

ACIL Tasman

Economics Policy Strategy



Energy and demand forecasts

As part of the electricity distribution price review process

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Energy Distribution Masterclass for Consumers

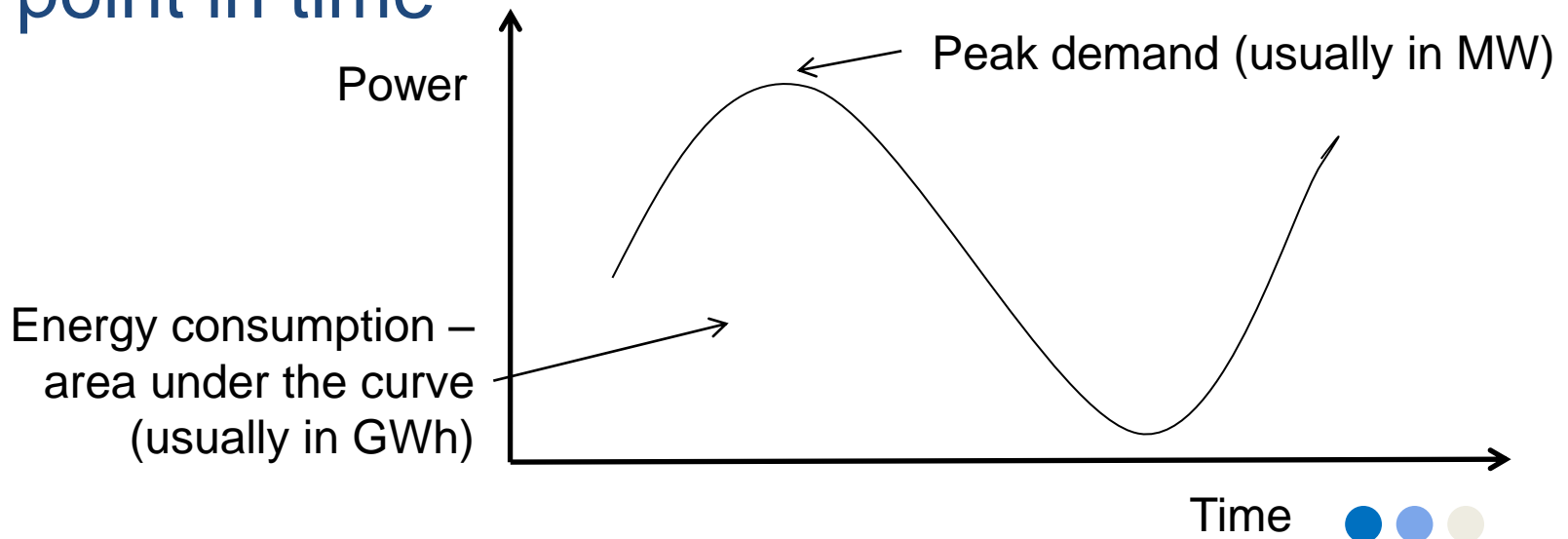
24 August 2011

Overview

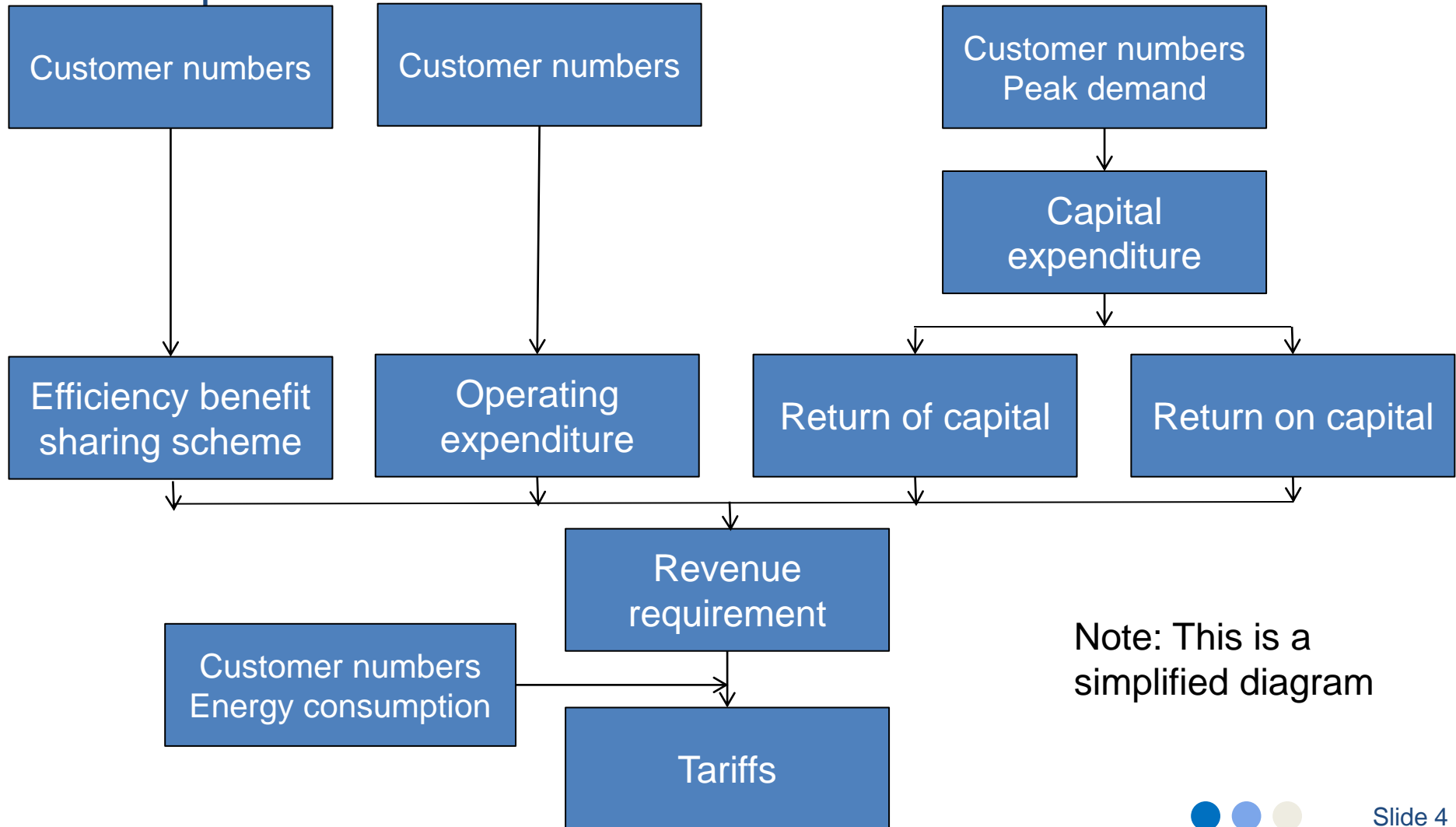
- What demand quantities are forecast?
- Why are they forecast?
- What are the incentives on distributors?
- What drives the forecasts?
- Concluding comments

What demand quantities are forecast?

- Number of customers
- Energy consumption – power consumed over time
- Peak demand – maximum power required at a point in time



Why are they forecast?



Operating expenditure

- Scale escalation
 - Operating expenditure
 - Increases as number of customers increases eg meter reading costs, call centre costs
 - Maintenance expenditure
 - Increases as number of customers increases eg meter maintenance
 - Increases as network expands
- Offset by Efficiency Benefits Sharing Scheme (EBSS)

Moderate incentive to forecast high quantities

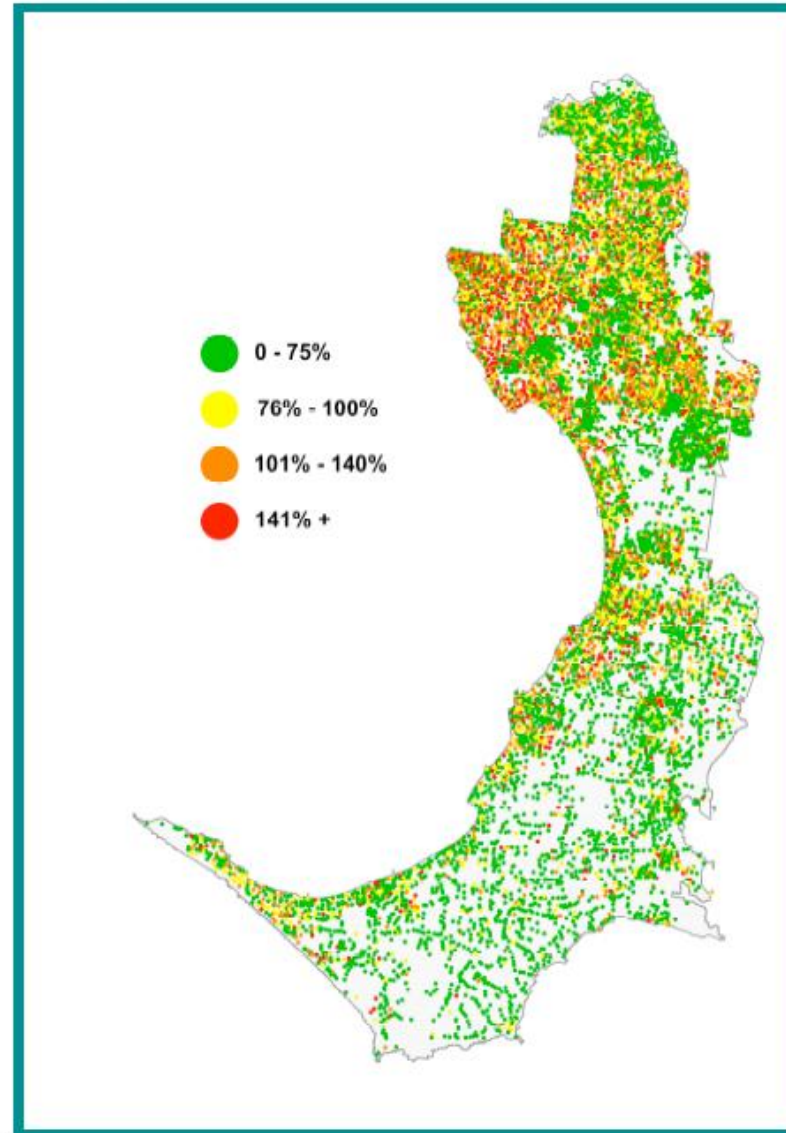
Capital expenditure

- Connections
 - A function of growth in customer numbers
- Augmentation
 - A function of growth in peak demand
 - Weak correlation – depends on capacity in network

Moderate incentive to forecast high quantities

United Energy – network loading

Figure 4.7: Distribution Substation Loading Summer 2008



Setting of tariffs – Weighted Average Price Cap

- Determination of P_0 & X factors
 - Revenue = Price x Quantity_{forecast}
 - Price = Revenue / Quantity_{forecast}
 - The lower the forecast quantity, the higher the tariffs
- Revenue earned
 - Revenue = Price x Quantity_{actual}
 - The higher the actual quantity, the higher the revenue earned

Strong incentive to forecast low quantities

Setting of tariffs

For most customers:

Revenue = Number of customers x Fixed charge
+ Energy consumption x Variable charge

A small number of larger customers have a demand charge

P₀ adjustment to align 2010 revenues

	Po adjustment
CitiPower	4.9%
Powercor	1.0%
Jemena	4.9%
SP AusNet	-5.7%
United Energy	8.6%

Note: A positive adjustment results in a decrease in revenue and prices

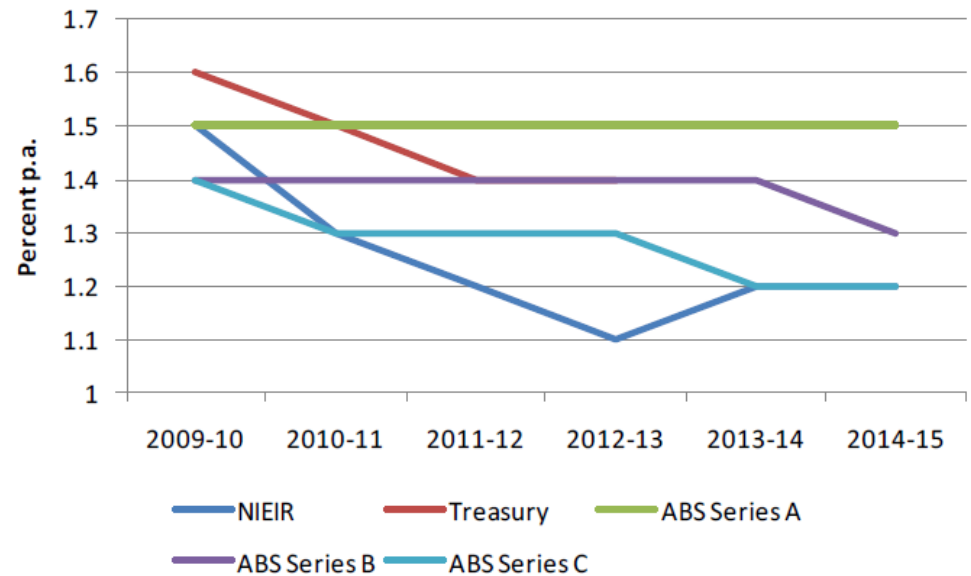
Incentives on distributors

	Expenditure	Revenue
Customer numbers	High (but moderate incentive)	Low (but strong incentive)
Energy consumption	-	Low
Peak demand	High	-

Customer number forecast

- Small – medium customers
- Population growth
- New housing starts
- Large customers (“block” loads)
- New connection applications
- New developments / closures

Figure 3 Population growth projections from various sources, 2009-10 to 2014-15

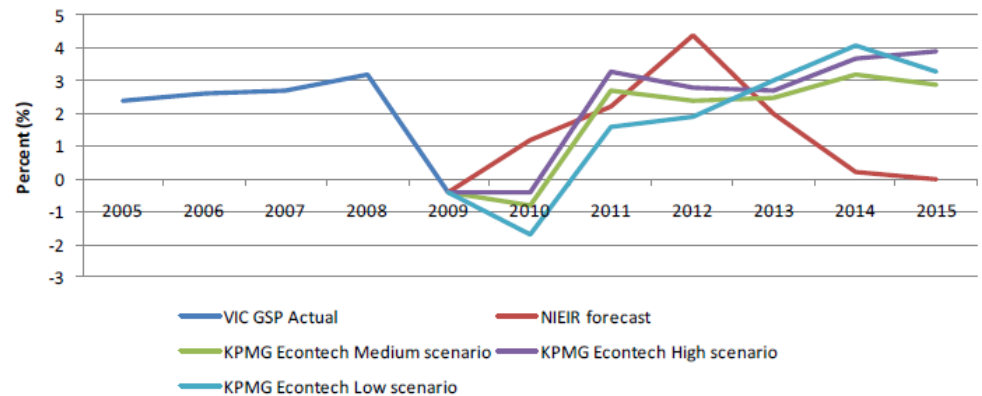


Data source: ABS, 3220.0 Population Projections, Australia 2006 to 2101, Victorian Treasury, Victorian Budget Papers 2009-10, NIEIR, Electricity sales and customer numbers reports prepared for distribution businesses.

Energy consumption

- Small – medium customers
 - Customer numbers forecast
 - Energy consumption per customer
 - Residential
 - By industry
 - Economic growth – Gross State Product (GSP)
 - Weather
 - Policy impacts
 - Minimum Equipment Performance Standards
 - Building standards
 - “White certificate” schemes
 - Introduction of time of use tariffs
 - Solar PV systems
 - Carbon pricing
- Large customers (“block” loads)
 - Assess on a customer by customer basis

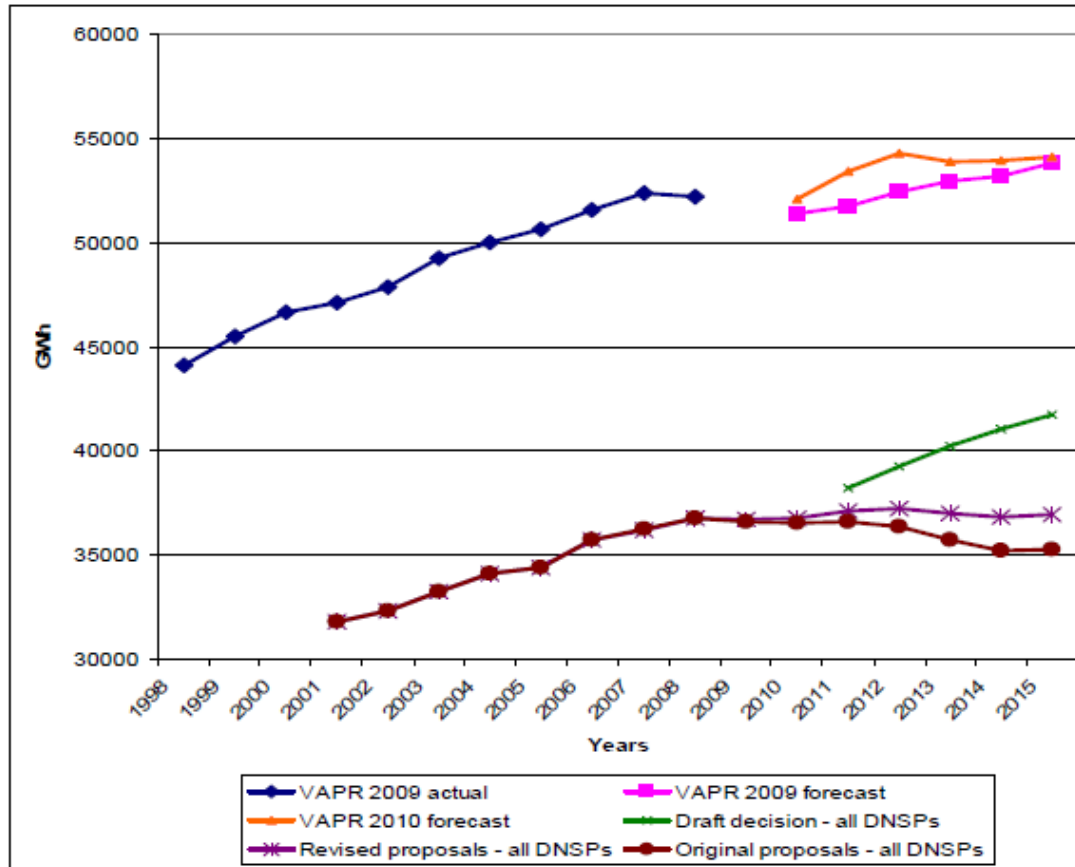
Figure 6 NIEIR economic growth forecasts versus KPMG Econtech



Data source: NIEIR Electricity sales and customer numbers reports prepared for five distribution businesses and VENCorp annual planning report 2009

Energy consumption

Figure 5.2 Energy consumption—2009 VAPR, 2010 VAPR (native energy demand), AER Draft decision, DNSP initial and revised forecasts (GWh)

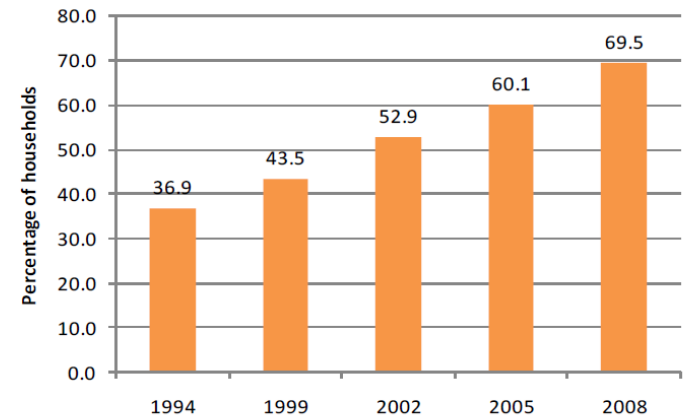


Source: Victorian DNSPs' revised regulatory proposal RIN templates, sheet 6.3, table 3; AEMO, *Victorian Annual Planning Report—Victoria's Electricity and Gas Transmission Network Planning Document*, July 2010; VENCORP, *Victorian Annual Planning Report 2009*, 16 July 2009.

Peak demand

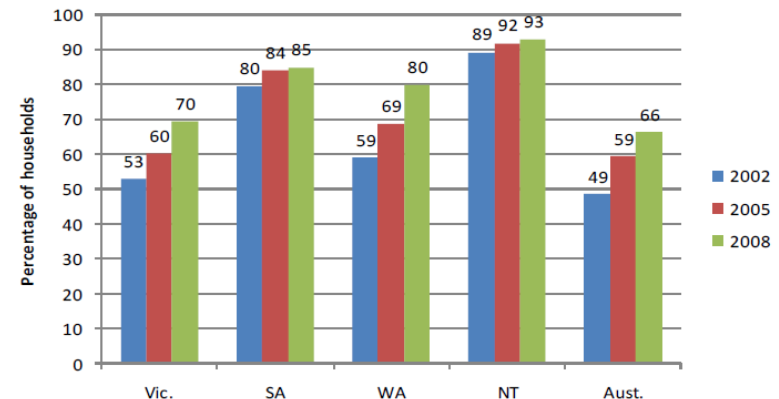
- Small – medium customers
 - Population growth
 - Economic growth – Gross State Product (GSP)
 - Air conditioning use (summer vs winter peak demand)
 - Weather
 - Policy impacts
 - Minimum Equipment Performance Standards
 - Building standards
 - “White certificate” schemes
 - Introduction of time of use tariffs
 - Solar PV systems
 - Carbon pricing
- Large customers (“block” loads)
 - Assess on a customer by customer basis

Figure 9 Victorian penetration of air conditioners 1994, 1999, 2002, 2005 and 2008



Data source: ABS, 4602.0.55.001 Environmental Issues: Energy Use and Conservation, Mar 2008

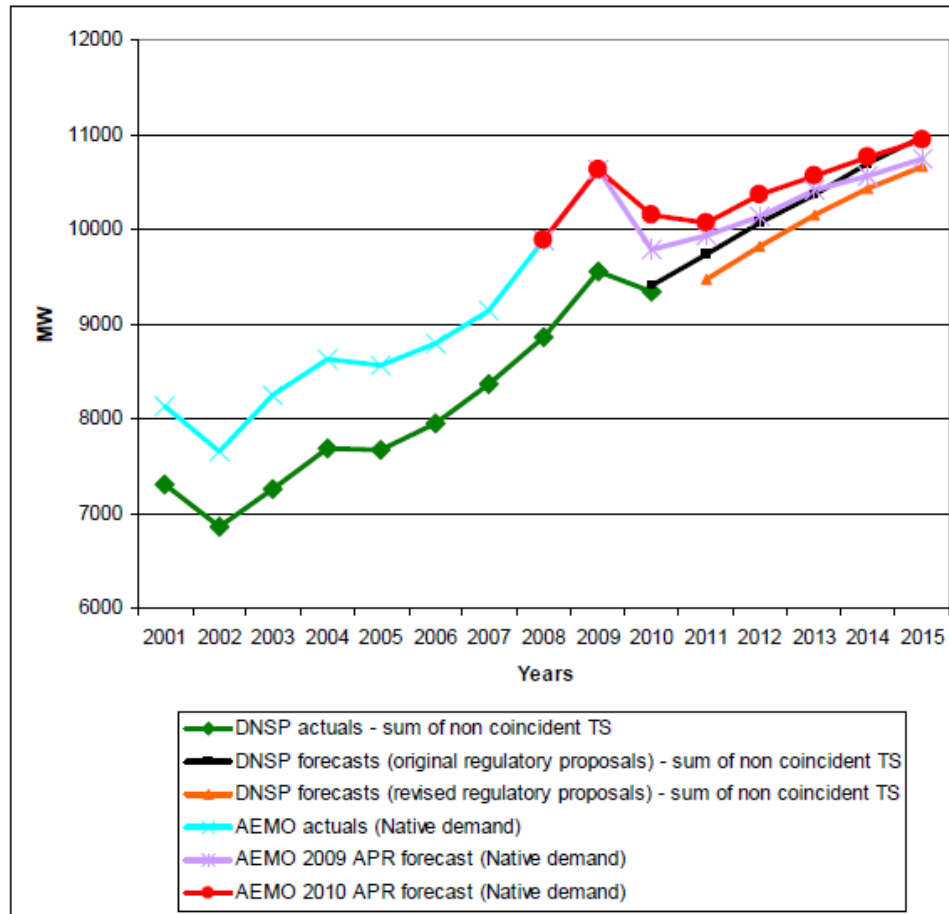
Figure 10 Market penetration of air conditioners, Victoria versus other jurisdictions



Data source: ABS, 4602.0.55.001 Environmental Issues: Energy Use and Conservation, Mar 2008

Peak demand

Figure 5.1 Maximum demand—2009 VAPR, 2010 VAPR (native summer demand), DNSP forecasts and actuals (sum of terminal station forecasts)



Source: AEMO, *Victorian Annual Planning Report—Victoria's Electricity and Gas Transmission Network Planning Document*, July 2010, p. 94, table 4-1; VENCORP, *Victorian Annual Planning Report 2009*, 16 July 2009, tables 3-1 and E1-2; DNSPs' initial and revised RIN templates, sum of terminal station maximum demand forecasts.

Concluding comments

- Understand the incentives
 - Do the electricity distributors have an incentive to forecast high or low?
 - How material is the forecast to the determination?
 - Maximum revenue cap or weighted average price cap?
- Compare drivers of forecasts
 - eg population growth, economic growth
 - Review policy impacts – are they consistent with public documents?
- Compare with other sources
 - eg AEMO forecasts

Questions?