DWGM SIMPLER WHOLESALE PRICE

STAKEHOLDER WORKSHOP

MELBOURNE
16 MAY 2019

AEMC

Agenda

1.	Background
2.	AEMO (EA) rule change - Application of constraints in the DTS
3.	Victorian Government rule change – Congestion uplift methodology

APPLICATION OF CONSTRAINTS IN THE DTS

The EA rule change request

- On 24 November 2016 the AEMC received a rule change request from AEMO (on behalf of EnergyAustralia) to amend the National Gas Rules by including physical constraints on scheduled withdrawals in the pricing schedule of the DWGM.
- The change would effectively be a return to the way that AEMO operated the market prior to 2015.
- The rule change request was consolidated with the Simpler wholesale price rule change request.

Background

- There are important differences between the pricing and operating schedules in the DWGM:

Pricing schedule	Operating schedule
Ignores transmission constraints	Includes transmission constraints
Determines balance of day price	Hourly shadow price to determine efficient dispatch
Determines DTS-wide price	Location specific shadow price to determine efficient dispatch
Determines daily market prices and any updates to price during gas day	**Determines gas quantity**

- This rule change proposes to (partially) better align the operating and pricing schedules, by including constraints on scheduled withdrawals in the pricing schedule.

The issue in the AEMO (EA) rule change request

- The pricing schedule is an output of a market clearing engine assuming no physical constraints *within* the DTS (the 'infinite pool') and determines the market price for the gas day and any updates to the market price during the gas day. The quantity of gas is determined in the operating schedule.
- Where **injections** are constrained off due to physical constraints, other injections will be constrained on with compensating payments paid for these injections (ancillary payments) so that the equilibrium quantity (and price) is unchanged
- However where **withdrawals** are constrained off there is no mechanism for compensating withdrawal bids below the market price so injections equal to the amount of constrained off withdrawals are necessarily constrained off – the scheduled quantity is less than the equilibrium quantity from the pricing schedule
- In this situation there are injection bids below the market price that are not scheduled even though there are no physical injection constraints at that location
- This creates a deadweight loss (see upcoming diagram) – borne by both injectors and withdrawers, i.e. relative to the constrained price:
    - Withdrawers are willing to buy gas but cannot
    - Injectors are willing to supply gas but cannot
- Currently this may result in higher prices and lower quantities of gas traded, compared to the rule change proposal.

The proposed solution in the AEMO (EA) rule change request

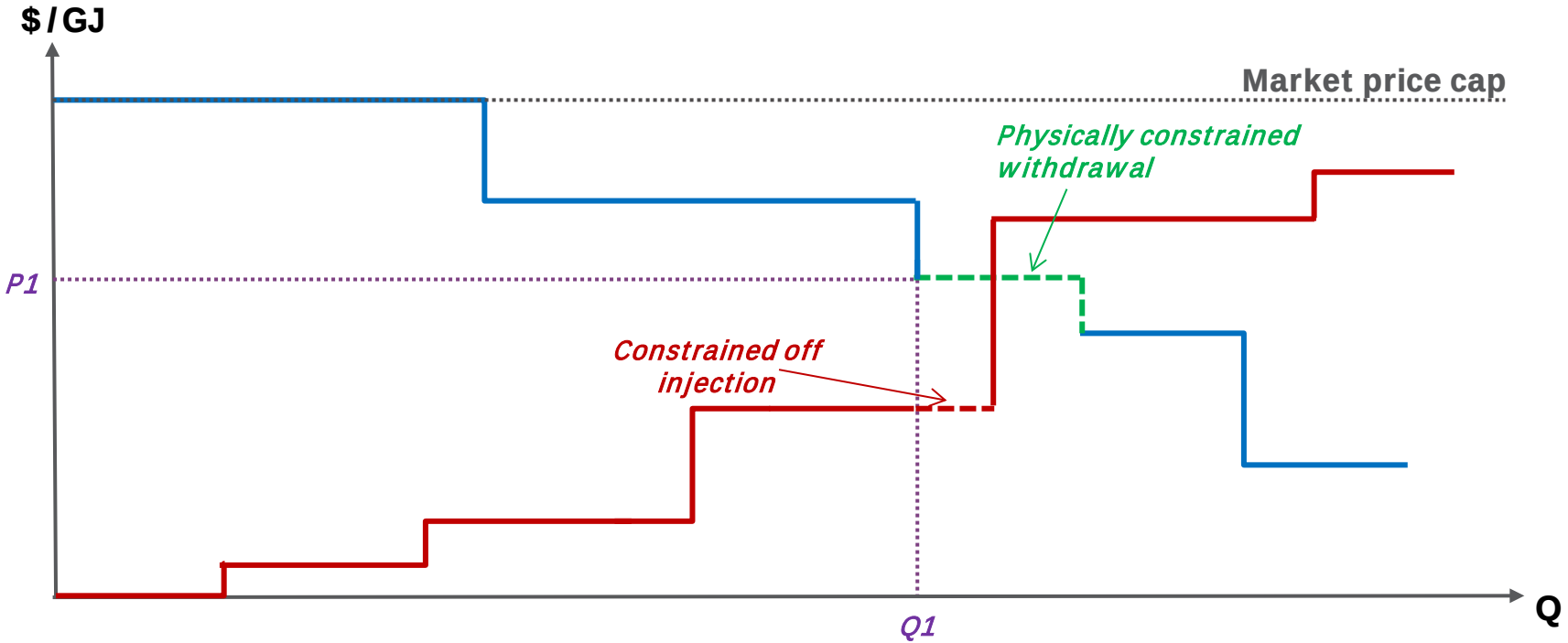
Why can't we have ancillary payments for withdrawals?

- Complexity of cost recovery – constrained off withdrawals are typically associated with things like compressor maintenance so it is difficult to recover the payments from a 'causer'. Not reasonable to require the DTS SP (APA) to pay for it.
- Constrained off withdrawals are more susceptible to gaming – MPs can put in low-ball offers and potentially get very cheap gas for no risk. This is different from the case of gaming on constrained off injections for two reasons:
    1. Occasions where constrained off withdrawals are likely to occur may be better known in advance (and are also more common)
    2. In the case of constrained off injections, if you make a high injection offer and are scheduled, you need to actually inject the gas.

Proposed solution

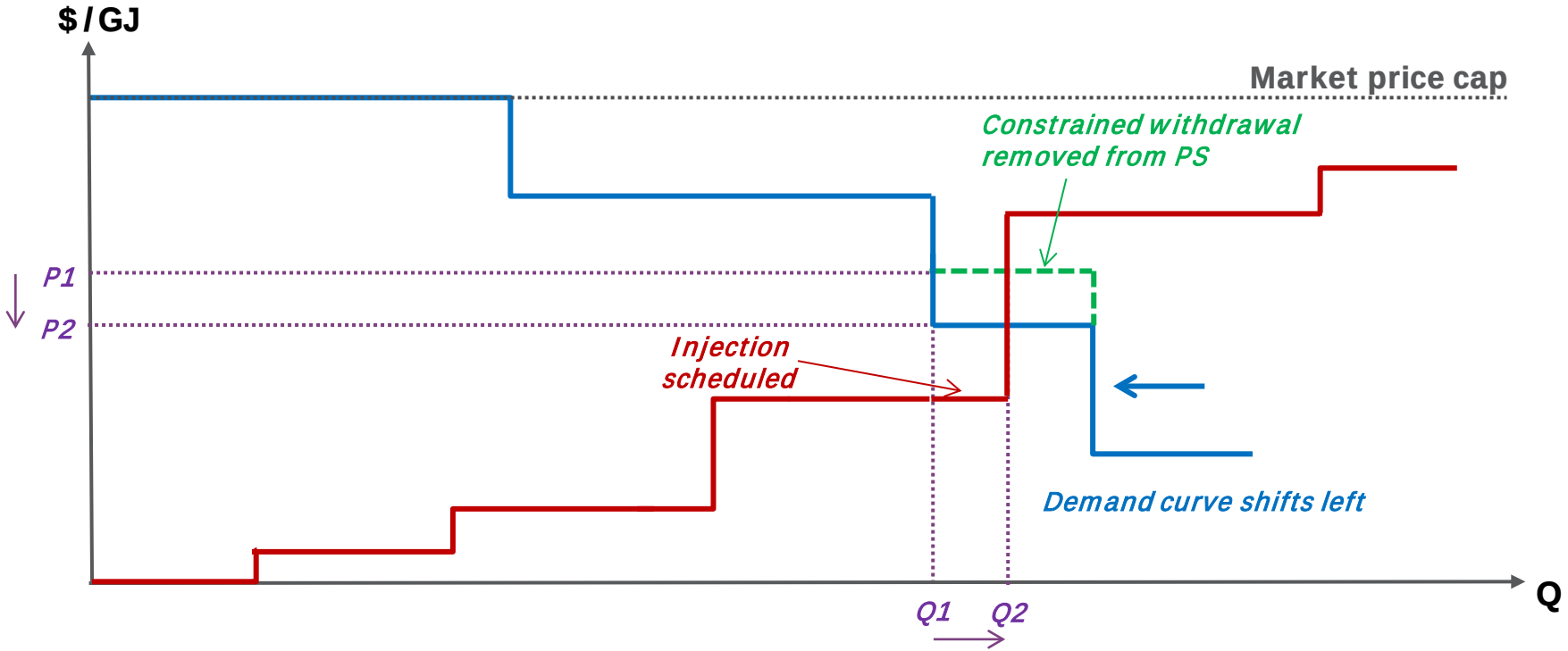
- The EA rule change seeks to solve this problem by including withdrawal constraints in the pricing schedule, so that there is greater alignment between the pricing and operating schedules under certain circumstances.
- This would effectively remove constrained withdrawal bids from the demand curve (shifting segments to the left)
- An increase in quantity traded and (potentially) a lower market price, eliminating the deadweight loss

Constrained withdrawals – Pricing schedule under status quo (Q1, P1)



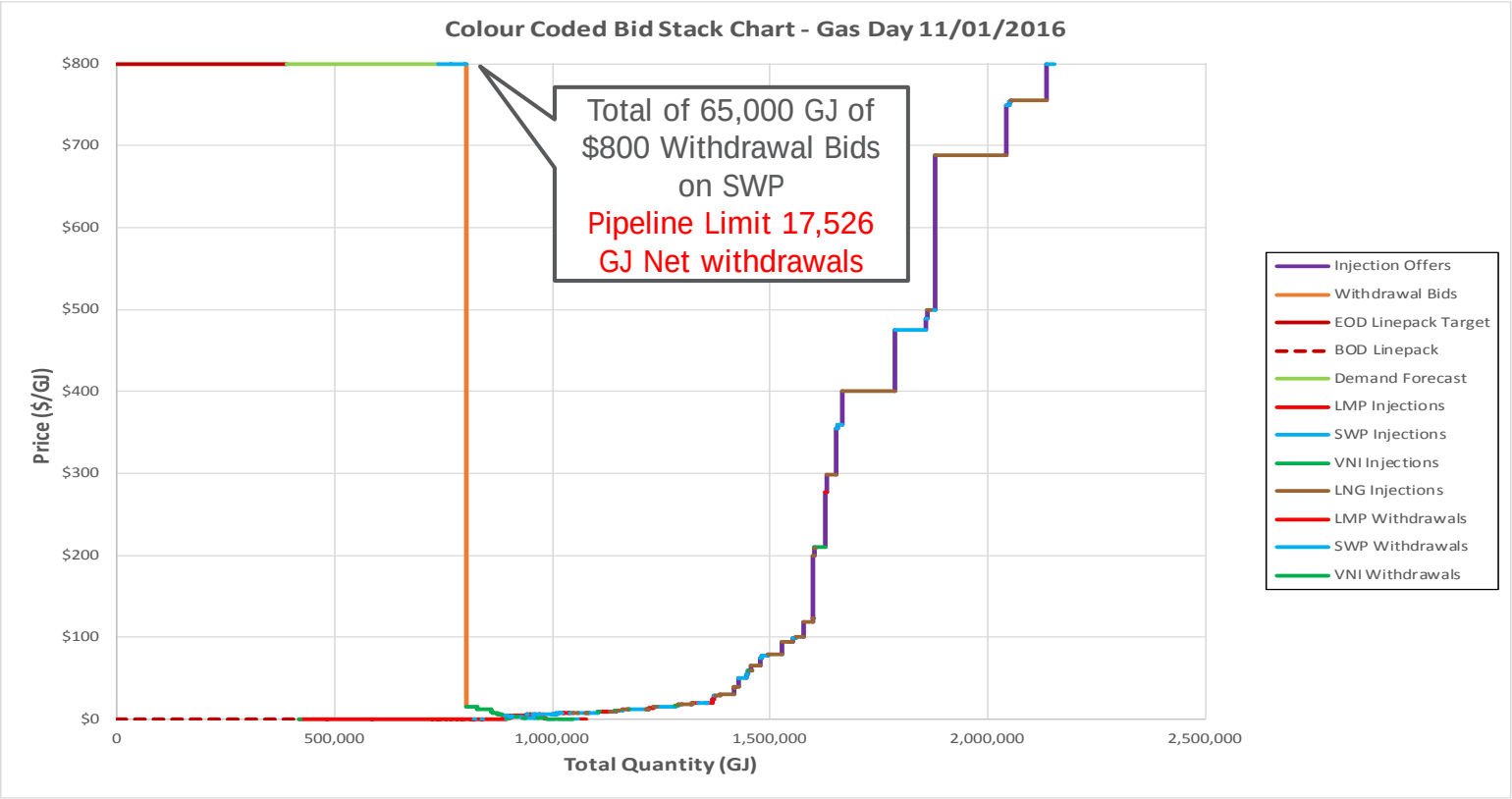
- Currently, the pricing schedule sets the market price (P1) without taking into account physical constraints in the DTS.
- As there is no mechanism for 'constraining on' lower priced withdrawal bids, an equivalent amount of injections are constrained off **even though there are no physical constraints on injections.** The quantity set in the operating schedule falls to Q1, creating a deadweight loss.

Constrained withdrawals – Pricing schedule under EA rule change (Q2, P2)



- The EA proposal incorporates physical withdrawal constraints in the pricing schedule.
- Demand curve shifts left resulting in a lower price (P2) and can increase the quantity of gas traded (Q2)

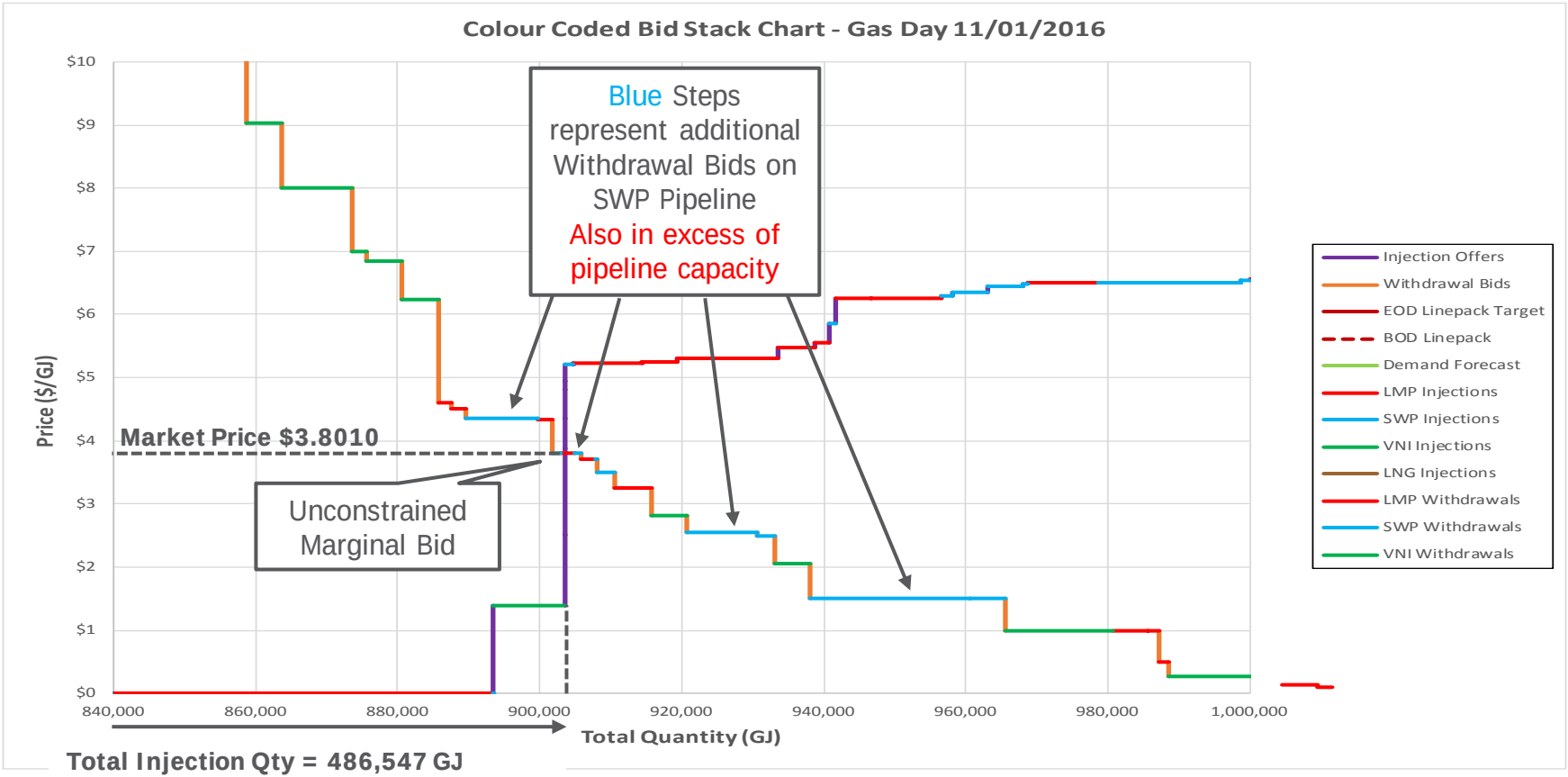
Example of pricing schedule under current arrangements:
Gas Day 11/01/2016 – Pipeline injection & withdrawal matching colours



Legend
EOD = End of day
BOD = Balance of day
LMP = Longford Melbourne pipeline
SWP = South west pipeline
VNI = Victorian northern interconnect pipeline
LNG = Dandenong LNG

Source: AEMO

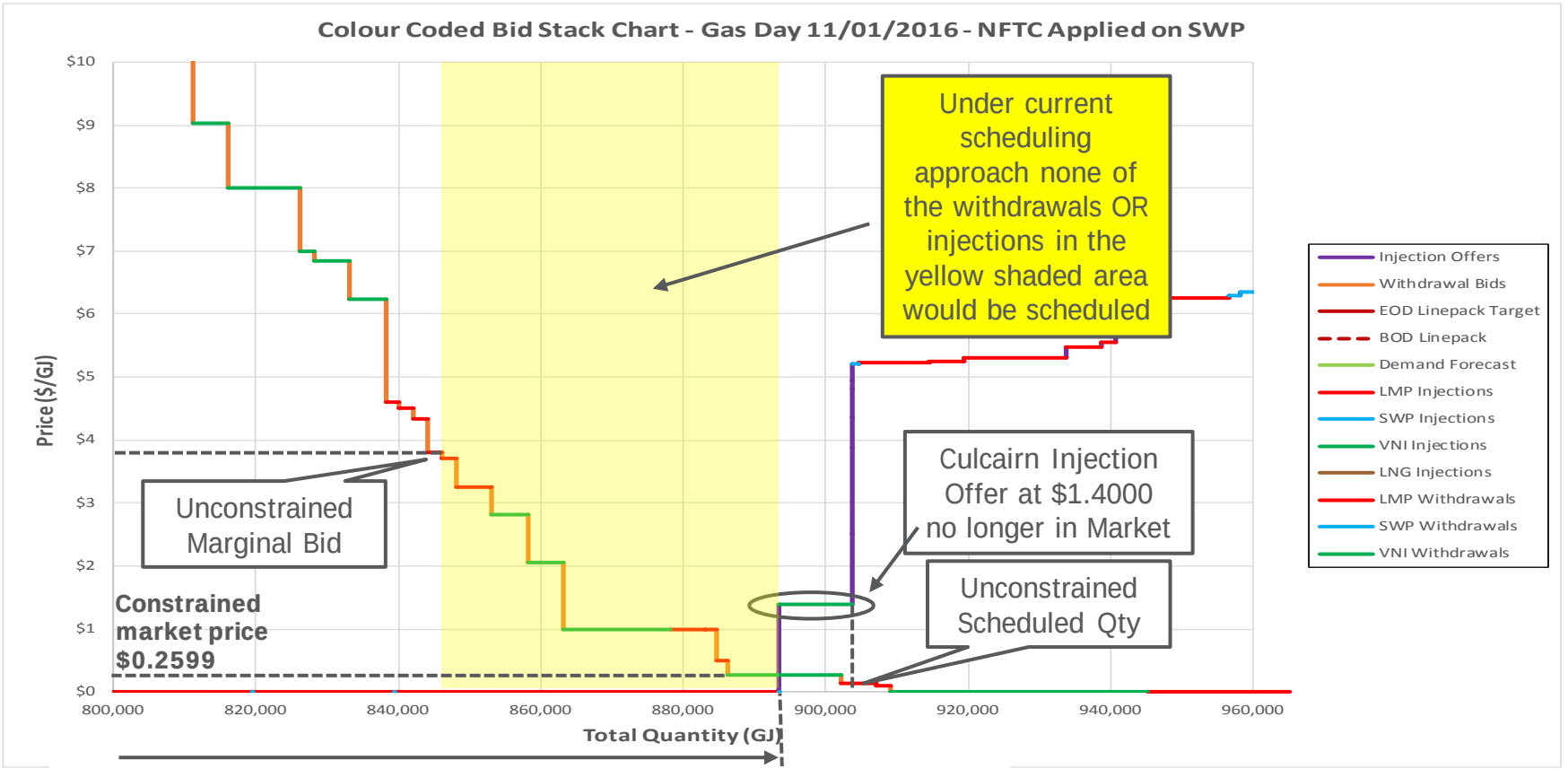
A closer look



Total Injection Qty = 486,547 GJ
(903,673 GJ minus
Balance of day Linepack of 417,126 GJ)

Source: AEMO

Example of pricing schedule under EA rule change proposal:
Gas Day 11/01/2016 – Removing constrained withdrawal bids lowers market price



'Constrained' Total Injection Qty = 476,368 GJ
(As per previous slide minus 10,179 GJ Culcairn Injection Offer)

Source: AEMO

AEMC staff preliminary position on the EA rule change request

- The change is welfare enhancing and is in the long-term interest of consumers
- Stakeholder responses were supportive
- Costs of implementation are expected to be small

SIMPLER WHOLESALE PRICE - CONGESTION UPLIFT METHODOLOGY

Victorian Government's rule change request – Simpler wholesale price

Issue

- **congestion uplift methodology is highly complex** for market participants to predict and understand
- **current cost-to-cause method** of assigning uplift payments is inaccurate & might not be sending appropriate price signals
- **requirement for participants to physically inject** in order to activate their congestion uplift hedge protection may deter financial risk management and trade
- **evolution of the market** may result in more frequent or more material uplift charges being levied.

The congestion uplift framework was designed to address constraints related to high levels of demand that would not be able to be met due to capacity constraints in the DTS:

- this type of congestion is currently less likely to occur due to physical and commercial changes in the market
- congestion now more likely due to maintenance or outage. In these circumstances congestion uplift is unlikely to allocate cost to cause.

Victorian Government's rule change request – Simpler wholesale price

Proposed solution

- 'Socialise' or 'spread' congestion uplift payments across MPs, possibly using a pro rata measure.
- MP's would continue to receive ancillary payments if constrained on.
- No change to surprise uplift - necessary to retain incentive for MP's to accurately and efficient forecast and adjust their gas requirements.
- No change to congestion DTS SP.

Other considerations

- More cost reflective congestion uplift
- Directional flow point constraint (DFPC) pricing

Background
Gas scheduling process

- AEMO schedules the gas market so that supply meets demand, at a minimum cost, while keeping the DTS secure.
- Market participants bids and rebids are for the 24 hour gas day.
- AEMO determines the market price, scheduled quantity and issues operating instructions through the PS and OS.

Pricing schedule

- **Determines the market price**
- Includes:
  - Daily demand forecasts
  - Current bids (or rebids)
  - Facility constraints
- Determines lowest priced gas, without taking into account transmission system constraints.

Operating schedule

- **Determines schedule quantity**
- Includes:
  - Hourly demand forecasts
  - Current bids (or rebids)
  - Facility constraints
  - *Transmission constraints*
- Determines lowest price gas that is operational feasible.

Background
Ancillary payments

- AP's arise due to differences between the PS and OS.

- AP's are compensation to MPs who are constrained on (usually injections scheduled to inject gas at a higher bid price than the market clearing price).

- AP's funded through uplift payments from MPs who cause the constraint.

Background
Uplift payments

Ancillary payments

Surprise uplift (temporal constraints)
Paid by MPs who cause temporal constraints that 'surprise' the system.

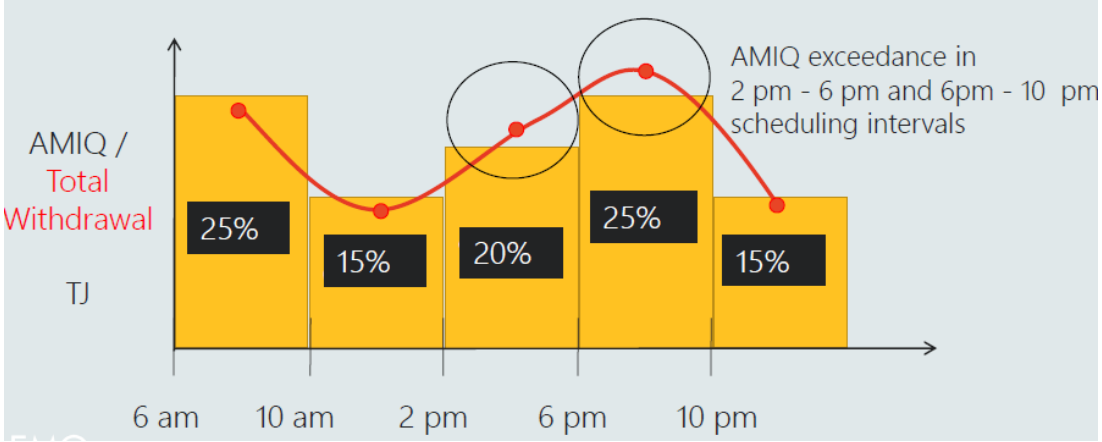
DTSSP congestion uplift
Charged to DTS SP if it fails to meet its service envelope capacity (i.e. doesn't provide agreed transmission capacity).

Congestion uplift (locational constraints)
Paid by MPs who cause a locational constraint, i.e. they are scheduled to withdraw in excess of their AMIQ.

Common uplift
Other uplift that is generated in the market that can't otherwise be allocated (eg. AEMO residual forecast demand overrides).

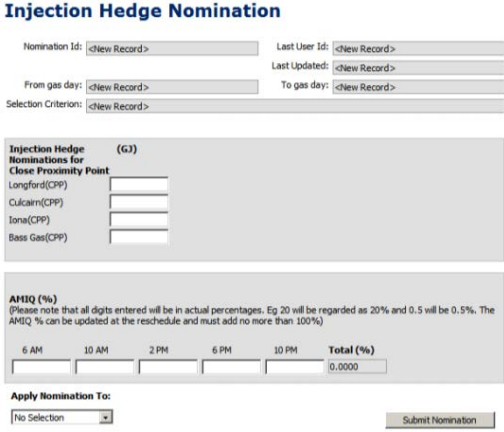
Background
Congestion uplift

- Congestion uplift is paid by MP's who "cause" AP's.
- MP's are exposed to congestion uplift if their withdrawals exceed their Authorised Maximum Internal Quantity (AMIQ) in any interval.
- An MP's exposure to congestion uplift is set by their exceedance for the 6am schedule, and then changes in exceedance at reschedules (if they occur).



Source: AEMO, DWGM Settlements, Module 4.

Background
Congestion uplift hedge



- **MP's can hedge their exposure to congestion uplift by:**
  - **Holding sufficient AMDQ** associated with each close proximity point (CPP)
  - **Submitting injection hedge nomination (IHN) quantities** at each CPP and **nominating a % profile** for AMIQ, and
  - **Injecting** – have enough gas supply from the relevant injection point(s), matched to location of AMDQ.
- Alternatively use an Agency Injection Hedge Nomination (AIHN).
- If an MP's has congestion uplift hedge it will:
  - not receive AP's if constrained on to inject gas up to their AMDQ
  - not be required to pay congestion uplift if withdraw quantity of gas equal or less than nominated.

AEMC preliminary staff views

Is there a problem with the current congestion uplift methodology?

- **There are problems with the current congestion uplift methodology**, including that:
  - it is complex and unpredictable
  - it does not effectively allocate cost to causers
  - congestion uplift does not provide a signal for long-term investment in DTS pipeline capacity (but neither would spreading congestion uplift).

- **While we have established there are problems, the AEMC needs to further consider:**
  - trade-offs between the current cost to cause methodology and proposal to spread congestion uplift, and
  - materiality.

AEMC preliminary staff view

Trade-off between policy options – Current cost to cause vs spreading congestion uplift

Area	Current cost to cause (no change)	Spreading congestion uplift (proposal)
Cost reflectivity		
Complexity and predictability		
Risk management		
Short-term signals and incentives		
Retail competition		
Inter-regional trade of gas		
Long-term investment signal		
Implementation		

Stakeholder submissions on other considerations raised by Victorian Government

- **More cost reflective congestion uplift (stakeholders not supportive)**
  - ERM suggest it would be very difficult to determine a methodology (that goes further than surprise uplift) that would effective allocate costs to their specific cause in every possible scenario.
  - AEMO is not convinced that a tweak to the uplift regime is the best way to address future congestion. It would require a complex set of scenarios to be developed and translated in settlement equations and hedge mechanisms.

- **Directional flow point constraint (DFPC) pricing (stakeholders not supportive)**
  - AEMO noted that DFPC was discussed with the Gas Wholesale Consultative Forum (GWCF) in 2014 and 2015, following which the GWCF elected not to pursue the concept.
  - AEMO note that DFPC would:
    - increase complexity
    - likely involve significant implementation time and cost.
  - EA - appreciates the economic rationale for DFPC, however is concerned that utilising it in the DWGM may result in significant unintended outcomes. DFPC applies in STTM, but it is significantly different from the DWGM.

Stakeholder submissions – if congestion uplift is spread across participants, would it cause any issues with other DWGM rule changes?

Interactions	Stakeholder views
Application of constraints in PS	EA considers that better aligning the PS and OS would not result in any loss of congestion signals.
AMDQ regime	AEMO suggest unlikely to be material impact on AMDQ regime - depends on the extent to which congestion uplift hedge is valued by MPs.
FTM	AEMO suggest that spreading congestion uplift is complementary with the FTM. Under the current arrangements' participants may be disincentivised from trading due to challenges associated with hedging exposure to congestion uplift (i.e. if only want to buy and not inject).

Uplift methodology
Cost reflectivity

	Current cost to cause (no change)	Spreading congestion uplift (proposal)
Arguments for	Need to retain causer pays principle to encourage MPs to consider how they manage their diversity of supply. Congestion costs often arise from 'out of merit order' gas required from another 'uncongested' source. Imperfect cost to cause and investment signal related to trade-off associated with gross pool, open access framework (absence of locational price signals).	"Fairer" way to allocate (not allocating costs only to those without AMDQ). Support spreading congestion if establish that ability to allocate costs of congestion to actual causers is sufficiently difficult that misallocation is likely.
Arguments against	The congestion scenario that the uplift framework was designed for is no longer the only relevant scenario. Can result in uplift costs being allocated to congestion even when no congestion has occurred Does not effectively allocate costs to their cause (i.e. 1 Oct 2016). The large costs allocated as congestion uplift on 1 October appear to be more reflective of surprise uplift.	A risk that the removal of the current causer pay's approach could result in higher levels of congestion if MPs are not exposed to an appropriate share of the costs (i.e. GPG).

Uplift methodology
Risk management and retail competition

	Current cost to cause (no change)	Spreading congestion uplift (proposal)
Arguments for	• Participants are currently able to hedge congestion uplift if they hold sufficient AMDQ and inject.	• Removes complexity associated with congestion uplift hedge. • Reduces potential exposure to large (but typically rare) congestion uplift payments, particularly for non-AMDQ holders.
Arguments against	• Complexity of hedging congestion uplift: 1. May be difficult to acquire AMDQ, and 2. Injection hedge nomination process is complex. • Complexity hedging congestion uplift may be a barrier to entry or difficult for smaller players (that want to be net buyers for small quantities). • If a participant does not hedge congestion uplift, it faces the risk of large (but rare) congestion uplift payments. • By imposing risks on participants who are not physically injecting, the uplift arrangements hinder the development of financial instruments and new ways of trading.	• Removes one of the benefits of AMDQ (congestion uplift hedge). • Participants that currently hedge congestion uplift are worse off.

Uplift methodology
Short-term signals and incentives, market efficiency and system security

	Current cost to cause (no change)	Spreading congestion uplift (proposal)
Arguments for	Current 'cost-to-cause' basis supports effective procurement from reliable sources and acts to increase system security. The key factors driving the efficiency of the market are ability to contract competitively priced gas supply and AMDQ.	Incentives for shippers to adhere to their operating schedules and forecast withdrawals, as accurately as possible, is largely achieved through surprise uplift and deviation pricing.
Arguments against	Does not appear to provide a strong short-term signal for congestion (i.e. 1 October 2016).	While demand driven congestion in the DTS has been rare in recent times, it is possible this dynamic could change if MPs do not face an appropriate share of the costs. Concerned that abandoning cost-to-cause could: • encourage consequence-free risky or inappropriate bidding behaviour • reduce incentive to minimise congestion (i.e. GPG need to continue to face incentives to minimise congestion) • diminish system integrity.