Participating in balancing

MDIWG – 7 September 2010

Context

Balancing requirement:

- Energy mismatch in a trading period – difference between participants' net contract positions and actual energy supply and demand
  - Variations due to demand, wind, deviations from resource plan etc

Balancing service:

- Ability and opportunity to increase or decrease energy production to contribute to balancing requirement
- Subject to SM instruction/ approval
- For one or more 30 minute trading intervals
  - Intra trading period requirements are managed through ancillary services/load following

Context *(cont'd)*

Need for change:

- Verve is obligated to provide the balancing service
  - Verve submits portfolio-wide pricing curve for each trading interval approximately 1 – 2 days beforehand
  - SM schedules/ commits and dispatches Verve facilities (using dispatch guidelines supplied by Verve)
- IPP balancing opportunities are limited
  - Alternatives to liquid fuelled Verve plant or for system security purposes
- Balancing is less efficient than it could be

Objective:

- To provide economic opportunities to participate in balancing

Related/linked issues/changes:

- Ensure pricing and cost allocations create efficient incentives for provision of balancing
- Options/ arrangements that may reduce the volume of balancing required
  - E.g. changes to STEM operation, timing

Range of options explored by MRDT
(under current market design)

	Dispatch based	Contract (pre-dispatch) based
More targeted	1. Existing BSC provisions 2. Market facilitated BSCs	
More generic	3. Relax dispatch tolerances 4. Seek authorised deviations 5. Submit increase/ decrease prices relative to MCAP	6. Multiple STEM runs 7. Incremental BS auctions or swaps

1) Existing BSC provisions

Rules currently provide for Verve or SM to enter BSCs with participants

- Verve could insert a BSC within the guidelines it provides SM for dispatching its facilities
- SM would need to agree with Verve how and when to dispatch a BSC, and how to recover costs

Verve should be incentivised to enter a BSC to avoid the dispatch of higher cost balancing resources
(e.g. overnight unit de-commitment/ cycling)

- Presumes counterparty would also see commercial benefits

BSCs have not been deployed to date

- Suggests one or other party perceives unacceptable risks or contractual barriers in trying to negotiate and/ or execute a BSC
- Is it possible to improve incentives to negotiate BSCs? e.g.
  - Increase transparency around dispatch and balancing costs
  - Place good faith obligation on Verve (and others?) to negotiate if approached

2) Basic market facilitated BSCs

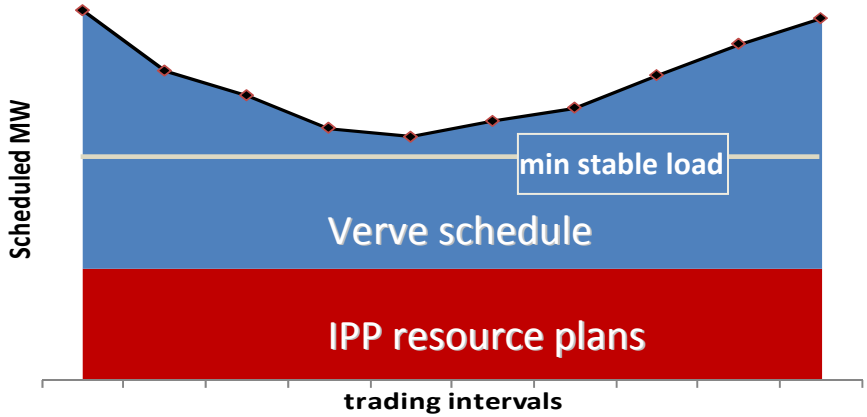
Alternatively, the market could proactively seek to facilitate BSCs at times of high value

- Indicated by very low balancing price (overnight low demand)
  - i.e. Procuring IPP alternatives to de-commitment of Verve units
- Or very high balancing price (low reserve)
  - i.e. Procuring alternatives (IPP or demand side) to Verve gas turbines
    - IPP non liquid fuelled facilities must be dispatched now on pay as bid basis ahead of Verve distillate
- Would be relatively straightforward to implement basic BSCs:
  - Leverage off existing BSC provisions in the rules where practical
  - Would ideally publish balancing price forecasts as a matter of course

2) Basic market facilitated BSCs *(cont'd)*

Could work as follows for overnight/ low price situations:

- SM forecasts (some hours ahead of time) that a Verve unit may need to be de-committed



- SM would announce this to the market along with the relevant trading periods and expected balancing price should de-commitment be required
  - e.g. –ve $20/MWh
- IPPs would be invited to submit BSC offers - prices above the expected balancing price indicating their preparedness to reduce output below their resource plan levels and the maximum amount
  - e.g. a reduction of up to 80 MWh at –ve $15/MWh
- SM would rank by price and place on call the IPP(s) with the best price(s) to reduce output if required
- The accepted IPP(s) would then be available to SM to dispatch downwards if necessary to avoid de-committing the Verve unit

2) Basic market facilitated BSCs *(cont'd)*

- MCAP would be set at the lesser of MCAP as normally calculated or the lowest priced IPP offer that was dispatched. e.g.
  - Suppose the lowest priced IPP dispatched down by SM had submitted a price of –ve $15/MWh
  - But MCAP as calculated normally would have been –ve $5/MWh
  - Then MCAP would be adjusted to –ve $15/MWh (protecting the IPP from uncertainty about *out turn* MCAP to ensure willingness to submit options to SM)
  - IPPs dispatched down would pay the *out turn* MCAP for 'authorised' deviations below resource plan levels
    - e.g. An IPP dispatched below its resource plan would pay -ve $15/MWh
    - i.e. In effect, it would receive $15/MWh for the MWh dispatched below resource plan

Similar mechanisms could apply in high price periods to seek BSC alternatives to Verve GTs

- Especially when liquid fuels likely to be used

Pre-requisites:

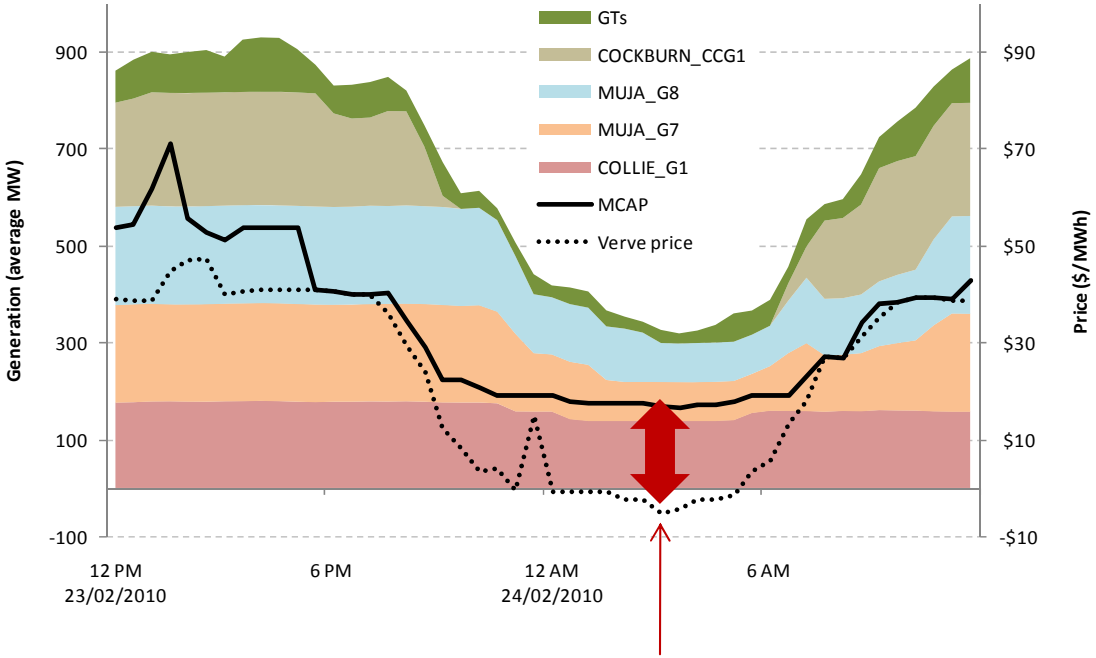
- Cost reflective balancing price to ensure participating generators receive appropriate payment
- Forecast of prices

2) Basic market facilitated BSCs *(cont'd)*

Issues:

Current MCAP impediment

- Consider example of 24 Feb 2010
- Verve facilities were dispatched down overnight to minimum, or shut down, and some GT capacity in service



- MCAP was around $20 per MWh higher than indicated by Verve's price curve
- Undervaluing opportunities for IPPs to have been dispatched downward profitably

BSCs involving IPP de-commitment or multi-period/ inter-temporal effects would be more complex

- i.e. difficult for participants to reflect multi-period risks (at least with simple offers) and for SM to evaluate offers

Discussion Points

2) Basic market facilitated BSCs

Identification of de-commitment situations

MCAP forecasts (routine vs de-commitment, publication)

Form of BSC offers (e.g. No of tranches? P,Q only?)

Selecting/ calling BSCs

SM issues/resourcing

Price formation – clean price, adjustments for dispatched BSCs

Systems requirements

Other issues?

Overall feasibility/ effectiveness

More generic options

Other options for IPPs to more generally provide balancing were also considered by MRDT

- Seen as more complex and/or requiring more careful assessments of overall economic impacts
  - E.g. to assess the effects of increasing uncertainty in relation to Verve scheduling, unit commitment and fuel management decisions
- Although it may be practical to mitigate through other market design enhancements
  - Such as ability to re-nominate

3) Relax resource plan dispatch tolerances

This option would allow IPPs to self dispatch above or below their resource plans based on their evaluation of MCAP forecasts

- Rule changes would be relatively straightforward to implement, by changing dispatch tolerances
- Operationally though, unfettered flexibility to deviate from resource plans could have system security implications (loss of control by SM)
- And to obtain net efficiency gains, net savings would need to result from an IPP deviation, taking account of any additional costs that might be imposed on Verve as a result. e.g.
  - Unfettered IPP flexibility to deviate from resource plans would increase uncertainty about balancing requirements
  - And complicate, or invalidate, some plant scheduling, commitment and fuel management decisions

3) Relax resource plan dispatch tolerances *(cont'd)*

- Participants would need to accept the potential impact of their (and others') deviations from resource plans on the balancing price
  - E.g. their deviations could result in a higher or lower balancing price invalidating their decision to deviate
- Would enable a degree of self-balancing but may increase overall balancing requirements rather than making a contribution to balancing (i.e. may not constitute participation in balancing)
- Alternatives could include partial relaxation of dispatch tolerances or targeted relaxation at certain times
  - E.g. temporarily relaxing downward dispatch tolerances overnight to address de-commitment issues

    Note that SM is already able to in effect relax dispatch tolerances in issuing an instruction to an IPP to move off resource plan for system security purposes

Pre-requisites

- Cost reflective balancing price to ensure appropriate payments to participating generators and appropriate charges to participants causing balancing requirements
- Forecast of balancing price

Discussion Points

3) Relax resource plan dispatch tolerances

MCAP forecasts / publication

Implications for Verve scheduling/ costs, SM/system security – mitigation?

Net balancing impacts (participation vs cause)

Outturn pricing risks for participants

Systems requirements

Other issues?

Overall feasibility/ effectiveness

4) Seek authorised deviations

Providing for IPPs to seek authorisation from SM to deviate from resource plans could mitigate system security concerns about unfettered deviations

- Criteria could be developed for SM to apply in considering requests for deviate from resource plans
- And for assessing multiple deviation requests (made at or for the same time, or different times over multiple and/or overlapping intervals) , etc
- Short of the ability for Verve to re-nominate, it could be difficult to avoid net adverse economic impacts
  - Perhaps provide for SM to authorise deviations which would not lead to material impacts on Verve schedules/ costs?
    - i.e. in its capacity as scheduler and dispatcher of Verve's portfolio
  - Would require judgements, potentially over the scheduling horizon, and without information about IPP costs it would be impractical to make an overall assessment of potential benefits / costs of authorising deviations

4) Seek authorised deviations *(cont'd)*

- A targeted regime (for example, overnight de-commitment issues) might be workable although similar in effect to the market facilitated BSC concept
- Again, IPPs would also need to accept the risk of adverse pricing impacts as a result of their deviations from resource plans
  - Markets usually address these, and other economic efficiency risks, by providing for generators to submit prices at which they are prepared to be dispatched relative to others (considered next)
- Again, while enabling self-balancing, would probably increase overall balancing requirements rather than making a contribution to balancing support
  - Except in targeted situations such as overnight de-commitment
  - Or if SM could establish that authorising a deviation would reduce overall balancing requirements in the relevant trading intervals and not have adverse economic impacts on scheduling the balancer

Discussion Points

4) Seek authorised deviations

SM authorisation criteria, multiple/ overlapping requests etc

Generic vs targeted?

How to ensure net economic gains/ participation in balancing rather than causing

Outturn pricing risks for participants

SM issues/resourcing

Systems requirements

Other issues?

Overall feasibility/ effectiveness

5) Submit incr/ decr prices relative to MCAP

Could IPPs submit offers/ bids indicating preparedness to be dispatched above/ below their resource plan level relative to MCAP?

- i.e. rather than just when requested by SM for specific purposes such as an overnight de-commitment situations
- These offers and bids would ideally be:
  - Formed from STEM offers/ bids relative to participant NCPs consistent with the formation of the MCAP price curve (although inability to re-nomination may
  - By facility, as for resource plans, to enable SM to assess security implications
- In principle, offers/ bids would:
  - Provide a basis for SM to dispatch IPPs relative to the MCAP price curve
  - Be eligible to set the balancing price to ensure appropriate compensation and incentives to participate
- In addition to market system requirements, key aspects that would need to be considered include:
  - SM's ability to dispatch IPPs in this manner (i.e. relative to the MCAP portfolio price curve and Verve dispatch guidelines or portfolio price curve)

5) Submit prices relative to MCAP *(cont'd)*

- Potential efficiency impacts on the scheduling and dispatch of Verve resources given inability to resubmit day-ahead offer curves
  - i.e. while SM could (and does) reschedule Verve facilities to account for the dispatch of IPPs off their resource plans, this would increase uncertainty for Verve in resubmitting its day ahead price curve

- Other options may mitigate some of these concerns (e.g. ability to re-nominate) or be better alternatives (e.g. contractual/ pre-dispatch options discussed later)

Pre-requisites

- SM tools to enable price based dispatch of IPPs relative to Verve
- Cost reflective balancing price to ensure appropriate payments to participating generators and appropriate charges to participants causing balancing requirements
- Forecast of balancing price
- (Probably) changes to STEM operation to ensure resultant operational requirements are physically and financially realistic
  - e.g. could consider changing tight link between NCP and resource plans

Discussion Points

5) Submit incr/ decr prices relative to MCAP

Price forecasts/publication

Facility or portfolio offers?

Role of STEM offers

Dispatching offers relative to Verve facilities (dispatch guidelines, portfolio price curve etc)

Verve scheduling implications without renominations

Price formation

SM tools/ systems

Market systems

Other issues?

Overall feasibility/ effectiveness

6) Multiple STEM runs

A second (or more) STEM runs would provide an opportunity to respond to MCAP forecasts, from earlier runs, and participate in pre-dispatch balancing

- In effect, a contractual alternative, in pre-dispatch timeframes, to physical balancing
- Could avoid or mitigate some of the potential concerns about physical balancing options and may reduce physical on the day balancing
- The possibility of adopting a 2 or 3 pass STEM nominations process was considered
- i.e. to enable participants to modify and resubmit their positions
  - e.g. initial nominations/STEM (as now) plus one or two subsequent re-nomination/STEM processes later in the day (probably with a similar end time as the late gate closure option outline above)
- To support subsequent nominations, following the initial STEM run, each participant would receive for each trading interval to the end of the next trading day:
  - Their NCP
  - Overall system balancing requirements; and
  - MCAP forecasts

6) Multiple STEM runs *(cont'd)*

- Would need to decided whether initial nominations should be binding or indicative
- If binding, then participants would have firm NCPs (bilateral +/- STEM) following the initial STEM run
  - Subsequent submissions would then result in incremental changes (if any) to NCPs based on any off-market adjustments to previous bilateral positions and/ or any cleared STEM bids or offers
  - A possible argument for initial submissions not to be binding is that they would be made absent any pre-dispatch forecasts
- Alternatively, if initial and revised submissions are indicative only, firm NCPs would only be established from final submissions and the STEM process
  - Possible arguments for all submissions being binding include potential incentives to make accurate and cost reflective submissions; and/ or
  - A participant being able to elect to participate only in the initial (or revised submission) stage
    - e.g. a participant could trade-off any transaction costs against perceived benefits of participating in revised and final submissions, in effect making a standing initial submission

6) Multiple STEM runs *(cont'd)*

- Further, pre-dispatch forecasts would be less meaningful if not all submissions were included
- So, under either approach, there would need to be a requirement to make initial submissions and thereafter to update submissions if there are any off-market changes to bilateral positions

Related issues:

- Operation of STEM would need to be amended to ensure resultant operating profiles are both physically and financially realistic
- Could also consider breaking tight link between NCP and resource plans

Discussion Points

6) Multiple STEM runs

Forecasts (NCP, price etc)/ publication

Systems/ resourcing requirements

Binding or indicative submissions

Contractual balancing vs physical balancing

SM requirements/ timelines/ gate closure

Other issues?

Overall feasibility/ effectiveness

7) BS auctions or swaps

Could consider incremental STEM style process(es) following the initial STEM

- i.e. a contractual/ pre-dispatch alternative to submitting offers/ bids for dispatch relative to MCAP
- IPPs would submit increase and decrease bids relative to initial STEM outcomes (NCP/resource plans) in response to MCAP price forecasts
- This would have the benefits of:
  - Enabling both Verve and IPPs to incrementally adjust positions, giving offsetting adjustments to original NCPs/ pre-dispatch schedules
  - Assuming original schedules were feasible, so should revised schedules (given offsetting adjustments)
    - Subject to SM approval regarding system security requirements
  - SM would not require additional systems for dispatch purposes
- Compared to dispatch based options, there would be less opportunity for IPPs to respond to MCAP closer to real time
  - Although could consider an open swap system for participants to make or hit an offer or bid at any time prior to an agreed gate closure

Discussion Points

7) BS auctions or swaps

Incremental vs full STEM approach

Offer/ hit any time vs STEM style at pre-set times

System requirements

Contractual balancing vs physical balancing

SM requirements/ timelines/ gate closure

Other issues?

Overall feasibility/ effectiveness

Some notes on Price Forecasts

- Balancing price forecasts could be published when Verve schedules prepared
- Intersection of Verve balancing cost curve (ex STEM) and scheduled quantity
- Indicate nominal price forecast with +/- uncertainties (e.g. hi/lo demand)
- SM receives resource plans around 1:30 pm and prepares Verve schedule
- Schedule = demand forecast less wind forecast less resource plans (loss adjusted and taking account of any system constraints)
- Schedule horizon to end of next trading day
- SM could prepare schedule mid morning (after STEM process) if participants supplying own load would provide gross generation (currently only available when resource plans submitted)
- Balancing price forecasts could be published when SM prepares/revises Verve schedule:
  - After 10:30 am following STEM; noon (BOM forecast); around 2pm (if changes due to resource plans); new BOM forecasts (4pm, 7pm, 7am); material changes (e.g. IPP outages)