Electricity
Te Komihana Hiko
Commission

Demand-side Bidding and Forecasting Proposal (DSBF)

Industry Briefing

Purpose of briefing

- To clarify participants' understanding of the DSBF proposal in advance of submissions

Suggested process

- Commission to give presentation
- Commission will follow up on any questions that it cannot answer today
- Commission will take a note of any concerns raised today, and requests that these be repeated in written submissions, to ensure correct interpretation

Contents of presentation

- Objective of DSBF proposal
- Problem definition
- The proposal
- The NRS and PRS
- Benefits
- Cost benefit assessment
- Addressing concerns raised during last round of consultation
- Next steps

Objective of DSBF proposal

- Objective is to promote and facilitate demand-side participation in the wholesale market by
  - Providing more accurate and complete price forecasts 36 hours ahead of time and updated every half hour
  - Providing two schedules of price forecasts, one which includes planned demand response to price and one which assumes no demand response to price
  - Removing the requirement for purchasers to bid at conforming GXPs
  - Relaxing the accuracy requirements for bids at non-conforming GXPs

Problem definition

- Inaccurate price forecasts lead to inefficient use of resources and inefficient demand response
- Inaccurate price forecasts are largely caused by inaccurate demand bids
- A central forecast of demand at some GXPs leads to more accurate price forecasts than a forecast based on bids only
- The current bidding process places unnecessary costs on some purchasers

The Proposal

- GXPs classified by Board as conforming or non-conforming based on degree of unpredictability (statistical test)
- All purchasers at non-conforming GXPs required to bid
- Purchasers at conforming GXPs will no longer be required to bid – demand will be centrally forecast
- Purchasers at conforming GXPs can voluntarily bid price-responsive demand as difference bids

Identifying non-conforming GXPs

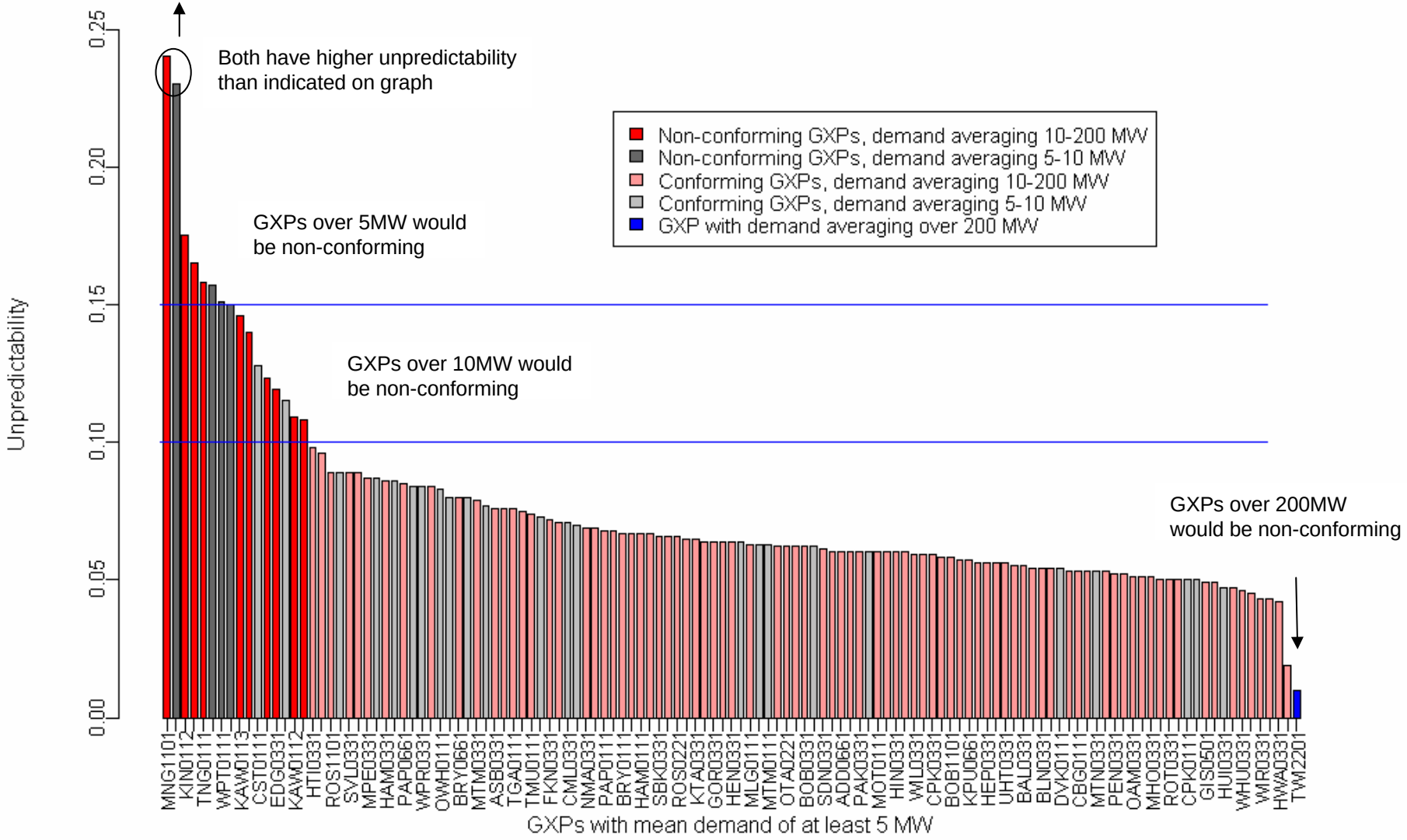
- Statistically assess the unpredictability of demand at each GXP
- Non-conforming GXPs have high unpredictability
- Conforming GXPs have low unpredictability, and a central forecaster can forecast demand relatively accurately
- Use relative error as a measure of unpredictability

Proposed decision rule

Mean GXP demand over historical data series	Relative error	Type of demand
< 5MW	All	Conforming
5-10MW	< 0.15	Conforming
	≥ 0.15	Non-conforming
10MW- 200MW	< 0.10	Conforming
	≥ 0.10	Non-conforming
≥200MW	All	Non-conforming

Derivation of non-conforming criteria

Figure 10: Relative predictability of GXP demand based on historical data



Likely non-conforming GXPs

ASB0661	GYT0331	MNG1101
ASY0111	KAW0111	TNG0111
BDE0111	KAW0112	TWI2201
EDG0331	KAW0113	WHI0111
GLN0331	KIN0112	WPT0111

Board to determine non-conforming GXPs

- Board to consult system operator before publishing list of likely non-conforming GXPs
- Any party can apply to the Board to have a conforming GXP classified as non-conforming or vice versa, for example
  - Some purchasers might consider they can do better job of forecasting than centralised forecaster
  - Some purchasers might be able to provide information that makes demand at the GXP easier to forecast
- In considering such an application, the Board will seek submissions and take into account impacts on other parties

The NRS and PRS

- Two schedules published every half hour looking forward 36 hours
  - Non-response schedule (NRS) assumes no demand response to price
  - Price responsive schedule (PRS) assumes demand response to price, as bid
- NRS and PRS should be more accurate than current PDS and SDPQ, will contain more information and will look further ahead
- Combination of PRS and NRS allows purchasers with price responsive demand to determine value of responding and optimal level of response

Bidding accuracy requirements

- Conforming GXPs
  - no bidding accuracy requirements for voluntary bids
- Non-conforming GXPs
  - purchasers must resubmit a revised bid quantity if the expected quantity changes by more than 30% of the quantity bid or 20MW, whichever is the smaller

Hot water ripple control

- Use of load control by distributors to manage peaks is fairly predictable and should be effectively included in central forecast just by historic patterns
- However SO should be notified of any unexpected demand response (outside normal pattern)
- Noted input from distributors that they control load to manage demand peaks not price peaks
- Statistical analysis of historic use of load control shows very predictable

Hot water ripple control

- No requirement to bid intended use of hot water ripple control at conforming GXPs (unless change in demand is likely to have a significant effect on price)
- Purchasers can voluntarily bid if they want to assess the benefits of demand response (need to consider both interruption and restoration of load in bid)

Benefits

- Better price forecasts (further ahead, more accurate, more information):
  - allow purchasers to better manage demand response to price
  - allow generators to better plan generation
  - leads to lower price volatility, reduced energy costs and potential delayed investment in generation, transmission and distribution
- Better use of resources
  - combination of NRS and PRS will indicate efficient level of demand response
  - better utilisation of water for hydro generators
  - easier for thermal generators to minimise start up costs
- Many purchasers will no longer be required to bid

Cost benefit assessment

- CBA shows positive net benefit of approximately $1.1 million
  - assumed no increase in total quantity of demand response (but better use of existing response)
  - isolated easily quantifiable benefits solely due to this proposal
  - other benefits exist but difficult to quantify (e.g. most purchasers no longer required to bid, and improved security (better scheduling of generation and reserve due to better demand forecast))
  - also likely to have synergies with other projects

Addressing concerns raised during last round of consultation (1)

- Major users
  - Commission met with
    - major users to discuss concerns
    - service providers to work through detail of proposal
  - feedback from these parties has been taken into account in the detailed design of the Proposal
- Lines Companies / Retailers
  - hot water ripple control
  - no longer required to bid

Addressing concerns raised during last round of consultation (2)

- Compliance regime (bidding accuracy requirements)
  - no bidding accuracy requirements for voluntary bids at conforming GXPs
  - relaxed bidding accuracy requirements at non-conforming GXPs
  - bidding process may be simplified under the bona fide physical reason project
  - post-implementation review will assess whether bidding accuracy requirements are appropriate

Addressing concerns raised during last round of consultation (3)

- Implementation costs
  - costs quoted in previous consultation paper included additional hardware required for the extended, and more frequent, price forecasts
  - these costs have been significantly reduced by implementing the Proposal after the system operator's MSP project
- Level of increase in demand response
  - sufficient and significant benefits arise just from better utilisation of existing demand response
  - not necessary to assume any increase in quantity of demand response to justify proposal

Next steps

- Consultation paper released (5 Jul 07)
- Public briefing (15 Aug 07)
- Consultation period closes (3 Sep 07)
- Analysis of submissions (Sep/Oct 07)
- MED review and final service provider confirmation of implementation cost and time (Nov 07)
- Board approval of rule changes (Dec 07)
- Rules gazetted (Dec 07/Jan 08)
- Implementation dependent on system operator's MSP project
  - Implementation is post go live of system operator's MSP project, exact date for this is still uncertain at this point