Contingency Simulations

13 December 2007

Introduction

This presentation will cover:

- Background of today's presentation
- Objective & Assumptions of the Contingency Simulations
- Methodology Applied for Building the Contingency Simulations
- Detailed Description of the Contingency Simulations
- Key Outputs
- Summary & Conclusions
- Next Steps

Background

- GIC are reviewing existing NGOCP arrangements.
- Industry sub-group formed to examine possible implications of a gas contingency on gas load reduction requirements.
- The group is interested in gaining a better understanding of how gas contingencies are likely to impact the requirement for load reduction across the gas sector and what this may mean for the level of thermal generation during an event. This may enable a more coordinated approach to be taken when managing supplies to major users of gas in the event of a gas contingency.

Background (cont.)

- To gain a better understanding of the implications of a gas contingency, the sub-group decided it would be useful to simulate possible implications on line pack levels under certain conditions.
- Following expressions of interest from third parties, Vector offered to undertake this simulation to prevent industry participants incurring unnecessary costs.
- Vector requested industry participants to specify a scenario that could be simulated and to provide input data as the basis for the key outputs.
- Vector has constructed the Contingency Simulation on this basis using its resources and at its own cost.

Interpretation of the Contingency Simulation

- Given the large number of variables that impact contingency outcomes, it has been necessary to make a number of significant assumptions to enable contingency simulations to be carried out. For this reason the simulations represented here should be treated as providing a broad indication of pipeline system conditions during the stated contingency scenarios, and are for discussion purposes only.
- Further, given that the scenarios under discussion represent a small subset of possible events on the pipeline, the contingency event simulations provided here should not be taken to represent the full range of contingency outcomes that may arise on the pipeline, nor the worst case outcomes anticipated to occur. They represent indicative reference points for discussion purposes only.

Disclaimer

- This presentation is intended to provide a simulation for general reference only.
- The contents may not reflect actual activity in a non-simulated event and accordingly should not be relied on as such.
- Specialist advice and guidance should be sought in relation to your own circumstances.

The Scenario

- Loss of Maui supply due to problems on the Maui gas field affecting whole pipeline:
  - On high dependence day - Oaonui scheduled to provide 224 TJs (actual flows from 6/9/07)
  - On moderate dependence day - Oaonui scheduled to provide 128 TJs (actual flows from 19/8/07)
  - On low dependence day - Oaonui scheduled to provide 108 TJs (actual flows from 13/10/07)
- Assumptions: As Pohokura gas is generally at full capacity, assume that there is no spare deliverability from the Pohokura gas field to supply gas.
- All scenarios are repeated with different compliance factors during the Phase 1 stage.

Data Provided to Vector to Construct the Contingency Scenarios

- Information provided by MDL in relation to gas flows for high, medium and low dependency days for Oaonui and Pohokura.

- Information provided by major gas plant owners:

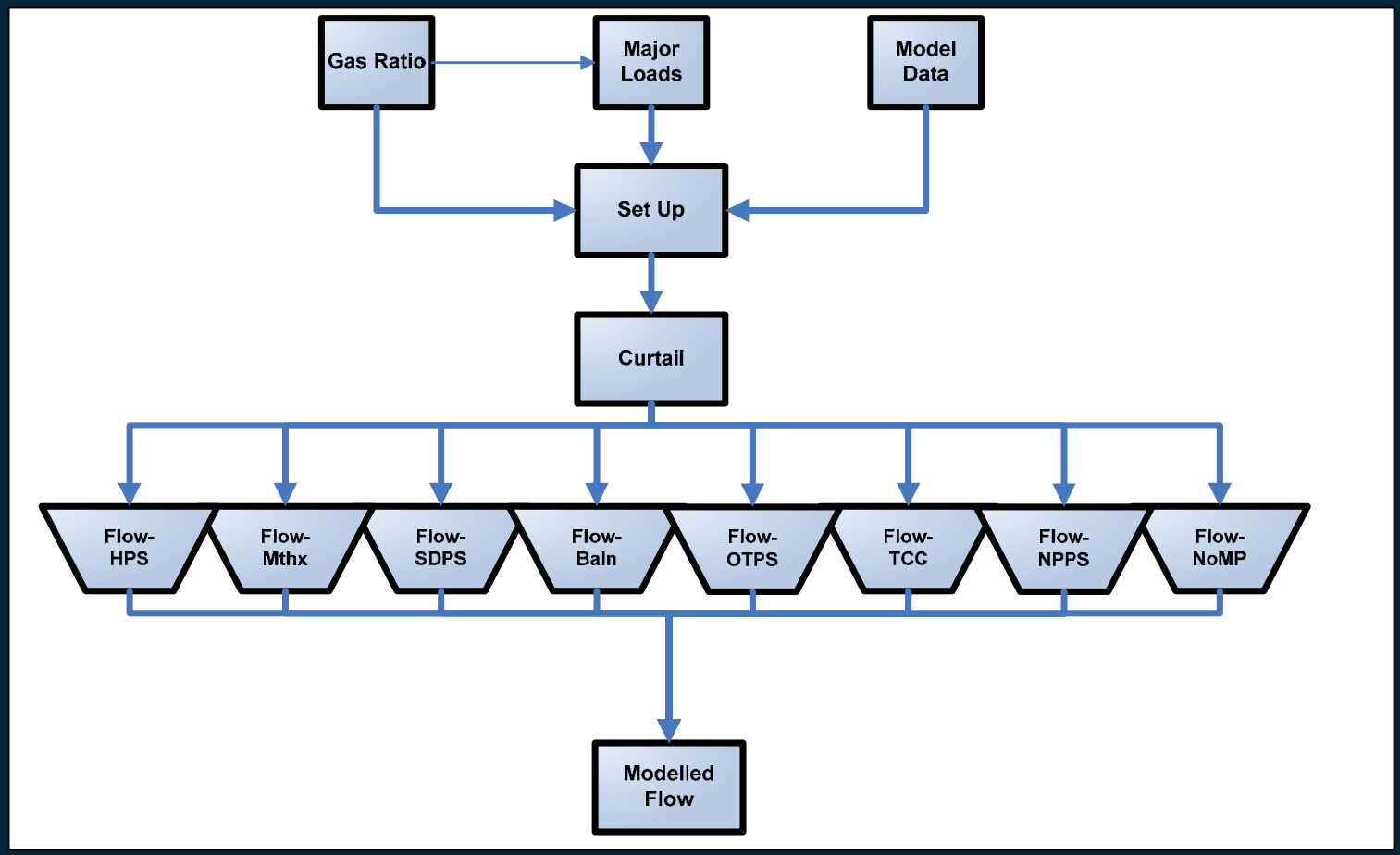
  - Ballance Agri-Nutrients (AU Plant)
  - Contact Energy (New Plymouth, Otahuhu B, Taranaki Com. Cycle)
  - Genesis Energy (Huntly)
  - Methanex (Bertrand Road)
  - Mighty River Power (Southdown)

- Proportion of gas in aggregate (supplied by plant owners) that comes from Maui pipeline sources and Vector system sources.

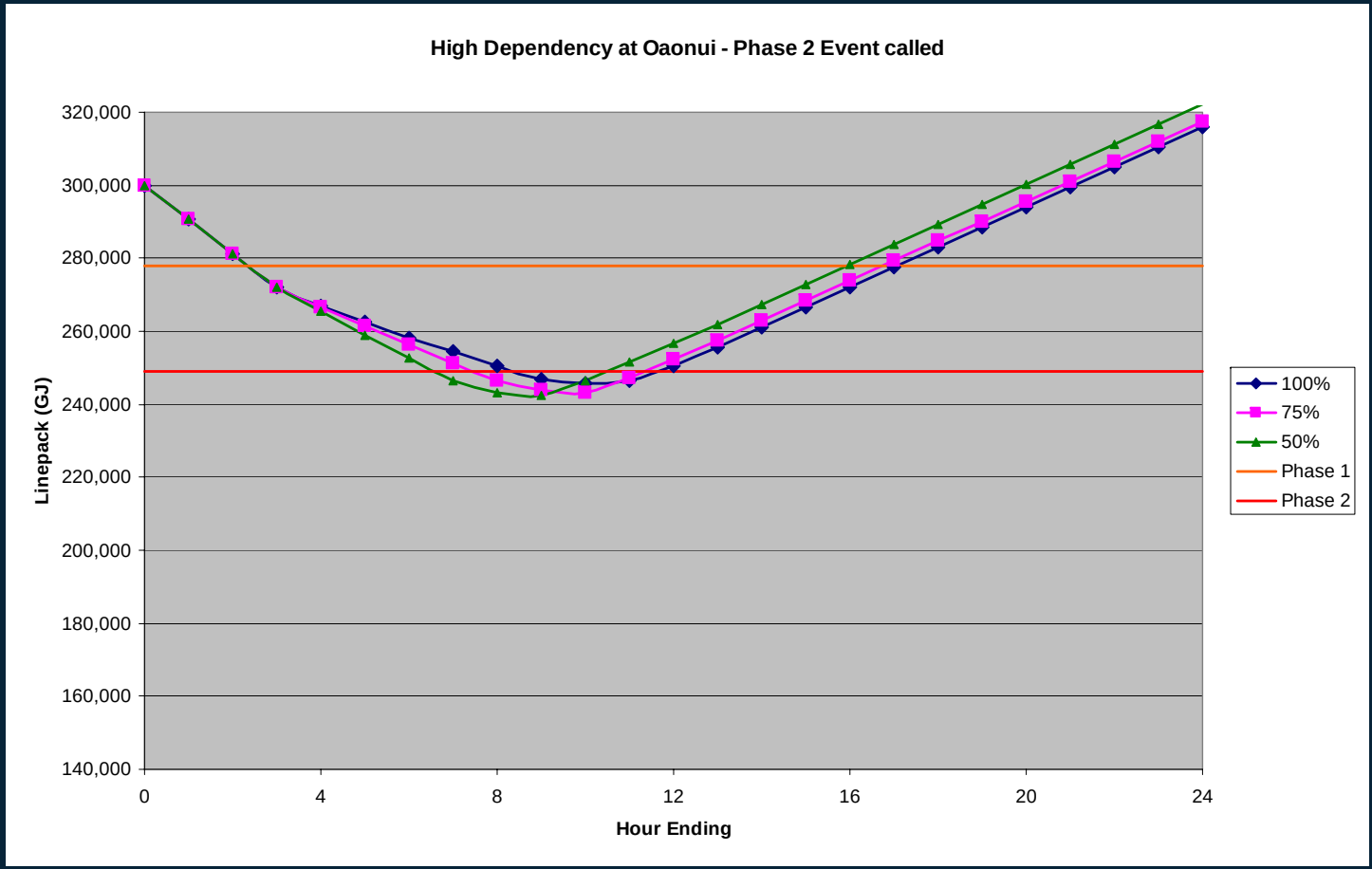
Key Assumptions of the Contingency Simulation

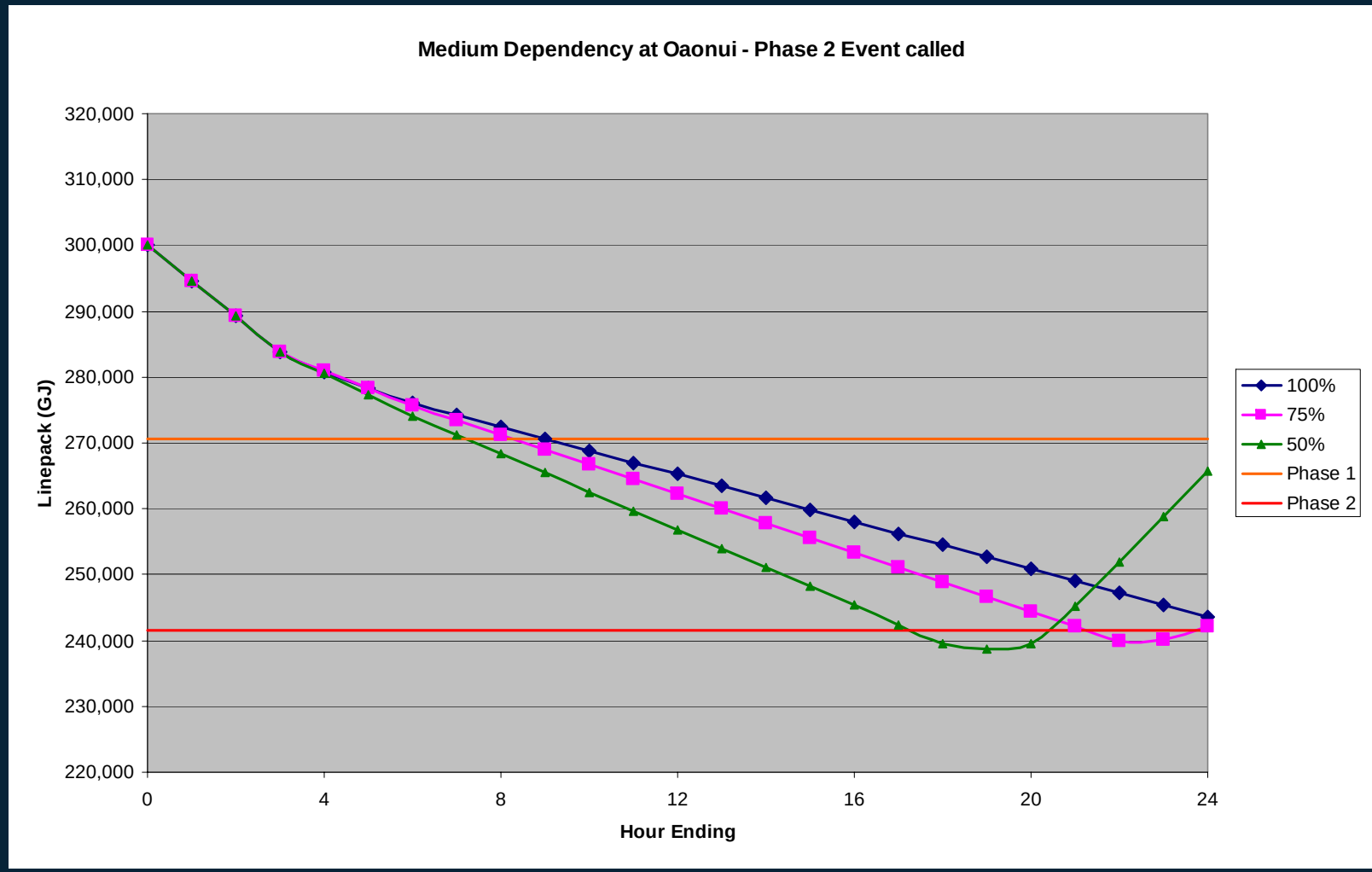
- All peaking has been removed (i.e.: all points are assumed to flow to a flat profile except to the extent they are responding to a curtailment).
- There is no Operational Imbalance (i.e. at the start of the day, before the event, nominations and flow are the same and they only differ subsequently to the extent that the 'compliance' factor allows).
- The event occurs at midnight and we have only monitored it for the first 24 hours (to avoid needing new nominations for a second day).
- There are no intra-day nominations (so we start the day with a set of day-ahead nominations which everyone is flowing to and these are only revised by the curtailment).

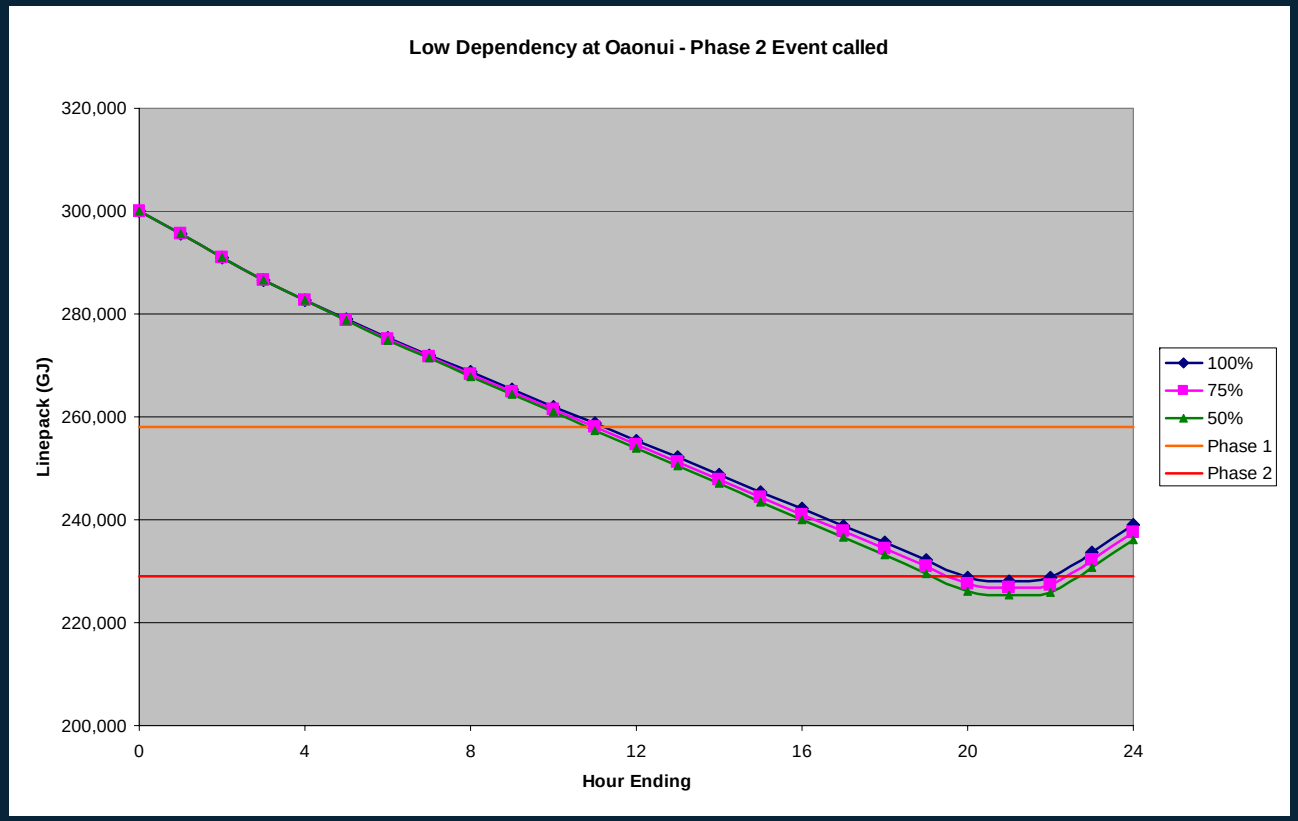
Methodology Applied



Key Outputs of the Contingency Simulation




Medium Dependency at Oaonui - Phase 2 Event called
320,000
310,000
300,000
290,000
280,000
270,000
260,000
250,000
240,000
230,000
220,000
Linepack (GJ)
0
4
8
12
16
20
24
Hour Ending
100%
75%
50%
Phase 1
Phase 2


Low Dependency at Oaonui - Phase 2 Event called
320,000
300,000
280,000
260,000
240,000
220,000
200,000
Linepack (GJ)
0
4
8
12
16
20
24
Hour Ending
100%
75%
50%
Phase 1
Phase 2

Summary & Conclusions

- The Contingency Simulation does serve as a useful reference point to better understand what may happen in the event of a gas contingency.
- Given the limitations of the data, assumptions and the scenarios modelled, Vector would encourage each industry stakeholder to derive their own conclusions from the Contingency Simulation.
- Vector hopes that the Contingency Simulation meets the expectations of industry stakeholders without the costs associated with engaging external advisors.

Next Steps

- Vector would encourage industry stakeholders to review and verify the specific input data previously provided.
- Should amendments be required, Vector would then need to re-model the prescribed scenario one more time using revised input data.
- Vector would be willing to present the findings of a re-simulated contingency to the sub-group early in the New Year.