



Hedge Market Development Steering Group

Industry Briefings

September 2006

Group members

- Tony Baldwin (independent chair)
- Carl Daucher (formerly NZX)
- James Moulder (MRP)
- Mark Trigg (Meridian)
- Paul McIver (Trustpower)
- Ralph Matthes (MEUG)
- Russell Longuet (Exergi)

Others:

- Tim Street (EC senior adviser)
- M-Co (secretariat)
- John Culy and Brent Layton (peer review)

Group Process

We are here



Phase 1

Phase 2

Phase 3

Phase 4

Phase 5

Understand nature and scope of problem

Obtain empirical information through survey, experts, and review of international markets

Explore potential initiatives to address issues

Prepare issues and options consultation paper specifying and evaluating the initiatives. Paper is peer reviewed

Publish consultation paper and review submissions

Develop specific rule amendments

October
2004

June
2005

September
2005

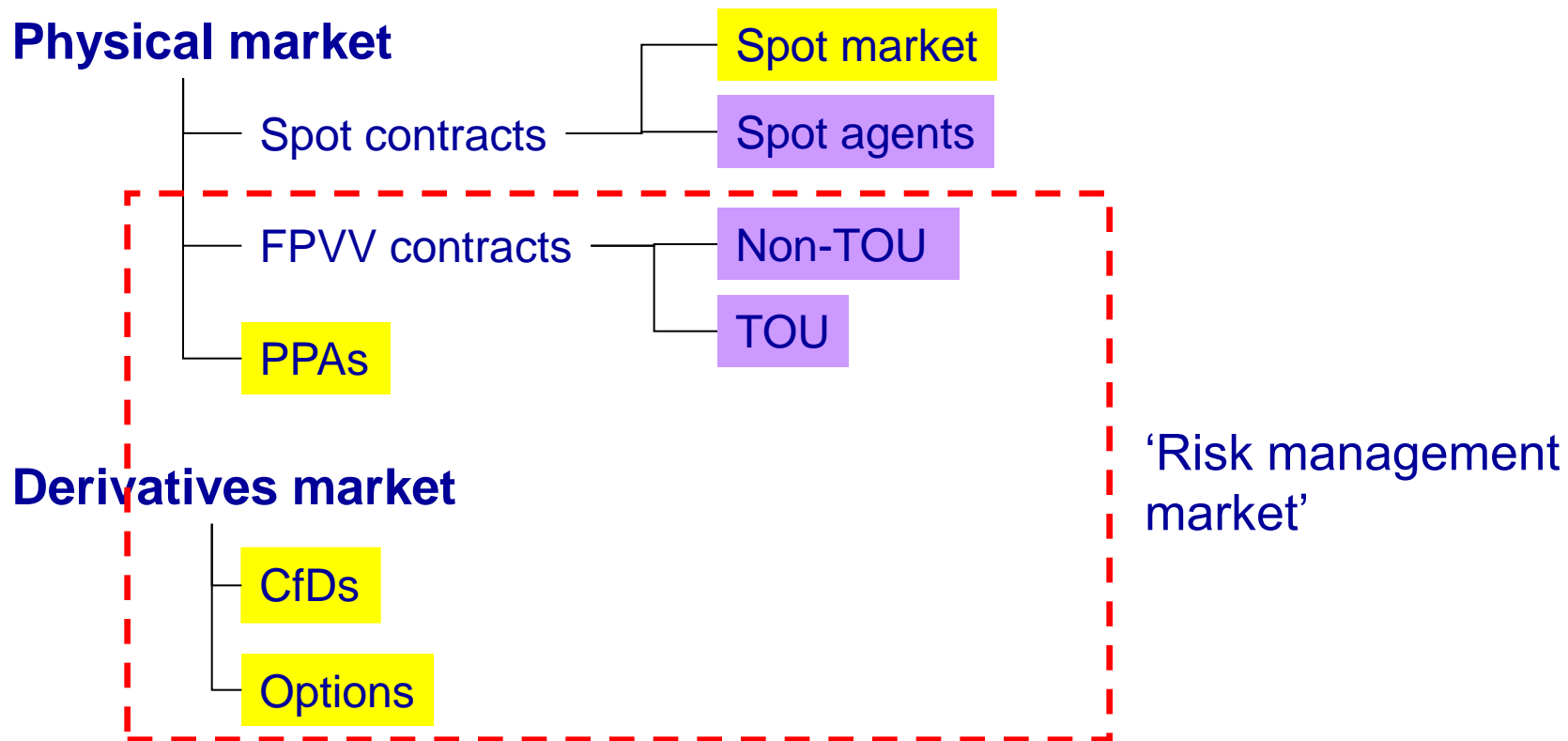
August
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Context

Spot prices in NZ vary significantly. Mechanisms for hedging this variability include:

- Vertical integration
- Demand management
- Cogeneration and stand-by generation
- Income from other markets
- Contractual instruments

Our focus



Key:

Wholesale

Retail

Current market

- OTC – covers most of the market – most use FPVV
- M-Co's Fixed Price Index – not effective
- *EnergyHedge* – low activity and low confidence among some parties
- Survey reveals cover overall is currently high

Problems

1 Lack of robust and timely information

Very limited information about volumes, prices, or other terms.

No forward price curve. Weak historic price curve

2 No hedge for location price risk

Creates barriers to competition in constrained regions

Reduces interest in standardisation, which lowers liquidity

Problems *(cont'd)*

③ Lack of confidence in competitiveness

Difficult to know if well founded (wider C/Commission investigation).
Lack of transparency a key problem

④ Weak understanding of price risks, and how to manage

Electricity still a procurement function for buyers. High use of medium-term FPVW contracts. Limited awareness of need to manage price risks.
Assumed government responsibility

⑤ High participation and transaction costs

Very limited standardisation. Predominance of bilateral negotiations and customised contracts. Costly to compare prices in advance and adjust cover

Policy objective

To promote a well functioning (price) risk management market –

This is the market for instruments used by buyers and sellers to manage their individual exposure to spot price risk in an efficient manner

Note

- Liquidity will depend on demand for risk management services – may continue to be low
- While current overall cover is high, OTC instruments make it hard to adjust readily to changing risk conditions
- NZ market is very small by overseas standards

Overseas comparisons

	Number in market	Annual consumption (GWh)	Grid	Vertical integration	Hedge liquidity
Nordpool	110	400,000	Zonal pricing	High in regions	High: 10x consumption. Standard products + market-makers
UK	6 main generators	390,000	Unconstrained. Locational pricing	Yes	Medium for 1yr contracts. Low for rest
Aus	70	195,000	Zonal pricing. Rentals auctioned	Yes	Low. Mainly OTC via brokers. Recent increase on futures exchange: 5% to 37% of consumption
PJM	350	700,000	1700 nodes, FTRs		Not clear. Mainly OTC, but two exchanges with some activity
NZ	5 main players	40,000	Nodal pricing. Constrained grid	Yes	Low Mainly FPVW and OTC tailored

HMDSG's approach

- Demand for risk management services is uncertain
- Key ingredient – parties understanding and ‘owning’ their risks. Without this change, market illiquid and undeveloped
- Key first step – provide ‘tools’ to enable greater understanding and reduce barriers to participation
- Avoid high costs of extremely prescriptive mechanism not likely to be wanted as demand unfolds

Full range of options

①	②	③	④	⑤	⑥	⑦	⑧	⑨
Information disclosure	Vertical integration	Standardised contracts	Credit risk	Trading mechanisms	Encouraging market makers	Mandatory market participation	Energy risk awareness	Location price risk
Use of insider trading rules	Ownership Separation	Standard contract types	Mandatory Credit Ratings	Brokers	Participation and Fee Differentiation	Mandatory Tendering of Contracts	Promotion of a Network of Advisors	Rental Revenue Share Auction
Centralised forward price curve derivation	Vertical Integration Capping	Standard Contract Durations	Mandatory Price Premiums Based on Credit Rating	Central Trading Platform	Designated External Market Makers	Mandatory Minimum Contracting	Provide Standard Risk Management Tool	Pure Financial Transmission Rights
Publication of contracted positions	Operational and Accounting Separation	Standard Contract Locations	Restricted Participation	Development of EnergyHedge		GPS Mandatory Offering Requirement	Trader Certification	Locational Rental Allocation
Regular Survey Initiative	Synthetic Separation of Retail and Generation	Requiring Parties to Use CfDs	Use of Prudential Security	Exchange Trading of Mandatory CfDs		GPS Mandatory Purchasing Requirement	Understand Risk Management	Hybrid FTR
Publication of Contract Details		Model Master Agreement						
Centralised Publication of Outage and Fuel		Mandatory Use of Standardised CfDs						

Covered by other processes

- Adequacy of competition, or other issues, in the spot market
- Structure of the wholesale and retail markets
- Ownership separation of generation and retail
- Sufficiency of generation
- Ownership of participants
- Overall regulatory arrangements for the industry

Preferred package

- Major changes in contract disclosure
- New mechanism to hedge location price risks
- Improved *EnergyHedge*
- Better information on fuel and outages
- Standard (simplified) model master agreement
- Growing wider understanding of risk management
- Regular market survey

Publication of contract details

By new rules, Commission to require disclosure of key terms and conditions of all new contracts above a threshold (say 10 GWh pa). A possible example of web-based publications:

Standardised Contract								Do you have any of the following provisions?						
Trade Date	Volume	Region	Start	End	Price	FPVV/CfD	Profile	Applicable	S1	S2	S3	S4	S5	S6
Q4 2005	5 MW	Waikato / BOP	Q1 2006	Q3 2009	\$73.45	CfD	BL	Yes	No	No	No	No	No	No
Q4 2005	1 MW	Southland / Otago	Q1 2006	Q4 2006	\$69.50	CfD	Profile	No	N/A	N/A	N/A	N/A	N/A	N/A
Q4 2005	0.5 MW	Auckland / North	Q1 2007	Q3 2009	\$72.50	CfD	BL	Yes	No	Yes	Yes	Yes	No	No
Q4 2005	10 MW	Waikato / BOP	Q4 2005	Q4 2008	\$75.00	CfD	Profile	No	N/A	N/A	N/A	N/A	N/A	N/A
Q4 2005	-	Hawkes Bay / East Cape	Q1 2006	Q3 2009	\$73.45	FPVV	-	Yes	No	Yes	Yes	No	No	No
Q4 2005	1 MW	Wellington / Kapiti	Q1 2006	Q4 2006	\$69.50	CfD	BL	Yes	No	No	No	No	No	No
Q4 2005	-	Taranaki / Manawatu	Q1 2007	Q3 2009	\$72.50	FPVV	-	Yes	No	No	No	No	No	No
Q4 2005	10 MW	Nelson / Westland	Q4 2005	Q4 2008	\$75.00	CfD	BL	Yes	No	No	No	No	No	No
Q4 2005	5 MW	Canterbury	Q1 2006	Q3 2009	\$73.45	CfD	BL	Yes	No	Yes	Yes	No	No	No
Q4 2005	1 MW	Southland / Otago	Q1 2006	Q4 2006	\$69.50	CfD	BL	Yes	No	No	No	No	No	No
Q4 2005	-	Auckland / North	Q1 2007	Q3 2009	\$72.50	FPVV	-	Yes	No	No	No	No	No	No
Q4 2005	10 MW	Waikato / BOP	Q4 2005	Q4 2008	\$75.00	CfD	BL	Yes	No	No	No	No	No	Yes

Standardised Contract

Schedule 1: Escalation

Schedule 2: Force Majeure

Schedule 3: Suspension

Schedule 4: Carbon Tax

Schedule 5: Levies / Tax Pass Through

Schedule 6: Other Terms and Conditions

Publication of contract details

Benefits

- Ready access to timely information for comparing prices and terms
- Incentives to use more standardised contracts
- Spread of more innovative risk management services (like brokering, and analysis of disclosure information)

Costs

- Modest set up costs for rules and web-based platform
- On-going compliance costs for maintaining rules and webpage
- On-going costs for parties to update their published information

Development of *EnergyHedge*

Commission to invite current owners of EnergyHedge to develop its services. Possible initiatives may include:

- Infer “equivalent” prices at a central node
- Extend term of contracts from 2 to 3 years
- Encourage participants to bid or offer on behalf of non-participants
- ‘Spread trading’ facility
(computerised trading that draws on demand and supply for contracts of other terms)
- ‘Strip trading’ facility
(computerised automatic and simultaneous trading of quarters over a series of periods to achieve a certain average price)

Development of *EnergyHedge* (cont'd)

Benefits

- A more meaningful forward price curve
- Wider participation in the CfD market
- All the other benefits of more effective hedge market

Costs and risks

- For Commission, low implementation and monitoring costs
- For market, risk of *EnergyHedge* not delivering

Transmission hedge: Locational rental allocation (LRA)

Commission to prepare rules for LRA. Key elements:

- Nodal pricing continues
- For rental allocation, nodes grouped by “participation factors” (using SPD)
- Except for HVDC, rentals allocated based on relative impact of actual losses and constraints across nodal groups
- HVDC rentals continue to be allocated to SI generators
- Wholesale buyers receive share of nodal group’s rentals based on gross load

LRA – Overall pros and cons

Pros

- Provides hedges for location risk
- Less complex when set up
- Reduces barriers to competition in constrained regions
- Removes extreme prices in constrained periods for large consumers
- Encourages standardisation in energy contracts
- Enables concentration of energy hedges at central nodes – increasing liquidity

Cons

- LRA untested. Requires prototype testing
- Some distortion in marginal prices for small consumer
- Politics of reallocating rentals

While still conceptual, the LRA proposal shows promise and HMDG recommends developing and testing a prototype without delay

LRA compared to hybrid FTR

Scope of cover	LRA better
Challenge of initial allocation	Similar
Marginal price signals for large consumers	Similar
Marginal price signals for smaller consumers	FTR better
Regional market power (gaming risk)	LRA better
Hedge duration	LRA better
Participation requirements	LRA easier
Need for lines coy pass-through	FTR, yes. LRA, no
Tradability	FTR, yes. LRA, possible but less ready

Model master agreement

Commission to support industry's voluntary development and use of a model master agreement. (Currently in preparation by retailer-generators, MEUG and Business New Zealand)

Benefits

- Lower transaction costs
- Easier to compare prices
- Encourages use of CfDs
- No rules required

Costs

- For Commission, assessing if the model meets its objectives

Plant outage and fuel information

Commission to centralise information on planned outages and fuel stocks onto a readily accessible web platform, presented in GWh equivalents so more meaningful for risk management purposes

Benefits

- More accurate views on future spot prices, therefore potential for better risk management choices

Costs

- For Commission, formulating new rules and website contract
- For parties, providing information

Understanding price risk issues

Commission to raise awareness by:

- Encouraging independent parties to provide information to the market about risk management techniques and products
- Publishing information on relevant training courses, and
- Requesting private organisations to establish certification processes for training providers and risk advisors

Benefits

- Gradually, better risk management across the market

Costs

- For Commission, providing information
- For participants, compliance with certification standards

Survey

Commission to continue surveys on a regular basis to identify issues and progress in risk management market

Benefits

- More timely and robust information on whether policies and initiatives are working
- Increased awareness of price risk management issues among market participants

Costs

- For respondents, time to complete survey
- For Commission, costs of survey

Preferred package: Impact on key problems

	Lack of robust + timely information	High participation/ transaction costs	Lack of confidence in competitiveness	Lack of transmission hedge	Lack of risk management understanding
① Publication of contract details	✓✓✓	✓✓	✓✓		✓
② Locational Rental Allocation (LRA)	✓	✓✓	✓✓	✓✓	
③ Improved <i>EnergyHedge</i>	✓✓	✓✓✓	✓✓✓		
④ Model master agreement	✓	✓✓	✓		
⑤ Regular survey	✓✓		✓		✓
⑥ Understanding of risk management	✓		✓		✓
⑦ Publication of outage + fuel data	✓	✓	✓		✓
Does package address key problems?	Yes	Yes if Energy-Hedge delivers	Yes, but even better if Energy-Hedge delivers	Yes	A start. Will build as experience gained

Non-preferred initiatives

Mandatory use of standardised contracts

- Mandatory for risk management market participants to use a standardised CfD to trade base load energy.
- Contracts would be based at one of three locations, with maturities out to five years and could be traded through any market.
- Participants would be free to trade other contracts for non-base load energy.

Exchange-based trading of mandatory standardised contracts

- Mandatory standardised CfDs to be traded on a mandatory exchange, rather than through the OTC market, EnergyHedge, or any other trading platform.

Synthetic separation

- Requires generator/retailers to supply a percentage of their internal hedge cover to blind derivative markets, to provide third parties with equal opportunity to acquire that hedge cover.
- Generator/retailers would be required to establish separate derivative trading teams for their generation and retailing businesses

GPS mandatory offering requirements

- Requires generators to offer a minimum volume of contracts to the market, covering spot pricing risks over the year ahead.
- Importantly, the GPS initiative places no restriction on reserve prices in the offers and publication of reserve prices is not required.

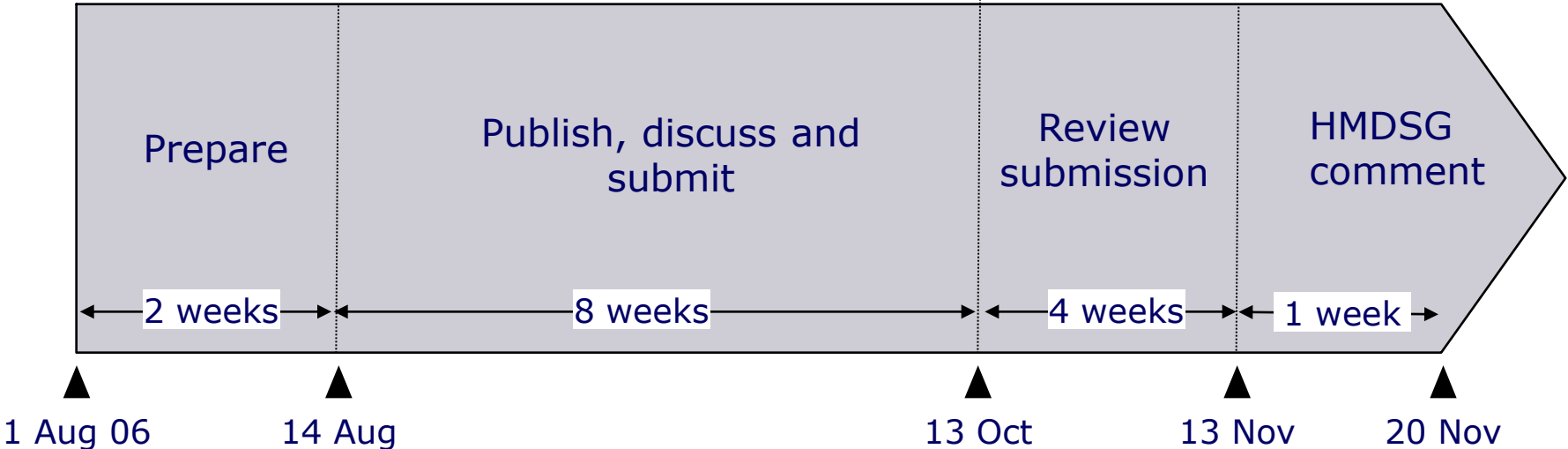
GPS mandatory purchasing requirements

- Requires spot market purchasers to maintain a minimum level of hedge and contract cover, covering spot pricing risks over the year ahead.
- In contrast to the mandatory offering initiative, this initiative requires parties to actually purchase risk management contracts rather than offer to purchase them.

Overall evaluation

Initiative	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬
Criteria	Survey	Publication of contract details	Centralised publication of fuel and outage info	Model master agreement	<i>EnergyHedge</i> development	Understanding risk management	Mandatory standardised contracts	Exchange-based trading	Synthetic separation	Mandatory offering requirements	Mandatory purchasing requirements	Hybrid Financial Transmission Rights	Locational rental allocation
Benefits	✓	✓✓✓	✓	✓✓	✓✓	✓	✓	✓	✓✓	✓	✓	✓✓✓	✓✓✓
Costs	x	x	x	x	x	x	xx	xx	xx	xxx	xxx	xxx	x
Net benefits	✓	✓✓✓	✓	✓✓	✓✓	✓	x	xxx	-	xx	xx	✓✓	✓✓✓
Confidence in net benefit assessment	high	high	high	high	med	low	low	med	low	high	high	high	high
Included in preferred package	yes	yes	yes	yes	yes	yes	no	no	no	no	no	no	yes

Consultation timeline



Implementation timeline

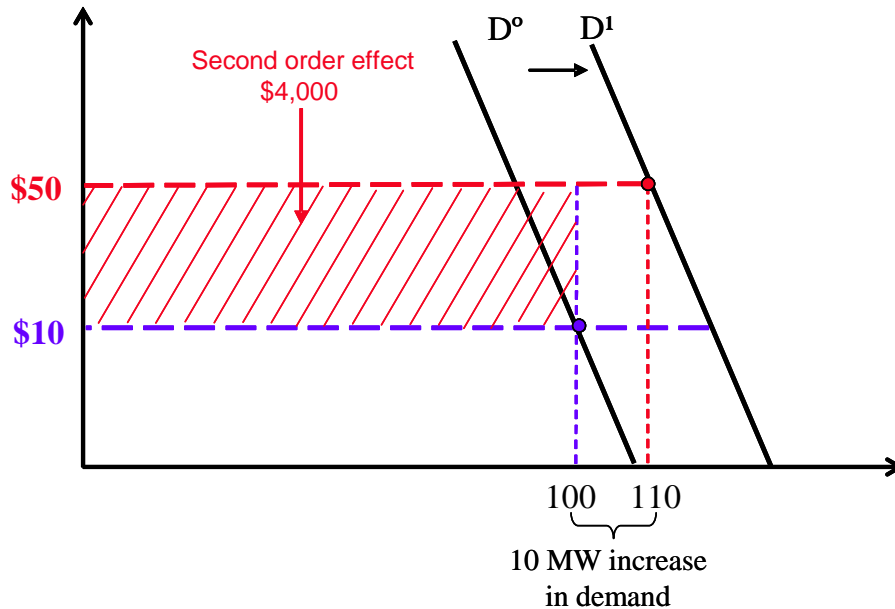
Dates assume the Commission staff continue design work on LRA and disclosure rules during coming consultation

Initiative	Rule change required	Target date for consultation on detailed proposal paper	Target date for implementation
Publication of contract details	Y	April 07	Oct 07
Locational Rental Allocation (LRA)	Y	Oct 07	Dec 08
Development of <i>EnergyHedge</i>	N	n/a	tbc
Support for model master agreement	N	n/a	Nov 06
Publication of outage and fuel data	Y	April 07	July 07
Promotion of training & advisors	N	n/a	March 07
Annual survey of market participants	N	n/a	March 07

Supplementary slides

LRA – Price signal example

Second-order effects for a large consumer



Effective price signals with no rebates

	Efficient Signal	No Rebates	
	Price-taking Consumers	Small Consumer	Large Consumer
Marginal Price (\$/MWh)	50	50	50
Effective Incremental Price (\$/MWh)	50	90	450

➤ Second-order effects can currently be excessive

➤ Scenario

Large load = 100 MW

Small load = 10 MW,

both located at a node served by a transmission line of 110 MW and a marginal generator. Assume the market price is \$10 per MWh when grid constraints are not binding, and \$50 per MWh at the constrained node when grid constraints are binding.

➤ Marginal price signal is only relevant for price-taking consumers.

➤ Effective incremental price = additional money paid by the consumer divided by the increment in consumption.

➤ For example, if the large consumer increases load by 10 MW, it pays an additional \$40 per MWh on its existing load of 100 MW, with \$4,000 additional costs to the large consumer on existing load. This is the second-order effect and illustrated in the graph below.

➤ The consumer also pays \$50 per MWh for the additional 10MW of load, which is an additional \$500 paid by the consumer. The effective incremental price is therefore \$4,500/10, which is \$450 per MWh. This greatly exceeds the efficient price signal of \$50 per MWh.

LRA – Price signal example *(cont'd)*

- The LRA initiative partially corrects excessive price signals
- Under the LRA initiative consumers know that if their actions are likely to alter spot market prices, the second-order effects they experience when prices change are partially offset by changes in the value of rentals allocated to them.
- In principle, the LRA initiative improves the efficiency of price signals for large consumers and reduces the efficiency of price signals for price-taking consumers. The efficiency implications are not so clear-cut for small consumers able to influence nodal prices. In the examples used above, the effective incremental price to small consumers swings from being excessive (\$90) to being too low (\$18).
- This example assumes consumers are completely unhedged. In practice, consumers are likely to obtain some hedge cover from generators to cover load served by local generation. This has the potential to further improve the effective incremental price signal for the large consumer without worsening it for the small consumer or for price-taking consumers.

Effective price signals under the LRA initiative

Effective Incremental Price	Price-taking Consumers	Small Consumer	Large Consumer
No rental rebates - (\$/MWh)	50	90	450
LRA with rentals equal to 50% of total hedge requirements (\$/MWh)	30	50	230
LRA with rentals equal to 90% of total hedge requirements (\$/MWh)	14	18	54

Hybrid FTR v. LRA

Criteria	Importance	Hybrid financial transmission rights	+/-	Locational rental allocation
1 Aggregate locational price risk cover	High	Aggregate cover on imported power but require additional contracts to achieve a fully hedged position.	=	Aggregate cover on imported power but require additional contracts to achieve a fully hedged position.
2 Individual locational price risk cover	High	Defined at 20 trading hubs, rather than individual nodes, so unlikely to provide cover for those most exposed to locational price risk.	<	Utilises participation factors to allocate rentals to individual nodes but allocation by gross loads may distort final payments
3 Simplicity of allocation methodology	High	Requires contentious definition of non-competitive regions and creation of an auction infrastructure	=	Requires creation of a new participation factors methodology
4 Marginal price signals for large consumers	Medium	Should substantially reduce the excessive marginal price signals	=	Should substantially reduce the excessive marginal price signals
5 Regional market power	Medium	Requires the definition of regions that have inadequate competition.	<	Avoids issue by allocating rentals to everyone based on gross load and participation factors.
6 Hedge duration	Medium	Short to medium term hedge cover with uncertain renewal under an auction mechanism	<	Long term hedge cover with a regulated renewal mechanism
7 Average locational price signals	Medium	Preserves nodal price signals	>	Reduces nodal price signals
8 Marginal price signals for small consumers	Low	Preserves efficiency	>	Reduces efficiency
9 Participation requirements	High	High – Requires regular active participation in auctions and invest in modelling for valuation of FTRs	<	Low – Complexity contained in allocation model.
10 Secondary trading	Low	Provides a ready made product for secondary trading	>	Requires participants to securitise their revenue streams
11 Pass through obligations	Medium	Requires obligations on lines companies to pass through to end customer	<	Utilises the Clearing Manager to allocate rentals directly to spot market purchasers