## GAS INDUSTRY COMPANY LIMITED



Ian Dempster—Gas Industry Co Ben Farrington—Concept Consulting Group Gas Outage and Contingency Management Arrangements — Stakeholder Workshop

27 November 2007



- 1. Introduction & recap
- 2. Overview of submissions analysis
- 3. Key changes
  - OCMP approvals
  - Imbalance calculations & pricing
- 4. Timetable and next steps



## Approach to contingency management arrangements - a reminder



## Hybrid combining regulation and industry arrangements

Framework Hierarchy	Description		
Gas Act	43F(2)(a)(vi) – empowering provisions		
Outage and Contingency	<ul> <li>Define critical gas contingency (CC)</li> </ul>		
Management Regulations (OCMR)	<ul> <li>Critical Contingency Operator (CCO) to manage security of supply under CCs</li> </ul>		
	<ul> <li>Powers for CCO to direct load curtailment via Transmission System Operators</li> </ul>		
	<ul> <li>Contingency Price to cash-out any quantity mismatches after event</li> </ul>		
	<ul> <li>Each TSO to prepare an Outage and Contingency Management Plan (OCMP)</li> </ul>		
	<ul> <li>Process for approval of each OCMP</li> </ul>		
Outage and Contingency	<ul> <li>Linepack or pressure levels to trigger a CC</li> </ul>		
Management Plans (OCMP)	<ul> <li>Processes to be followed during a CC</li> </ul>		
	<ul> <li>A plan for communicating with relevant parties</li> </ul>		
	<ul> <li>A process for communicating with Civil Defence and local authorities as required</li> </ul>		



## GASESSES Still need to manage contingencies in transmission codes





#### **Consultation Process**

- Statement of Proposal issued in August
- Industry Forum held on 23 August
- Responses received from seven industry members
- Submissions analysis and meetings with a number of submitters to clarify issues raised



Issues split into two categories:

- Issues of Principle
- Implementation Issues



#### Issues of Principle (1)

Issue	What was said	Analysis
Need for mandatory	Genesis and Mighty River	Proposal did not provide sufficient
powers	Power raised concerns	explanation of rationale. Mandatory
	about problem definition	powers only apply in rare
		circumstances.

Issue of mandatory power – provided more detail of the rationale in the submissions analysis paper



#### Issues of Principle (2)

What was said	Analysis
MDL proposed an alternative 'model' based on compliance with pipeline operators' instructions/codes backed by regulation to enforce compliance	<ul> <li>Difficulties with MDL proposal:</li> <li>no single party in charge;</li> <li>proposed arrangement is more comprehensive;</li> <li>Gas Act unlikely to sanction regulations which provide for third parties to enforce contractual parties to enforce contractual parties to enforce contractual</li> </ul>
V A o p ir b e	Vhat was said ADL proposed an Iternative 'model' based on compliance with operators' nstructions/codes acked by regulation to nforce compliance

Mandatory powers to be exercised by pipelines rather than CCO – MDL proposal not a practicable option



#### Issues of Principle (3)

Issue	What was said	Analysis	
Regulatory objective	Potential ambiguity	Minor change required to convert RO from an outcome to an objective	

that arrangements are in place to achieve effective handling of a national or regional gas contingency without compromising long-term security of supply

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## Implementation Issues – proposed changes to statement of proposal

Issue	Change to SOP	Proposal
Terminology	Events triggered under OCMP need to be clearly distinguished from situations handled under MPOC/VTC	Revised terminology in several areas to align with transmission access regulations and to avoid confusion with MPOC



#### Terminology

Revised terminology	Previous
Critical contingency	Gas contingency
Critical contingency operator (CCO)	Gas contingency operator (GCO)
Transmission system	Transmission network
Transmission system owner (TSO)	Transmission network owner (TNO)
Critical contingency price	Gas contingency price
Critical contingency operator service provider agreement (SPACCO)	Gas contingency operator service provider agreement (SPAGCO)



## Implementation Issues – proposed changes to SOP

Issue	Change to SOP
Cost recovery	Reconsider recovery of development and establishment costs



#### Funding and cost allocation

- Consider spreading up-front development and establishment costs over 3 years (rather than recovering at start)
- Requires funding arrangement
- How significant are these costs?
  - up-front charges under SPACCO
  - costs for industry expert on OCMP approvals
- May be more efficient in contract with CCO for CCO to spread up-front costs over duration of agreement



## Implementation Issues – proposed changes to SOP

Issue	Change to SOP
Information provision	Two-way information flows between the CCO and participants

## Flows of directions and information during a Critical Contingency

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## Additional information provision from CCO

Requirement on CCO to publish a declaration that a critical contingency has been declared

Add requirement for CCO to publish (i.e. make available on critical contingency website):

- Updated information on the status of critical contingency
- All formal notices given by the CCO



## Implementation Issues—other changes to statement of proposal

- Avoiding deadlocks in OCMP preparation
- Quantifying gas imbalances during a CC
- Calculating the Critical Contingency Price
- Invoicing



# Significant implementation issues identified in the Submissions Analysis



## 1. Avoiding deadlock in preparation of OCMPs



#### Key changes

- Hierarchy:
  - CCO now communicates with expert adviser
  - Expert adviser recommends approval of plans
- Gas Industry Co has limited ability to change plans in some circumstances:
  - may amend plan if 6 months has elapsed without a plan being approved
  - amended plan in force until TSO provides replacement plan and Gas Industry Co approves



#### How OCMPs are assessed and approved



\* Amended OCMP prevails until TSO has produced a revised OCMP that has been approved



#### Gas imbalances during a CC—how these will be calculated

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## Gas Imbalances during a CC – details of the arrangements

OCMR	<ul> <li>Use the most detailed metering data available</li> </ul>			
	• Estimates of end user consumption during period of CC will assume compliance with curtailment instructions unless evidence of non compliance			
	<ul> <li>Shippers with negative gas imbalances pay Contingency Price</li> </ul>			
Contract imbalance	<ul> <li>Measurement starts from the next hour bar after a CC declared and ends from the next hour bar after CC terminated</li> </ul>			
guidelines	<ul> <li>Most detailed metering means hourly metering at WPs</li> </ul>			
(annex to	<ul> <li>Hourly allocation to non-hourly metered consumers is 1/24 of daily allocation</li> </ul>			
OCMR)	<u>Maui pipeline</u>			
	<ul> <li>Change in linepack: when change is cashed-out and when change is an adjustment to Running Operational Imbalance at WPs</li> </ul>			
	Vector pipeline			
	<ul> <li>In a regional contingency the allocation of flows through delivery WP will be made pro-rata to shipper capacity booking at WP</li> </ul>			
ОСМР	<ul> <li>Refer to the arrangements under the TSO's Code</li> </ul>			
	<ul> <li>Describe the adjustments necessary to implement regulations i.e. single period for the CC, rather than one day</li> </ul>			



### Operational Imbalances under OCMR arrangements: example based on 5 June 2007



- Information taken from the Incident Report published on OATIS
- Simplified example to illustrate the principles of the cash-out and change in linepack
- Phase 2 under NGOCP declared at 19:05, on 5 June
- Under OCMR arrangements the CC is regarded as commencing at 20:00 hours for measurement purposes
- Assume CC terminated with effect from 01:00 hours (in fact phase 5 of NGOCP was terminated at 08:21 on 6 June)





#### **Operational Imbalance (OI) at each WP**

- Calculate the OI at each WP over the duration of the CC
- In any hour the Operational Imbalance is:

Receipt WP	(Flow – Scheduled Quantity)	Over injection is +ve
Delivery WP	(Scheduled Quantity – Flow)	Under taking is +ve

#### • During the CC:

- the Scheduled Quantities are held fixed
- the Flows are the demand (including any curtailment of consumers) downstream of WP

## Flows and Scheduled Quantities during CC

Source: Maui Pipeline Contingency Event - 5th June 2007, OATIS

#### Receipt WPs: OI is +ve

**Delivery WPs: OI is -ve** 









#### OI measured at each receipt and delivery WP on Maui pipeline

Overall reduction in linepack: negative OI quantities at Huntly and Rotowaro are cashed-out Operational Imbalance (OI) by Welded Point





#### Calculation of OI during 5 hours of CC

All figures in TJ	Receipt Welded Point (RWP)			Delivery Welded Point (DWP)			
	Ngatimaru Rd	Tikorangi #2	Other RWPs	Huntly	Rotowaro	Other DWPs	
Flow	10,000	3,500	Lots	12,500	29,000	Lots	
Scheduled Quantity	0	0	Lots	4,000	22,000	Lots	TOTAL OI = change in linepack =
Operational Imbalance*	+10,000	+3,500	Zero	-8,500	-7,000	Zero	-2,000
Cash-out Ol	+10,000	+3,500	Zero	-8,500	-7,000	Zero	
Adjustment to ROI	Zero	Zero	Zero	Zero	Zero	Zero	

\* Sign convention: over delivery at RWP is +ve; over take at DWP is -ve



Illustration of Running Operational Imbalance (ROI) at Welded Points showing hourly profile of ROI and cash-out OI



Where there is an increase in linepack different treatment..



Illustration of Running Operational Imbalance (ROI) when there is an *increase* in linepack: the increase in linepack is an adjustment to the ROI at WP with positive OI







#### OI example with increase in linepack: negative OIs are cashed-out, positive OIs are split between cash-out and adjustment to ROI

**Operational Imbalance (OI) by Welded Point: Example with Increase in linepack** 



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## Cash-out quantities on the Maui pipeline

- The objective is to preserve the price incentive for additional supply/demand reduction during a critical contingency
- All negative imbalances are cashed-out
- Positive imbalances are cashed-out but only to the extent that they helped supply consumers and maintain the linepack
- Any net increase in linepack during the CC is treated as an adjustment to the ROI
  - ⇒ All additional supply (and demand reduction) receives the critical contingency price up to the point that linepack has been restored to pre-CC level. Thereafter the increase in linepack is added to the ROI at WPs with positive OI.



## OI at WP where there are multiple shippers: e.g. Rotowaro

- OI at Vector receipt WP is allocated to downstream shippers via existing shipper mismatch mechanism
- Shipper allocated flow through the receipt WP during duration of CC based on:
  - Hourly flows at downstream delivery WPs with single shipper (e.g. power station)
  - Allocation of hourly flows through downstream delivery WPs with multiple shippers (e.g. city gate)
    - Use metered flows where hourly data available for consumer
    - Hourly allocation is 1/24 of daily allocation for all other consumers
- Where curtailment occurs
  - Hourly metered sites automatically accounted for
  - Daily metered sites may need further adjustment (issue for industry to resolve)



## 3. Contingency price—how this will be calculated



#### **Critical Contingency Price**

Submissions Analysis stated an overarching principle that industry expert is to follow:

"The critical contingency price must be set at a level that reflects the price that would be established by an efficient short-term market that allocated scarce gas resources to the highest value during a contingency"



#### Critical contingency price: emergency pricing in other jurisdictions

Jurisdiction	Arrangement	Price used for cash-out of imbalances
Victoria*	Administered Price Cap	Net buyers from the spot market pay gas spot price. Under emergency conditions the spot price is capped at the Administered Price Cap (APC). The APC is set at \$80/GJ, a figure that is intended to include the full option value of LNG under normal market conditions. (LNG is the supply of last resort in an emergency.)
GB	Price immediately prior to emergency	<ul> <li>Originally System Average Price (SAP) for 30 days prior to emergency. Recently updated to:</li> <li>Short – pay SMP buy price immediately prior</li> <li>Long – receive SAP immediately prior</li> </ul>
Ireland	Price in connected market at time of emergency	System Average Price derived from GB market



#### Critical contingency price: alternative factors for setting price

Pricing Factor	Reflects price in short-term market?
Electricity wholesale market to impute gas price	Power generation demand is curtailed first. Power generation makes up around 50% of total gas demand
Economic cost to users who had supply curtailed	Appropriate: - for a regional contingency where no power
	generation has been curtailed;
	<ul> <li>where curtailment required to cut deeper than power generation</li> </ul>
Published fixed price ex-ante	Difficult to find a basis for setting the price (e.g. Administered Price Cap in Victoria)

#### Electricity wholesale market: example of gas price equivalent under MPOC



Source: Electricity Commission central data set at Otahuhu node, electrical conversion efficiency 140 kWh/GJ



- Electricity prices during (rather than prior to) the critical contingency
- Use the average price over the hours of the CC
- Details of which pricing node and the appropriate heat rate to use would need to be determined by industry expert



#### Critical contingency price (CCP)

OCMR	• Industry expert will be appointed by GIC to determine the CCP	
	• Overarching principle: the gas contingency price must be set at a level that reflects the price that would be established by an efficient short-term market that allocated scarce gas resources to the highest value uses during the contingency	
	• Lists prices that Industry Expert must take into account to include:	
	Prices in the electricity wholesale market during the critical contingency, used to impute a gas price;	
	The economic cost of the loss of gas supply to those consumers who had their gas supply curtailed	
	<ul> <li>Industry Expert will need to determine appropriate node for elect prices, appropriate heat rate and cost of carbon to impute the ga from electricity wholesale prices</li> </ul>	

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### Contingency price guidelines specify which price the industry expert is to use





#### Invoicing arrangements for gas imbalances during a CC

#### Invoicing – details of the arrangements

OCMR	<ul> <li>Invoicing to be performed by TSOs</li> </ul>		
	<ul> <li>Each TSO to apply a cash-out pool arrangement</li> </ul>		
	<ul> <li>Negative contract imbalances invoiced first at the contingency price provided by the industry expert and moneys held in contingency pool</li> </ul>		
	• Payment of moneys in contingency pool to those in positive imbalance		
	<ul> <li>Obligation on TSO to pursue payment</li> </ul>		
Contract imbalance guidelines (annex to OCMR)	<ul> <li>Timing of invoices to parties in negative imbalance – MDL to issue invoices first, then Vector to issue invoices consistent with amounts invoiced by MDL.</li> </ul>		
	<ul> <li>Payment of involces due - Vector involces due [20<sup>m</sup>] of the month following month in which invoice was issued. MDL invoice due on the following business day and Vector payment to be based on moneys received.</li> </ul>		
	• Payment to parties in positive imbalance will be on the last business day of the month		
ОСМР	Refer to the arrangements under the TSO's Code		
	Describe the adjustments necessary to implement regulations		

## GASESTER Negative imbalances: timing of invoices and payment



- 3. Payment of Vector invoices
- 4. Payment of MDL invoices

Payments to parties in positive imbalance made following the collection of payment from parties in negative imbalance



## Summary of changes to arrangements for contract imbalances and invoicing

Issue	Revised approach	Previous
Determination of contract imbalances performed by:	TSO	Appointee
Negative contract imbalances	At critical contingency price determined by independent expert	At gas contingency price determined by independent expert
Contingency cash pool held by:	Separate pool held by each TSO	GIC
Positive contract imbalances	Payment of moneys held in each TSO's contingency pool	Payment of moneys held in one contingency pool
Invoices for cash-out are issued by:	TSO	GIC
Timing for payment of invoices for negative imbalances	Vector TSO invoices due [day] before MDL invoices due	No issue

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## How will these arrangements change Shippers' behaviours?

- Provides incentives to avoid taking others' gas unless they are willing to pay CP for it
- Mitigating actions:
  - portfolio supplies
  - purchase interruptibility from customers
  - purchase "insurance" from shippers who are likely to be curtailed
- Reasonable certainty of receiving CP means shippers who are long gas should continue to flow
- Incentives for producers who can supply additional gas to do so—expectation of CP



### Next steps



- Present to stakeholders for consideration
- Update regulations in light of comments
- 'Short-form' consultation on proposed changes



#### Service provider agreement

- Develop the service provider agreement for CCO to reflect changes
- Possibility of spreading up-front costs over term of agreement
- Once regulations have progressed can move ahead with service provider agreement



## Revised project plan



#### Revised project plan

Target Date	Key Step
Today	Industry forum to present proposed changes
Nov/Dec	Initial feedback from MED
18 December	Board considers short-form consultation on changes to proposal and updated draft regulations
19 December	Issue short-form consultation (Decision Paper)
11 February	Receive submissions
March/April	Board considers recommendation to Minister