Transitional measures for reforms to DWGM

Presentation to DWGM working group

31 August 2016

Agenda

1. Introduction
2. Recap of key concepts
3. Transitional issues and international experience
4. Options for Victoria / Southern Hub

1 INTRODUCTION

1. Introduction

Terms of reference and focus of today

CEPA and TPA Solutions have been commissioned by the AEMC to investigate and report on potential transition measures in relation to the balancing regime which might be implemented upon introduction of the proposed new market design in Victoria ('Southern Hub'). We have not been asked to consider capacity right issues.

- AEMC and various market stakeholders have identified a number of issues that would need to be addressed and managed during the transition period from the existing DWGM, to ensure that the market can function effectively from the outset and the physical security of the DTS is guaranteed.

The purpose of today is to:

- Highlight and discuss with DWGM working group the transitional issues highlighted to date.
- Present initial (developing) work on potential options / packages for transition measures.

Purpose is not to revisit wider market reform and design issues discussed at previous working groups

1. Introduction

Identifying options for transitional measures

- We have taken as a working assumption that change to Victoria's market design is needed (in light of AEMC's ongoing DGWM review process) and that transitional measures should **support evolution to the expected 'target model'** for the trading and balancing regime at the Southern Hub.
- However options for transition have at this stage been developed as ideas / proposals rather than prescriptive solutions, based on experience of how transition and regime evolution has been effected in other countries and regions, in particular North West Europe.

What is ultimately required is a fit for purpose regime and transition process that takes account of Victoria's local circumstances. An approach that:

- Takes account of specific features of the DTS and Victoria's changing gas market.
- Uses learning from other countries to establish what could be best practice in this local context.

International experience shows how transition can need to be evolutionary to respond to developments in the market

1. Introduction

Approach - identifying options for transitional measures

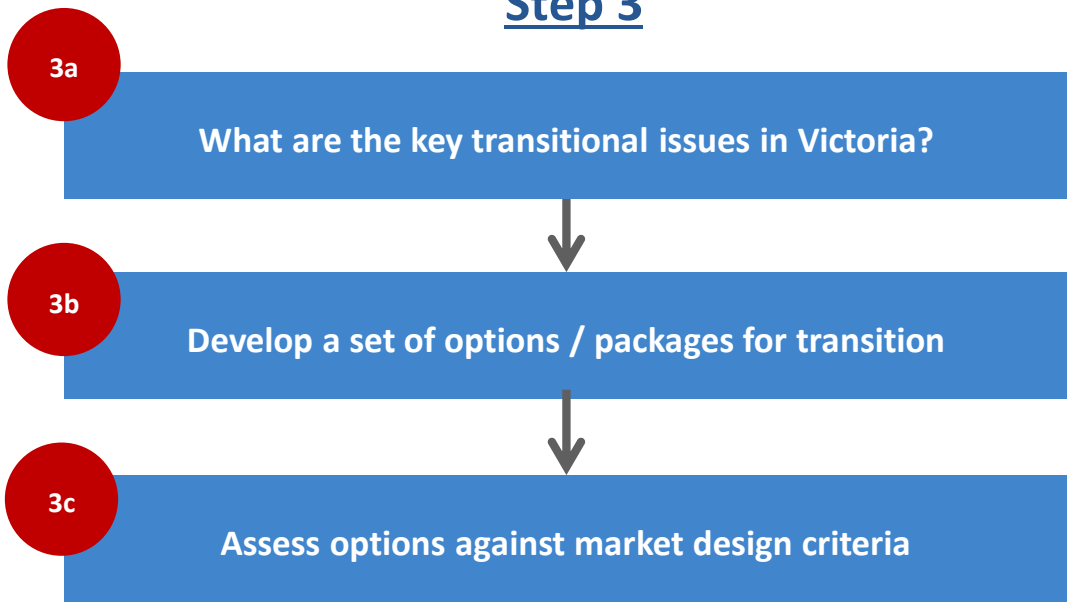
Step 1

- Review emerging 'target model' for Southern Hub
- Both trading and balancing regime

Step 2

- Review international experience of transition
- GB, Netherlands and other European countries

Step 3



We have used learning from international experience to establish options tailored to Victoria local context

2 RECAP OF KEY CONCEPTS

2. Key concepts applicable to all balancing regimes

Key principles that underpin balancing regimes

- **Role of the System Operator (SO):** The SO has a key role as it undertakes the journey from "guardian of the network" to "facilitator of the market" – as a "residual balancer" it has the key task of managing the gap between the reality of the physical system (and the need to keep it safely balanced) with the "virtual reality" construct of the commercial rules applicable to system users (and the need to facilitate successful traded markets).

- **Commercial balancing regime:** The balancing rules that incentivise MPs should be designed to encourage individual balancing, facilitate market trading and allocate balancing costs reasonably. There are inevitable trade-offs between precise cost allocation and socialisation given the desire to encourage market trading – lax rules may increase socialisation; overly precise rules may lessen trade.

- **Physical balancing:** The ability to balance the system safely should be a given, regardless of the precise design of the commercial balancing regime. The SO needs the means to ensure physical balancing, preferably indirectly in its role as residual balancer using market based tools, but ultimately with the right to intervene more directly up to and including invoking emergency measures.

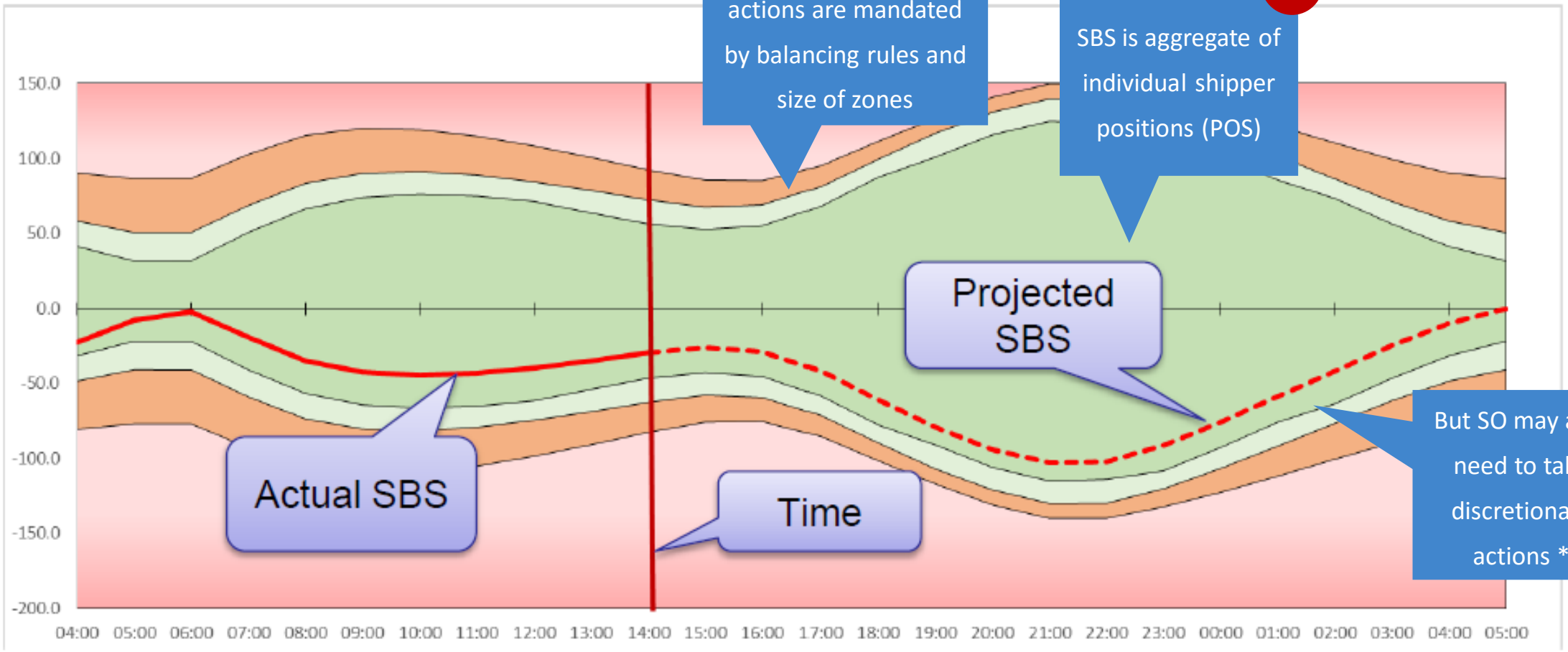
2. Typical balancing schemes

Before looking at transitional arrangements, let's remind ourselves about different balancing schemes

- **Pure continuous balancing:** A regime that incentivises MPs collectively to keep the aggregate system position within a pre-defined linepack range, with the SO taking a precisely calculated mandated volume transaction if the aggregate MP position is projected to move outside that range, and then targeting costs incurred at MPs who were contributing to the system excursion at the time.
- **Pure daily balancing:** A regime that cashes out individual end of day (EoD) MP imbalances in full, with the SO taking flexible residual balancing actions at its discretion as required during the day that potentially influence the end of day cash out prices. MPs with short positions at EoD will buy gas at the highest price of SO purchases, and those with long positions will sell at the lowest price of the SO sells. Neutrality arrangements socialise any surplus or deficit for the day.
- **Hybrid balancing:** A regime that combines features of both continuous and daily balancing, such as the Netherlands regime that combines continuous balancing with the application of a daily linepack fee (for any inventory carry forward to the next day). Or the Belgian regime that combines continuous balancing with daily imbalance cash out. Another example would be a daily balancing regime that also includes within day nomination "scheduling" disciplines, as was considered in GB.

2. Continuous balancing regime

Key concepts and definitions



* Which are not covered by mandated scheme, including locational effects or special circumstances

3 TRANSITIONAL MEASURES AND ISSUES

3. Features of transitional schemes

Before looking at transitional packages in more detail, we consider some elements of transition

- **Promotion of market liquidity:** A common concern about embarking on a traded market based approach to gas balancing is whether there will be sufficient liquidity to both justify all the effort and to enable reasonably efficient residual balancing by the SO (where needed). This concern can be addressed by various stand-alone measures and/or by evolving the balancing rules in stages.
- **Financial relief:** Another aspect of transition is the concern about the impact on MPs of new rules and incentives, especially where the intended regime may expose some or all MPs to new financial risks. This concern can be addressed by including special interim features within the regime rules and/or by evolution of the regime towards the target model.
- **Interactions:** In applying financial relief measures, it is important to recognise the potential implications for undermining balancing disciplines and contributing to increased cost socialisation as well as reducing the need for the very trading that we are trying to encourage.

3. Transitional measures

Liquidity promotion measures

Measure	Description	Rationale
Market maker	Certain MPs could be required (or incentivised) to continually show bid and offer prices for a minimum volume of commodity within a defined bid-offer spread.	Market maker would help to stimulate liquidity in the newly redesigned commodity market. Could be designed to stimulate products that meet balancing needs of MPs.
Balancing duration	Certain balancing duration periods (e.g. daily) may as an interim measure help to be more conductive to building trading liquidity from the outset (e.g. simple daily products).	Focuses trading on basic day ahead and balance of day products.
Trigger for RBAs	Narrower linepack bands could be applied than is intended longer-term for the market increasing the likelihood that RBAs will be triggered.	The narrower linepack bands are used to encourage MPs to trade as the new market design is introduced.

Offering financial relief (see overleaf) from market based balancing disciplines may also help to promote liquidity if MPs are more willing to release flexibility into the market.

3. Transitional measures

Balancing and financial relief measures

Measure	Description	Rationale
Balancing platform / SO flex	Either a platform is used to establish a set of prices and products which the SO could draw on for RBA or the SO could be allowed to enter into its own GSAs.	An interim measure to ensure that the SO can maintain the physical security of the system through access to short-term balancing tools. [1]
Scheduled market	As with the DWGM today, within day balancing could be managed solely by the SO (for an interim period) after a 'gate closure' point for MP physical nominations.	Limits MPs exposure to imbalance risks during the implementation of the new Southern Hub and SO retains direct control of within day scheduling.
Tolerance / cost socialisation	In the continuous based regime applied in the Netherlands, cost of a within day RBA would only be partially targeted on MP inventory positions (POS).[2]	Reduce network users exposure to imbalance cash-out / targeting of cost on causers of system imbalances as a means to allow other aspects of the regime to function effectively before imposing balancing disciplines.[3]

Note 1: Viewed as an interim measure before a trading platform is available.

Note 2: In GB (and many EU countries) imbalances within tolerance limits would face a lower exposure when cashed-out (SAP rather than SMP).

Note 3: Regular bid/offering of flexibility with an expected greater RSB role before migrating responsibility (and financial risk) of balancing to MPs.

3. Transitional schemes

The Netherlands experience

- The Netherlands currently operates a continuous balancing regime similar to the proposed regime for the Victorian gas market.
- A market-based balancing regime was first introduced in 2011: it combined a continuous balancing regime with the use of a balancing platform in an arrangement known as the **Bid Price Ladder** (BPL) mechanism
  - MPs submitted offers to the SO to supply or buy gas – the ladder was called on when the SO needed to take a balancing action to bring the system within green bands.
  - Offers accepted according to the merit order - Imbalance price was set by the marginal offer used to balance the system.
- In 2014, the BPL mechanism was abandoned in favour of the use of traded **title products**.
  - The TSO uses within-day title products traded at the Dutch TTF hub (one of the most liquid gas hubs in Europe) but also less liquid TTF Next hour products.
- **End of day inventory position** – in the Netherlands any shipper imbalance at the end of the day is rolled forward to the next day in return for a linepack service (per unit) fee. In **Belgium** (which adopts a similar continuous balancing regime as the Netherlands) shipper end of day inventory positions are fully cashed-out.

3. Transitional schemes

The GB experience

- Great Britain moved to market based balancing regime in the mid-1990s. A daily balancing regime was implemented because previous monthly balancing was inappropriate for a level playing field regime, and the absence of within day allocation information at a network user level made continuous “cost to causer” arrangements impossible.

- A ‘soft landing’ approach was adopted in the initial phases of the daily balancing regime:
  - New regime was **‘shadowed’** for around six months: A diluted monthly balancing discipline was applied during the period.
  - **Balancing platform:** After daily balancing took full effect, a flexibility mechanism (‘flex mex’) was adopted where the SO could select from posted bids and offers to conduct residual balancing role – subsequently replaced by an On-the-Day Commodity Market (OCM) in 1999.
  - **Imbalance tolerances:** Designed as bands within which shippers would be cashed out at System Average Price (SAP) rather than (the more penalising) System Marginal Prices (SMP) – daily tolerances were eliminated gradually over time and included a small absolute figure, % of offtakes and NDM demand deviation.

3. Transitional schemes

The Danish experience

- Denmark has adopted a new balancing regime in 2014 based on trading in the day-ahead and within-day market and an end-of-day imbalance settlement.
- The TSO undertakes residual balancing trades during five trading windows within the day - this is meant to help concentrate liquidity in an otherwise illiquid within-day market.
- Measures currently being considered to address liquidity include:
  - Introduction of a market maker in the within-day market – potentially operating during certain times of the day and focusing on providing narrow spreads rather than larger volumes (currently the TSO undertakes balancing actions in the within-day market during five trading windows).
  - Extension of the trading windows within which the TSO trades on the market.
  - Stronger incentives for shippers to balance their portfolios through more penalising imbalance prices (which are currently seen as a better source of flexibility for shippers then entering the within-day market to balance their portfolio).

3. Transitional issues in Victoria

A range of issues need to be considered in identifying specific transitional measures for Victoria

Some are inherent to the DTS and Victoria's market structure…

- **Relatively small market** so liquidity should not necessarily be assumed to develop naturally or be self sustaining at the Southern Hub.
- **A number of smaller gas retailers** source gas primarily or exclusively through DWGM and could be exposed to illiquid trading.

…others relate to DTS physical constraints…

- **Retail basis for demand** means the demand profile can at times of the year be very peaky. Profiling of injections is typically flat.
- **General lack of quick response storage** and a concern from stakeholders the DTS may have **limited linepack** to respond rapidly to changes in demand.

…and the current target model for the balancing regime is a 'continuous' approach

Are there any questions?

4 OPTIONS FOR VICTORIA / SOUTHERN HUB

4. Options for Victoria / Southern Hub

Two options / 'packages' have been developed

Each option has been developed as a coherent package of transition measures that draws from international experience and key transition issues identified in Victoria:

- **Package 1 –** Target model (from day 1) with a soft landing
- **Package 2 –** Forward trading with SO "directed" balancing after Gate Closure

Proposal is to talk through each package in turn. We will then offer the working group the opportunity to ask questions on each of the packages.

There is no preferred package at present and so we welcome feedback from the working group.

4.1 PACKAGE 1

4. Package 1 – Target model (from Day 1) with soft landing

Overview of the package

- This package allows an immediate implementation from day 1 of all the main features of the 'target' model but with specific measures designed to engineer a 'soft landing' and encourage trading in more liquid daily products.

Element	Description
Overall description	• All main features of the proposed model are implemented from day 1 including continuous day-ahead and within-day trading market and continuous (within-day) balancing regime. • **Primary transition measure 1:** Residual balancing action (RBA) cost targeting would be reduced during a transitional phase to engineer a 'soft landing' for MPs. • **Secondary transition measures:** Sizing of the linepack bands in the transitional continuous balancing regime *could* be used as a supporting interim measure to create greater trading incentives for MPs. Alternatively a number of other supporting measures (see later slides) might be considered to ensure flexibility is available. • The provision of financial relief has the objectives of both reducing risk aversion following introduction of the new market design (to help free up flexibility) and helping smaller MPs manage the transition process.
Role of the SO	• From the outset, AEMO will have a residual balancing role as envisaged by the 'target model'.
MP balancing discipline	• Incentivises MPs to maintain inventory position within linepack ranges over the course of the day (albeit dampened if relief measures are adopted) providing a within day discipline to prevent excessive cost causation. • If accompanied by an end of day linepack service charge[1], there would also be a daily discipline for MPs to balance end of day inventory positions, promoting trade rather than inventory "free-riding".

Note 1: As applies in the Netherlands. See later slides.

4. Package 1 – Financial relief measures

Primary transitional measure: RBA cost targeting dilution

- Transitional financial relief would be offered to reduce MPs exposure to RBA costs during the transitional period. Two options (set out below) for providing this relief have been identified to fit with the AEMC continuous balancing model.[1]

1

Attributing only a portion of the RBA cost to 'causers'

- When a RBA is undertaken, only a portion (i.e. X%) of the total balancing cost would be attributed to 'causers' according to the selected cost allocation methodology.
- Any unrecovered RBA costs would then be socialised/ smeared across all MPs (e.g. based on a measure such as throughput on the day or all inputs and all offtakes).
- The financial relief proportion (X%) could be adjusted over time to increase MPs financial exposure to imbalances.

2

Protected element of causer inventory

- Each MP could be offered a protected element of causer inventory (an absolute value) that would not feed into the RBA cost targeting attribution.[1]
- Only the attributed imbalance above the protected inventory ('buffer') limit would attract imbalance cost targeting. Any unrecovered RBA costs would be socialised across MPs.
- The protected element of causer inventory could be adjusted over time to increase MPs financial exposure to imbalances.

- These measures – particularly the protected causer inventory approach if set according to an absolute quantity value for all MPs – could be used to significantly reduce imbalance exposure (e.g. for small shippers) on a non-discriminatory basis.

Note 1: As discussed earlier in the presentation, these measures are different to how 'tolerance' has been introduced in other markets.

4. Package 1 – Financial relief measures

Illustrative examples

No Financial Relief

System position - illustrative example

			Quantity
Green zone	(+/-)		0 - 50
Light green zone	(+/-)		51 - 75
Amber zone	(+/-)		76 - 100
SBS			-80
Use of green zone			-50
Use of light green zone			-25
Use of amber zone			-5

MP position - illustrative example

	MP 1	MP 2	MP 3	MP 4
Cumulative inventory	-100	-50	30	40
Contribution to cost	100	50	0	0
% contribution to cost	67%	33%	0	0
Targeted inventory purchase	20	10	0	0

Residual Balancing Actions

	Price	Quantity
Next hour product to cover shortfall to light green boundary	11	5
End of day product to get SBS back to green band boundary	5	25
Total cost (P x Q)		180

Cost targetting - allocated pro rata (no reliefs applied)

	MP contribution to cost %	Cost
MP 1	67%	120
MP 2	33%	60
MP 3	0%	0
MP 4	0%	0
Total targeted cost		180
Socialised / smeared cost		0

Proportional Financial Relief

System position - illustrative example

			Quantity
Green zone	(+/-)		0 - 50
Light green zone	(+/-)		51 - 75
Amber zone	(+/-)		76 - 100
SBS			-80
Use of green zone			-50
Use of light green zone			-25
Use of amber zone			-5

MP position - illustrative example

	MP 1	MP 2	MP 3	MP 4
Cumulative inventory	-100	-50	30	40
Contribution to cost	100	50	0	0
% contribution to cost	67%	33%	0%	0%
Targeted inventory purchase	10	5	0	0

Residual Balancing Actions

	Price	Quantity
Next hour product to cover shortfall to light green boundary	11	5
End of day product to get SBS back to green band boundary	5	25
Total cost (P x Q)		180

Cost targetting - allocated pro rata and then relief proportion applied [1+2]

	MP contribution to cost %	Financial Relief Proportion	Revised contribution	Cost
MP 1	67%	50%	33.3%	60
MP 2	33%	50%	16.7%	30
MP 3	0%	50%	0.0%	0
MP 4	0%	50%	0.0%	0
Total targeted cost				90
Socialised / smeared cost				90

Protected inventory

System position - illustrative example

			Quantity
Green zone	(+/-)		0 - 50
Light green zone	(+/-)		51 - 75
Amber zone	(+/-)		76 - 100
SBS			-80
Use of green zone			-50
Use of light green zone			-25
Use of amber zone			-5

MP position - illustrative example

	MP 1	MP 2	MP 3	MP 4
Cumulative inventory	-100	-50	30	40
Contribution to cost	100	50	0	0
% contribution to cost	67%	33%	0	0
Potential inventory purchase	20	10	0	0

Residual Balancing Actions

	Price	Quantity
Next hour product to cover shortfall to light green boundary	11	5
End of day product to get SBS back to green band boundary	5	25
Total cost (P x Q)		180

Cost targetting - allocated pro rata first but then with absolute adjustment [3+4]

	Potential purchase (quantity)	Financial Relief Quantity	Revised purchase	Cost
MP 1	20	10	10	60
MP 2	10	10	0	0
MP 3	0	10	0	0
MP 4	0	10	0	0
Total targeted cost				60
Socialised / smeared cost				120

Note 1: Smeared cost will be recovered from say all flows on the day.

Note 2: Untargeted quantity of 15 will be sold to all MPs in same proportion as cost smearing.

Note 3: Assumes that cost is based on weighted average unit price of balancing cost.

Note 4: Smeared costs of 120 will be recovered from say all flows on the day.

4. Package 1 – Financial relief measures

Policy questions

How to determine how much relief would be permitted against RBA cost targeting?

- The size of the protected element of causer inventory (whether a absolute value or % of MP portfolio) could be a very important determinant of how well the regime functions from the outset for certain MPs.
- For example, if an absolute quantity approach was used, this could be set at a level that is particularly valuable to smaller MPs given the absolute quantity will be of proportionally greater value in the context of their business.
- Criteria - including known size of MP portfolios, supporting competition and financial impact on end customers – could be used to size the relief provided in the interim.

How and when could financial relief be rolled back?

- Again criteria – e.g. linked to market monitoring measures of the functioning of the Southern Hub[1] – could be needed to identify when it might be feasible for MPs to be exposed to full balancing disciplines.
- Financial relief measures could also be rolled back in stages (to a well signposted timetable) to avoid unmanageable exposures for MPs.

Note 1: In particular that flexibility is being offered into the market and will remain available once cost targeting levels increase.

4. Package 1 – Further design issues

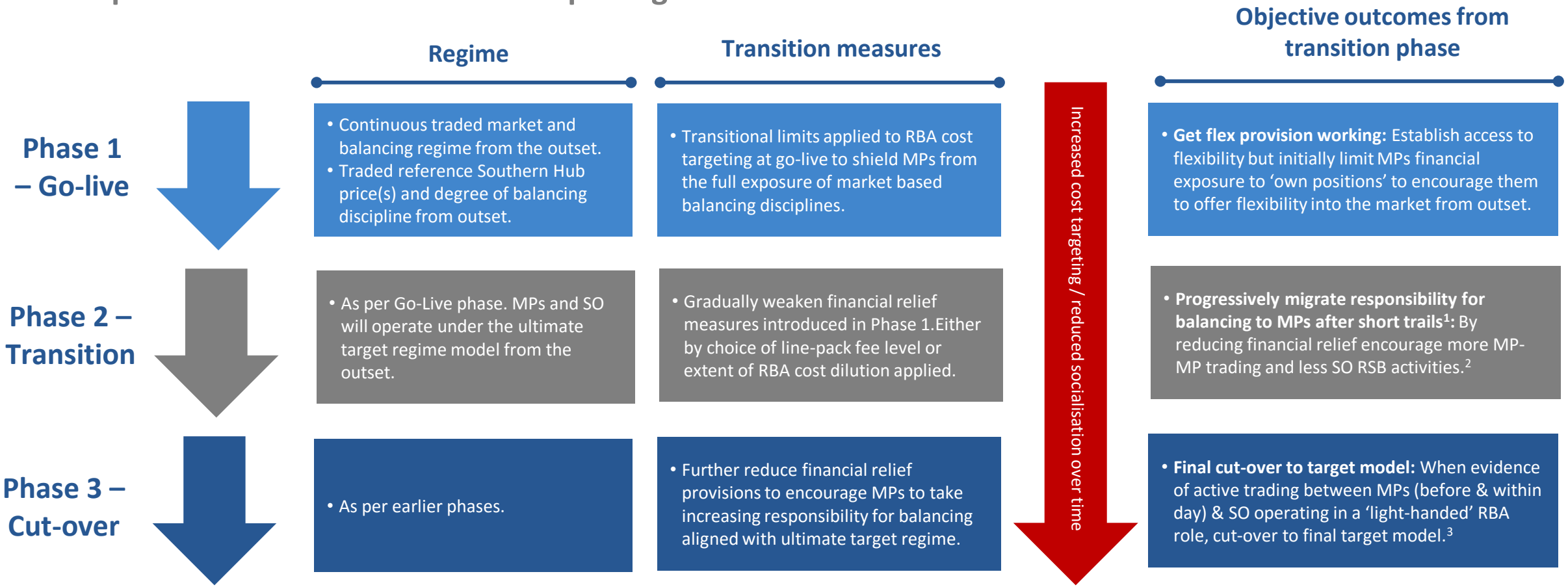
End of day balancing incentives

- The Netherlands currently applies an end-of-day linepack flexibility charge to MPs imbalance portfolios as well as continuous cost targeting of any RBAs.
- Whilst not a daily balancing regime, this fee provides an incentive for MPs to limit their end-of-day portfolio imbalances and so encourages trading in within-day market on daily (or balance of day products).
- Adopting a similar fee could be a very sensible measure on a permanent basis for Victoria. However the linepack fee set could also offer a transitional tool to help to foster market functioning during transition (although the absence of full end of cash-out[1] of MP inventory positions may also create transitional issues in cases where certain MPs are consistently short in their inventory positions).
- Initially the fee could be set to create some daily balancing discipline for MPs from the outset – even though financial relief of cost targeting dilution would be offered under the continuous balancing mechanism – to help encourage within day trade to develop.
- Either this fee could be set at an administered level or derived from various "prices" on the day (e.g. prices of balancing actions or within-day prices on the OCM exchange envisaged for the Southern Hub).

Note 1: As for example applies in Belgium alongside its continuous balancing regime.

4. Package 1 – Financial relief measures

The process of transition under this package



But will this virtuous process of transition develop in practice?

Note 1: Would envisage more than one but less than four steps during Phase 2 transition to keep focus.

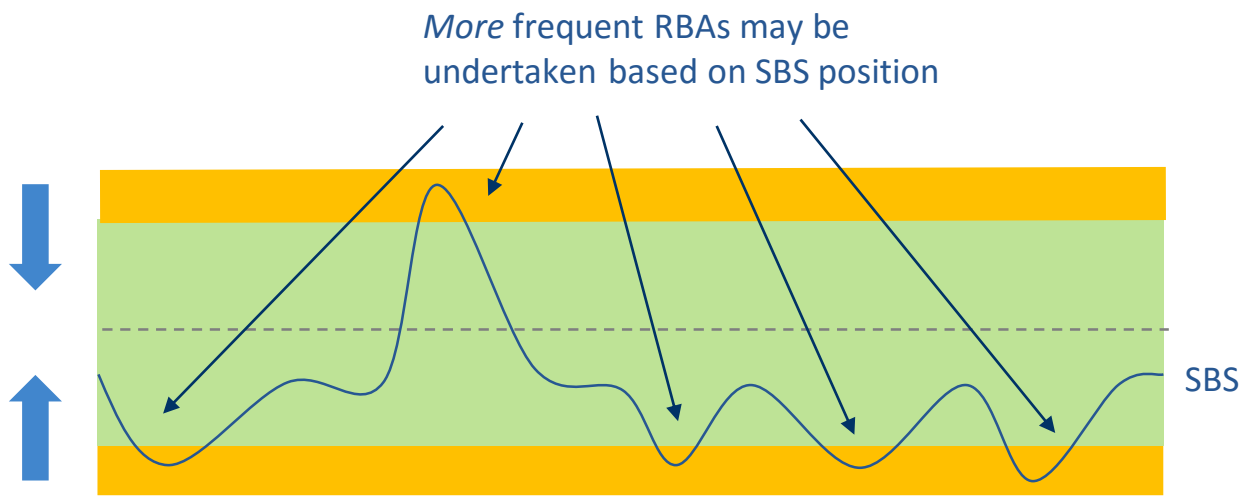
Note 2: Greater MP incentive to balance acts as a further inducement to trading.

Note 3: With cost targeting / socialisation as deemed appropriate.

4. Package 1 – Liquidity promotion through linepack bands

A secondary measure could be to narrow the green linepack bands

- Narrower linepack bands (than what is intended for the long-term target market) would provide tighter balancing discipline for MPs.
- This may encourage MPs to trade to bring to bring their positions (and the overall system) into balance within green bands and avoid cost of RBAs.
- Although as a transitional measure this starts from the assumption that the ultimate target band size is not already very low (which may need to be case at certain times in Victoria's system).



Impact on…	
Market liquidity	• Should encourage trading as MPs try to avoid the cost of RBAs.
"Soft landing"	• May result in the SO intervening too many times and expose shippers to higher risks if they cannot balance their positions in the market. • However a "soft landing" can alongside this measure be achieved by **reducing RBA cost targeting** – transitional measures that would mean that not all costs of within day balancing actions are passed on to MPs with unrecovered costs socialised / smeared across the market (see slide 24 above).

4. Package 1 – Liquidity promotion measures

Additional liquidity promotion measures – secondary transition measures

- Even with the measures outlined above there may still be a concern that liquidity may not develop sufficiently for the within-day market. There are two requirements:

  1. AEMO need to be confident that flexibility will be available in case it needs to take RSB actions.
  2. MPs need to be confident that title trade is available in the market.

- These concerns could also be addressed through additional market maker / must offer roles and/or tools (options) provided to the SO to call flexibility to be offered into the market when needed.
- This could involve a commitment for certain MPs to continually (or during specific trading windows) show bid and offer prices for a minimum volume of gas for particular products (at a maximum bid-offer spread) or by having a capacity agreement with the SO.
- This obligation could be imposed on some MPs or alternatively it could be a voluntary undertaking (e.g. if incentivsed by payment of a fee – which would effectively be an additional cost of transition).
- However, would need to establish the criteria for how these measures would be applied and how / when they would be removed. Clear and strong rationale needed for their introduction.

4. Package 1 – Summary

This package would deliver a soft landing to the Southern Hub's target balancing model…

- The target continuous based balancing model would be adopted from day 1 but reduced balancing action cost targeting would initially be designed to engineer a soft financial landing for MPs.
- This would provide financial relief to MPs from the risks / disciplines of the proposed continuous balancing model during an interim period (which could be rolled back over time).

…to mitigate risks and encourage flexibility being offered into the market

- MPs would initially be shielded from full exposure under the balancing regime through the financial relief measures in order to get flexibility being offered in the market, initially for RSB.
- Would then start to increase MP incentives (weaken financial relief) once players are more confident they can manage their exposures so that balancing responsibilities gradually migrate to network users.
- The financial relief measures – and how they removed / rolled back over time – would be the tools to evolve the balancing regime and foster market functioning during transition.

Are there any questions?

4.2 PACKAGE 2

4. Package 2 – SO balancing after Gate Closure

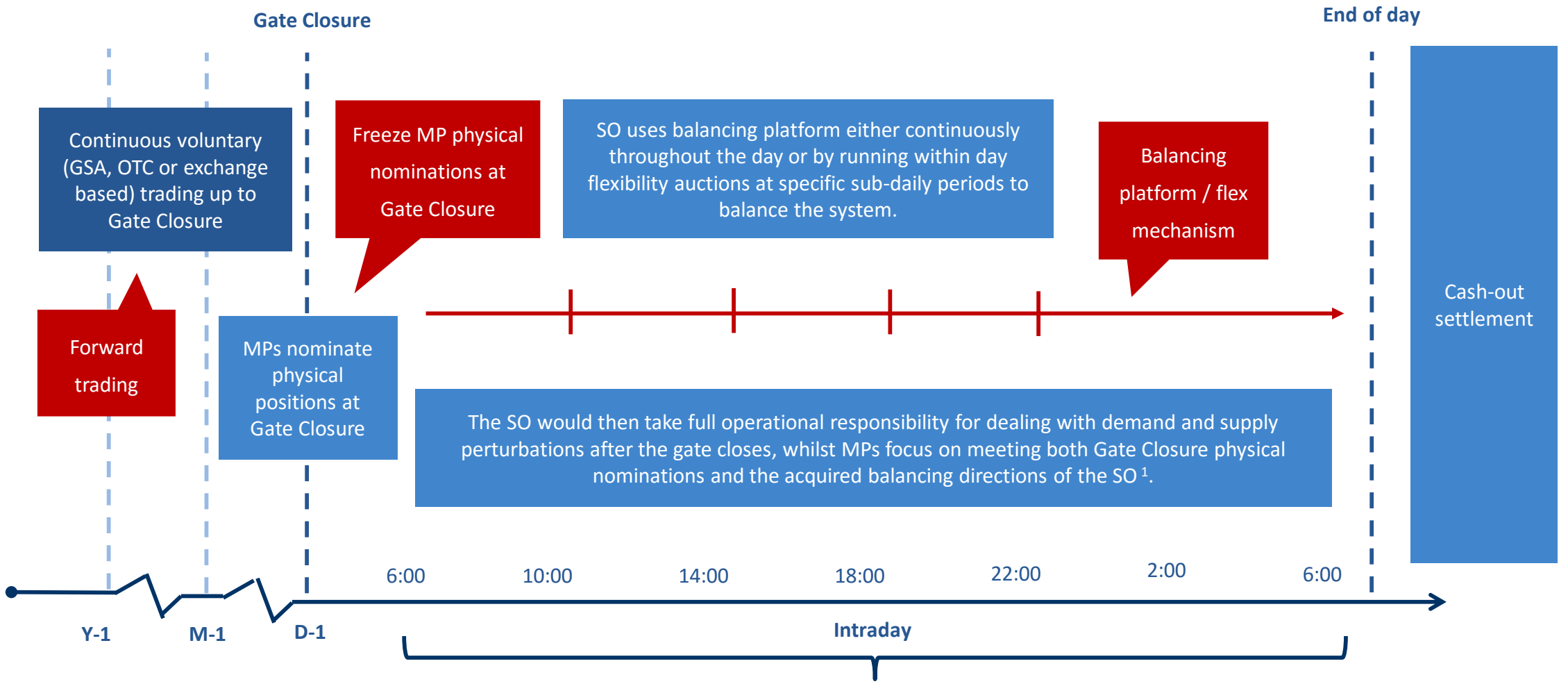
Overview of the package

- The concept of this transitional scheme is to allow an immediate move towards day (and further) ahead trading but with a reliable interim process to tackle within day flexibility needs during an initial phase.

Element	Description
Overall description	• MPs would be free to trade bilaterally (via OTC or the exchange) up to a 'Gate Closure' point before the day. At which time MPs physical nominated flows would be set and would become the deemed target (for physical flows) for the forthcoming gas day. • **Primary transition measure:** After Gate Closure, AEMO (as SO) would take over all balancing responsibilities and would meet any within day variations from the aggregate of MPs' physical nominated flows at Gate Closure to physically balance the system. A form of balancing platform / flexibility mechanism would be used by AEMO to meet any within day variations. Over time, this interim design would be phased out to deliver the target continuous balancing model. • **Secondary transition measures:** There are different ways this SO directed balancing approach could be phased out before the cut-over to ultimate target balancing regime to aid transition.
Role of the SO	• AEMO will have a 'directed' or 'scheduled' balancing role after the Gate Closure point (as distinguished from the smaller residual balance role in other transitional measure packages).
MP balancing discipline	• MPs would be exposed to balancing incentives at the start of the transition process, through a combination of scheduling charges and/or cash-outs that create incentives for MPs to deliver on gate nominations.

4. Package 2 – Simplified illustration

Where Gate Closure is set at the Day Ahead stage



Note 1: Any flow rate changes made in respect of transactions for system balancing made with AEMO.

4. Package 2 – SO balancing after Gate Closure

Objectives and transitional options

- Although not necessarily retaining the DWGM method that applies today, this regime could have common features with DWGM and offers a transition process to "roll-back" from a directed SO balancing mechanism to the target continuous market based balancing model.
- It seeks to address the initial illiquidity concern – for MPs and SO – by offering network users certainty after the Gate Closure point that they don't need to reserve flexibility for their own portfolios.
- However there would be a number of detailed regime design choices to resolve to ensure that the regime functions appropriately from the outset in terms of MP discipline. Including the role of:
    - **Scheduling charges:** payable on difference between physical nominations and actual flows
    - **Imbalance pricing:** applied to imbalance[1] cash-outs during the transition to incentivise desired behaviour
    - **Socialised cost of SO balancing actions:** facility for socialisation of some SO balancing actions during the interim period
- Worked examples using an illustrative regime are provided in the annex to the presentation.

There are then a range of approaches that could then be used to phase out this interim regime.

Note 1: Imbalance in this context is (physical) input allocations plus net traded position minus (physical) offtake allocations

4. Package 2 – Options

Rolling Gate Closure

- The cut-over to the target continuous balancing model could take place in two steps: i.e. adopt model as set out above in interim measure on day 1 and then in single ('big bang') step adopt the continuous balancing model.
- The alternative would entail a move towards the full trading and target gas balancing regime in stages, building confidence in operations and market liquidity before taking the next step.
- Under this alternative approach, the Gate Closure point could be progressively rolled back to extend the period for which MPs have primary scheduling and balancing responsibility.
- As the Gate Closure point is rolled back, there would be a shrinking period for which the SO has the directed balancing role, whilst during the earlier period within day (but before Gate Closure) the SO would have a purely residual balancing role monitoring and intervening as required
- Careful consideration would need to be given to any detailed complications arising from a rolling gate approach including potential "boundary issues" between the pre and post gate regimes within the same day. If this proves too problematic, other options are available for moving in stages to the target model.

4. Package 2 – Options

Trading after Gate Closure

- MPs could be allowed to continue to trade through the day on their within day positions. In this case, MP physical nominations would still remain frozen at Gate Closure positions, but the right to trade at the Virtual Trading Point (VTP) would persist[1], offering an alternative means to achieve target positions.
- For example, if within day demand increases after gate closure it is clearly the SO's responsibility under directed balancing to use the flexibility mechanism to redress the situation by purchasing gas. However, an MP who is long against its nominated supply position could also trade within day with another MP who is short, in order to reduce their respective financial exposure to scheduling/imbalance charges.
- Clearly the rationale and encouragement for such MP to MP trade within day will be influenced by the financial disciplines imposed by the SO directed balancing regime.
- With parallel trading, nominations remain frozen throughout the within day period, but trading via trade notifications (i.e. at the VTP) between MPs is now permitted both before and after the gate closes.

This measure could be applied from the start of the interim regime.

Note 1: Trading at the notional (VTP) point.

4. Package 2 – Options

Unmatched positions at gate closure

- MPs might be allowed to plan on a deficit or surplus in advance. For example, a small MP might be allowed to deliberately secure some of its gas via the SO's directed balancing mechanism, rather than trading for all its gas needs in the market.
- Assuming unmatched nominations are allowed, there is then the question of how to price the SO sourced matching. This should presumably not be as sharply priced as the situation where an MP fails to meet its planned positions, but might be priced at the same level (or somewhat more sharply?) than the neutral price applicable to unpredictable within day variation.
- The intention would be to allow (smaller) MPs during an interim period both the ability to trade in advance whilst still having the comfort (for a period) that "fallback" gas can be secured (effectively via the SO imbalance/ scheduling charges) at a reasonable price.
- Of course there is a tension between such transitional relief and the promotion of active trading (for example at a level somewhere between an average "neutral price" and an extreme marginal (SMP) price) which is why the financial discipline applied might be sharpened over time (as an alternative to simply restricting allowed volumes).

4. Package 2 – Options

Matched re-nominations after gate closure

- Assuming unmatched nominations are allowed, there is then the question of whether there should be any restriction on the use of this facility
- For example, the facility might be limited to only requests to source extra gas, rather than to dispose of a surplus (which could be made available via traded market or as a source of RBA flexibility to the SO
- Furthermore, it might be reasonable after a while to revisit the role of the SO in responding to all increases in within day demand after gate closure – for example, it could be considered that MPs should assume responsibility for deviation in larger controllable offtakes
- This could be achieved by allowing MPs to match a “matched re-nomination” of entry flows in response to a within day change in offtake flows at controllable offtakes
- This option could be accompanied (or followed later) by a price incentive on any MP who does not use the facility to take direct responsibility but instead relies on the SO to manage such deviations
- In this way, MPs can be gradually allowed (and/or encouraged) to take on more of the balancing responsibility that is a feature of the ultimate target balancing model (whatever its precise design)

4. Package 2 – SO balancing after Gate Closure

The process of transition under this package

	Regime	Transition measures	Objective outcomes from transition phase
Phase 1 – Go-live	• Continuous voluntary trading up to Gate Closure point. Interim balancing regime / process to fulfil flexibility needs within day.	• The transition measure at the go-live point is the interim process / regime for balancing before the target balancing model is implemented.	• **Establish confidence in the new traded market design:** use the interim SO scheduling process to tackle within day flexibility needs and system balancing.
Phase 2 – Transition	• As per Go-Live Phase. Depending on the policy for gate closure (see left) a within day continuous balancing regime may partly apply.	• **Roll-back from directed SO balancing:** either by strengthening disciplines on MPs heading into gate closure[1] or by rolling back the timing of gate closure.	• **Get flex provision working:** offering network users certainty after the Gate Closure point that they don't need to reserve flexibility for their own portfolios.
Phase 3 – Cut-over	• Cut over to continuous traded market and balancing regime. • Traded reference price(s) and MP balancing discipline.	• Complete roll-back from SO directed balancing role to residual balancing role. MP responsibility for balancing under target continuous regime.	• **Evaluate progress after short trials:** When evidence of active trading between MPs (before & within day), cut-over to final target model.

Increased cost targeting / reduced socialisation over time

Note 1: Either by the cash-out pricing applied to unmatched positions after gate-closure or by eventually removing the option of unmatched positions.

4. Package 2 – Summary

This package would enable an immediate move towards forward trading to replace the DWGM…

- In the interim period there would also be a process to tackle within day flexibility needs in order to address potential concerns about initial market liquidity and limited competitive access to flexibility.
- Liquidity concerns in the balancing timeframe would be addressed and the within day platform ensures the SO has access to gas for balancing purposes.
- The package as a whole might be best considered a market design approach rather than a financial relief or targeted liquidity promotion transitional measure (although it contains elements of both)

…and flexibility of how transition to the target model is managed.

- For example if rolling gate closures or some of the other identified options were adopted, MPs and the SO could be allowed time to learn the working of the new market, in bite-sized steps, before being fully exposed to it.

Are there any questions?

A

PACKAGE 2 ILLUSTRATIVE WORKED EXAMPLES

A. Package 2 – Gate closure (matched nominations)

OPTION PACKAGE 2 - GATE CLOSURE - ILLUSTRATIVE EXAMPLE 1

"Matched" nominations, deviation in uncontrolled demand equals 10%

MP opening positions

	MP 1	MP 2	MP 3	MP 4	TOTAL
Nominated total entry @ gate	215	170	10	5	400
Nominated total offtake @ gate	190	150	40	20	400
(inc. uncontrollable offtake noms)	110	50	30	10	200
Net trade positions at gate (-ve = sale)	-25	-20	30	15	0
"Unmatched" nomination	0	0	0	0	0

Residual Balancing Actions - assume physical response

	Qty.	MP 1	MP 2	MP 3	MP 4	TOTAL
Purchase by SO of input increase	15	$5.80	$6.20			30
Purchase by SO via offtake reduction	2	$6.50			$8.00	4
Sale by SO via input reduction	1		$6.00	$5.00		2
Sale by SO via offtake increase	4	$5.00				4
						40

Weighted system average price **SAP**	$6.00
System marginal buy price **SMP(buy)**	$8.00
System marginal sell price **SMP(sell)**	$5.00

Within day demand increases for weather sensitive load, eventually averaging 10% on day.
The SO responds by making a 15 unit purchase from MP1 initially.
SO then purchases 15 units from MP2 due to other demand increases.
And then purchases 2 units offtake turndown from MP1 and MP4, setting SMP (buy) at $8
Later in the day, the SO sells via small input reductions to choke off some oversupply.
And takes a modest offtake increase from MP1 at the SMP (sell) of $5 to hit linepack target.

Input and offtake outcomes after Balancing Actions

		MP 1	MP 2	MP 3	MP 4	TOTAL
Actual entry		233	188	10	4	435
Revised entry target after flex		230	184	9	5	428
Scheduled entry imbalance (surplus)		3	4	1	-1	7
Linepack inventory change	0					
Uncontrollable offtake "actual"		121	55	33	11	220
Controllable offtake actual		90	107	12	6	215
Actual offtake		211	162	45	17	435
Revised offtake target after flex		192	150	40	18	400
Deviation uncontrollable offtake (increase)		11	5	3	1	20
Within day title trading		0	0	0	0	0
Residual offtake imbalance (increase)		8	7	2	-2	15

Cost targetting - two scheduled cash-outs @SMP, other cash-outs @ SAP - no tolerances

	MP 1	MP 2	MP 3	MP 4	TOTAL
Flexibility payments to MPs	$80	$87	-$5	$16	$178
Costs of purchase charged to MPs:					
Entry cash out @ SMP	-$15	-$20	-$5	$8	-$32
Uncontrollable deviation @ SAP	$66	$30	$18	$6	$120
Unmatched nomination @ SAP	$0	$0	$0	$0	$0
Residual offtake cash out @ SMP	$64	$56	$16	-$10	$126
Contribution to socialised/smeared cost	-$35	$21	-$34	$12	-$36

A. Package 2 – Gate closure (unmatched nominations)

OPTION PACKAGE 2 - GATE CLOSURE - ILLUSTRATIVE EXAMPLE 2

"Unmatched" nominations, deviation in uncontrolled demand equals 10%

MP opening positions

	MP 1	MP 2	MP 3	MP 4	TOTAL
Nominated total entry @ gate	200	160	10	5	375
Nominated total offtake @ gate	190	150	40	20	400
(inc. uncontrollable offtake noms)	110	50	30	10	200
Net trade positions at gate (-ve = sale)	-10	-10	10	10	0
"Unmatched" nomination	0	0	20	5	25

Residual Balancing Actions - assume physical response

	Qty.	MP 1	MP 2	MP 3	MP 4	TOTAL
Purchase by SO of input increase	25	$5.80	$6.20			50
Purchase by SO via offtake reduction	2	$6.50			$8.00	4
Sale by SO via input reduction	1		$6.00	$5.00		2
Sale by SO via offtake increase	4	$5.00				4
Weighted system average price **SAP**	$6.00					60
System marginal buy price **SMP(buy)**	$8.00					
System marginal sell price **SMP(sell)**	$5.00					

Less before day trade than Example 1 result in unmatched nominations for MP3 and MP4.
Consequently, MP1 and MP2 reduce initial input nominations compared with Example 1.
Within day demand increases for weather sensitive load by 10%, as in Example 1.
SO purchases 20 extra units compared with Example 1, not the full 25 unmatched "need".
All other balancing actions the same as for Example 1.
MP1 and MP2 supply extra flexibility gas, whilst MP3 and MP4 buy unmatched needs at SAP.

Input and offtake outcomes after Balancing Actions

		MP 1	MP 2	MP 3	MP 4	TOTAL
Actual entry		230	191	10	4	435
Revised entry target after flex		225	184	9	5	423
Scheduled entry imbalance (surplus)		5	7	1	-1	12
Linepack inventory change	0					
Uncontrollable offtake "actual"		121	55	33	11	220
Controllable offtake actual		92	108	9	6	215
Actual offtake		213	163	42	17	435
Revised offtake target after flex		192	150	40	18	400
Deviation uncontrollable offtake (increase)		11	5	3	1	20
Within day title trading		0	0	0	0	0
Residual offtake imbalance (increase)		10	8	-1	-2	15

Cost targetting - two scheduled cash-outs @SMP, other cash-outs @ SAP - no tolerances

	MP 1	MP 2	MP 3	MP 4	TOTAL
Flexibility payments to MPs	$138	$149	-$5	$16	$298
Costs of purchase charged to MPs:					
Entry cash out @ SMP	-$25	-$35	-$5	$8	-$57
Uncontrollable deviation @ SAP	$66	$30	$18	$6	$120
Unmatched nomination @ SAP	$0	$0	$120	$30	$150
Residual offtake cash out @ SMP	$80	$64	-$5	-$10	$129
Contribution to socialised/smeared cost	$17	$90	-$133	-$18	-$44

A. Package 2 – Gate closure (within day trading)

OPTION PACKAGE 2 - GATE CLOSURE - ILLUSTRATIVE EXAMPLE 3

"Matched" nominations, deviation in uncontrolled demand equals	10%

Within day trading between MPs now enabled

MP opening positions

	MP 1	MP 2	MP 3	MP 4	TOTAL
Nominated total entry @ gate	200	160	10	5	375
Nominated total offtake @ gate	190	150	40	20	400
(inc. uncontrollable offtake noms)	110	50	30	10	200
Net trade positions at gate (-ve = sale)	-10	-10	10	10	0
"Unmatched" nomination	0	0	20	5	25

Residual Balancing Actions - assume physical response

	Qty.	MP 1	MP 2	MP 3	MP 4	TOTAL
Purchase by SO of input increase	25	$5.80	$6.20			50
Purchase by SO via offtake reduction	2	$6.50			$8.00	4
Sale by SO via input reduction	1		$6.00	$5.00		2
Sale by SO via offtake increase	4	$5.00				4
Weighted system average price **SAP**	$6.00					60
System marginal buy price **SMP(buy)**	$8.00					
System marginal sell price **SMP(sell)**	$5.00					

Same scenario as example 2
But now within day trading is exploited by all MPs
MP3 and MP4 trade surplus gas to avoid being cashed out for only $5.
MP1 and MP2 are exposed to buying offtake imbalances at $8.
Hence they all trade at mutual advantage, and the smeared cost figure falls slightly too.
(MP4 surplus caused by an over-response to flexibility offtake turn down)

Input and offtake outcomes after Balancing Actions

		MP 1	MP 2	MP 3	MP 4	TOTAL
Actual entry		230	191	10	4	435
Revised entry target after flex		225	184	9	5	423
Scheduled entry imbalance (surplus)		5	7	1	-1	12
Linepack inventory change	0					
Uncontrollable offtake "actual"		121	55	33	11	220
Controllable offtake actual		92	108	9	6	215
Actual offtake		213	163	42	17	435
Revised offtake target after flex		192	150	40	18	400
Deviation uncontrollable offtake (increase)		11	5	3	1	20
Within day title trading		-2	-1	1	2	0
Residual offtake imbalance (increase)		8	7	0	0	15

Cost targetting - two scheduled cash-outs @SMP, other cash-outs @ SAP - no tolerances

	MP 1	MP 2	MP 3	MP 4	TOTAL
Flexibility payments to MPs	$138	$149	-$5	$16	$298
Costs of purchase charged to MPs:					
Entry cash out @ SMP	-$25	-$35	-$5	$8	-$57
Uncontrollable deviation @ SAP	$66	$30	$18	$6	$120
Unmatched nomination @ SAP	$0	$0	$120	$30	$150
Residual offtake cash out @ SMP	$64	$56	$0	$0	$120
Contribution to socialised/smeared cost	$33	$98	-$138	-$28	-$35

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