

Office of Financial Management

**Research &  
Information Paper**

**NSW Electricity Supply  
Full Retail Competition  
Comparison of Selected Design Options**



New South Wales  
TREASURY



Ministry of Energy and Utilities  
NSW Government

TRP 99-4

September 1999

## **PREFACE**

This Research & Information Paper has been released for discussion by the NSW Treasury and the Ministry of Energy and Utilities for consideration by NSW electricity customer groups and other electricity industry stakeholders. The aim of the paper is to promote consideration of principal options for extending to all customers the freedom to choose their retail suppliers.

The policy of the NSW Government is to promote competition between retail suppliers as the way to promote sustainable benefits for customers. This remains one of the key objectives of the Government's reform program. Inherent in competition is the objective of signalling to customers the true costs of their electricity use, and providing an incentive to reduce those costs. Large electricity consumers are presently able to choose their suppliers and have secured substantial benefits through competition. Extension of competition to the remaining 2.7 million electricity customers in NSW has been scheduled to be phased in from 1 January 2001. With full competition, all customers will be able to choose from competing retail suppliers who are licensed to supply electricity to retail customers.

Competition in retail electricity supply is a complex subject on which extensive studies have already been undertaken. The paper isolates and addresses the key strategic issues to be resolved in order to establish in essence how the new retail market will operate. The approach adopted in this paper is to analyse and compare at a summary-level the three principal competing options for competition. The options represent the three basic ways in which customers can have individual freedom to choose their suppliers.

Readers are invited to submit their views on the options presented in this paper to NSW Treasury by 15 October 1999. Submissions should be forwarded to Graham Higham, Economic Strategy Branch, NSW Treasury, Level 26 Governor Macquarie Tower, 1 Farrer Place, Sydney, NSW 2000.

It is envisaged that there will be further opportunity for stakeholders to be consulted and to submit views at various stages in preparation for full retail competition.

**John Pierce**  
**Secretary**  
NSW Treasury  
September 1999

**Treasury Ref: TRP 99-4**  
**ISBN: 0 7313 3027 7**

General inquiries concerning this document should be initially directed to: Graham Higham (Tel: 9228 5879, or E-mail: [highamg@mail.treasury.nsw.gov.au](mailto:highamg@mail.treasury.nsw.gov.au)) of NSW Treasury. This publication can be accessed from the Treasury's Office of Financial Management Internet site [<http://www.treasury.nsw.gov.au/>].

For printed copies contact the Publications Officer on Tel: 9228 4426.

# CONTENTS

[Preface](#)

[Executive Summary](#)

[Introduction](#)

[Outline of the options](#)

[Analysis of options](#)

[Observations on the options](#)

[Further issues arising from the options](#)

[Questions for discussion concerning the options](#)

[Appendix 1 - Analysis notes for selected design options](#)

[Appendix 2 - Bibliography](#)

## EXECUTIVE SUMMARY

This Research and Information Paper has been released for discussion by the NSW Treasury and the Ministry of Energy and Utilities for consideration by NSW electricity customer groups and other electricity industry stakeholders. The aim of the paper is to promote consideration of principal options for extending to all customers the freedom to choose their retail suppliers.

There are some 2.7 million customers in NSW who currently do not have choice and need to buy their electricity supplies from their local electricity distributors. With full competition, all customers will be able to choose from competing retail suppliers who are licensed to supply electricity to retail customers.

The policy of the NSW Government is to promote competition between retail suppliers as the way to promote sustainable benefits for customers. Inherent in competition is the objective of signalling to customers the true costs of their electricity use, and providing an incentive to reduce those costs. Large electricity consumers are presently able to choose their suppliers and have secured substantial benefits through competition. Extension of competition to smaller customers has been scheduled to be phased in from 1 January 2001.

Competition in retail electricity supply is a complex subject on which extensive studies have already been undertaken. It is assumed in this paper that enquiring readers will have seen the more detailed study reports released last year that are referenced in this paper. The paper isolates and addresses the key strategic issues to be resolved in order to establish in essence how the new retail market will operate; it leaves the large number of detailed aspects - critical as they are to the design and implementation of the market - for subsequent consideration.

The approach adopted in this paper is to analyse and compare at a summary-level the three principal competing options for competition. The options represent the three basic ways in which customers can have individual freedom to choose their suppliers. The paper describes the basic requirements to be met by retailers wishing to supply customers under each option. A retailer would be able to choose the minimum entry option (ie that option with the simplest form of metering) or any higher order option that involves more sophisticated metering. The three principal options are -

- **Option 1** continues competition through the existing wholesale market arrangements; ie where a customer changes retail supplier, the supplier is responsible to ensure installation of a half-hourly interval meter equipped with a communications link that enables remote meter reading. The option will present comparatively high entry costs for retailers of small customers, although it is anticipated that as costs decline over future years it will be attractive for an increasing proportion of electricity supplies.
- **Option 2** allows the communication costs inherent in option 1 to be avoided. For option 2 supply, a chosen retailer will still be responsible to ensure that a 1/2-hourly interval meter is installed. The interval meter will be read in the course of the normal billing cycle. The retailer will purchase energy supplied in each half-hour at the wholesale market spot price. (Note that where option 2 is available, a retailer is not precluded from selecting the "co-existing" option 1 - whichever is considered to generate the best value).
- **Option 3** will avoid meter replacement costs by retaining existing meters. Meters will continue to be read as part of the normal billing cycle. A retailer will purchase the energy supplied over any meter reading period at the average (i.e. net system demand

weighed average) wholesale market spot price for that period. (Note that where option 3 is available, a retailer is not precluded from selecting one of the "co-existing" options 2 or 1).

While option 3 has a lower initial direct cost for competing retailers than option 2, this advantage is moderated by:

- Restricted scope under option 3 for a retailer to capture and pass on to customers the value of lower-cost demand patterns (thereby depriving customers of incentives for reducing costs through more efficient usage);
- Costs variability (due to asynchronism in meter reading cycles) for which retailers will need to recover compensation in the services they can offer;
- Some added market design complexity inherent in the option.

Option 3 is presented in this analysis in its simplest form, using a single parameter to weight half-hourly spot prices. The problems of complexity are increased if "sub-options" or variations are added to this simplest form. One important "sub-option" is to accommodate within the option existing load control schemes, such as off-peak hot water switching. While load control can co-exist readily with option 2, its incorporation into option 3 will make price calculation somewhat more involved and create added scope for disputation among market participants.

It is expected that, over time, retailers will find option 2 more attractive than option 3,

- as metering costs decline;
- in view of the reduced risks inherent in option 2 [where each customer's actual demand pattern is measured]; and
- with customers having the opportunity to capture the benefits of lower cost demand.

Accordingly, option 3 investment costs may need to be recovered over a declining or uncertain consumption base or be subsidised to compensate for stranding of the investment.

Related high-level strategic competition issues identified in the paper cover:

- The basis for recovering costs of establishing and operating the retail market;
- Assignment of responsibility for implementing retail competition and arrangements for supervision of the implementation;
- Metering arrangements;
- Consumer protection requirements for competitive supply.

The observations in this paper about the three options and related issues have been formulated in consultation with electricity distributors. The paper poses questions on the availability of these options, possible alternatives and related issues. The questions are directed in part to whether option 3 presents a balance of advantages that justify its availability, either for general use or on a contingent or restricted basis.

Readers are invited to submit their views to NSW Treasury by 15 October 1999. Submissions should be forwarded to Mr Graham Higham, Economic Strategy Branch, NSW Treasury, Level 26 Governor Macquarie Tower, 1 Farrer Place, Sydney 2000. Submissions can also be emailed to [highamg@mail.treasury.nsw.gov.au](mailto:highamg@mail.treasury.nsw.gov.au).[\[Back\]](#)

# 1. INTRODUCTION

## *1.1 Background*

Currently in NSW, contestability in electricity supply to retail customers is limited to larger customers (generally, those who use in excess of 160MWh of electricity per annum, or 100MWh at aggregated sites). For a customer to exercise choice of retail supplier, the customer's supply is "fully-metered" with half-hourly interval metering records transmitted automatically over a communications link into the market settlement process.

The NSW Government has foreshadowed that competitive supply will be extended to small customers from 1 January 2001.

## *1.2 Purpose of the paper*

This paper has been prepared to promote discussion and input from interested persons to government strategic decision-making on the extension of competition to all retail customers.

The paper compares key features of selected market design models for contestable electricity supply for small customers. The selected models are presented as three options that might be offered to a contestable customer's retail supplier.

The options are described in a tabular format (see Appendix 1) in order to highlight and compare

- The essential functionality of each option
- The contestable supply arrangements to apply with each option
- The order of additional costs to be incurred for each option

Other costs and benefits associated with each option (including alignment with competition objectives).

## *1.3 The selected options*

The options for retailers of customers switching supplier are, in summary

- **Option 1 - current contestable supply arrangement - fully-metered supply (half-hourly metering with communications link)**
- **Option 2 - new contestable supply arrangement - interval metered supply (half-hourly metering with manual meter reading)**
- **Option 3 - new contestable supply arrangement - retaining (existing) single-register metered supply**

The options presented in this paper have been selected as representing the principal alternatives for extending to customers the maximum individual freedom to choose their retail suppliers. It is recognised that there are other potential methods for delivering to customers, in a more limited fashion, benefits of competition. Such other methods might include for example -

- Competitive tendering for franchise supply rights

- Price regulation (as a surrogate for competition) within the existing franchise framework.

With these other methods, however, customers would lack some sovereignty in terms of:

- Their freedom to choose their supplier; and
- Their scope to secure economic supply arrangements tailored to their individual value preferences.

#### ***1.4 Summary level presentation***

The selection of options is presented in this paper at a summary level for discussion purposes and to promote broad consideration of the key issues involved.

This paper does not purport to provide a rigorous business case for small customer retail supply contestability. That can only be completed after consideration of stakeholder preferences, technical aspects, impacts of alternatives, and consistent costings.

#### ***1.5 Detailed technical aspects***

For readers wanting to explore more detailed technical aspects of retail competition, reading of the reports from two previous studies is recommended.

The earlier studies, both completed in December 1998, are -

- "Development of a Conceptual Metering and Settlement Design for Full Retail Competition in the National Electricity Market" - prepared by Putnam, Hayes & Bartlett Asia Pacific Pty Ltd and Lacuna Consulting Limited for the Metering and Retail Settlement Steering Committee of NEMMCO.
- "Contestability for Residential and Other Low Use Electricity Customers" - prepared by SRC International Pty Ltd for the Independent Pricing and Regulatory Tribunal of NSW.

Each report is available through the NSW Treasury internet web site ([www.treasury.nsw.gov.au](http://www.treasury.nsw.gov.au)) and the Ministry of Energy and Utilities Internet Web site ([www.doe.nsw.gov.au](http://www.doe.nsw.gov.au)). [\[Back\]](#)

## **2. OUTLINE OF THE OPTIONS**

### ***2.1 Option 1 - current contestable supply arrangement - fully-metered supply (half-hourly metering with communications link)***

The wholesale electricity market currently provides the mechanism used for delivering supply contestability to non-franchise electricity customers. In order to change supplier under this option, a retail customer must have a contract for fully-metered supply with a licensed retail supplier who is then responsible to settle in the wholesale market for electricity consumed at the customer's connection point.

The supplier (or the local network service provider as a fall-back) is responsible to ensure that full metering is in place. For this purpose, full metering systems record half-hourly energy consumption and communicate the records automatically into the wholesale market for weekly settlement. Metering services are contestable, although service providers (meter

providers and meter data agents) must be accredited. Details regarding the connection point, metering particulars and the retail supplier are registered under arrangements administered NEMMCO. Transfer by the customer from one retailer to another is effected in the wholesale market by registration of changed details (which must have been certified by the parties involved with the transfer).

### ***2.2 Option 2 - new contestable supply arrangement - interval metered supply (half-hourly metering with manual meter reading)***

Under this option, for a customer to change retail supplier, the supplier will be required (as an alternative to Option 1 above) to ensure installation of a half-hour interval meter, and will be responsible to pay for demand in each half-hour at spot market price. However the meter will be read manually on a cyclic basis, as for existing meters.

Manual reading of meters has the effect of deferring final settlement (and therefore extending settlement risk) for the option 2 retailer - compared with weekly settlement under option 1. To prevent distortion of risks, an eligibility limit based on annual consumption at the connection point is proposed; larger customers would not have access to this option.

### ***2.3 Option 3 - new contestable supply arrangement - retaining (existing) single-register metered supply***

Under this option, for a customer to change retail supplier, (as an alternative to Options 1 and 2 above) an existing single register meter may be retained. The meter will continue to be read manually on a cyclic basis, and the supplier will pay for demand recorded over each meter reading period at the average pool price for the period (for this purpose, average means the net system demand weighted average).

This option has the effect of spreading the risks associated with high-cost demand profiles across all option 3 retailers. To reduce distortion, an eligibility limit based on annual consumption at the connection point is proposed. Larger customers, for whom the costs of switching to options 1 or 2 are relatively small, and who may have greater scope to gain an adverse benefit by buying against an average price, would not have access to this option.

### ***2.4 Cumulative operation and coexistence of options***

For ease of this summary-level comparison, the options are presented "cumulatively" in this paper. This involves an assumption that each option will coexist with all preceding options. Thus

- Option 1 (full metering) is currently available, and it is assumed will continue to be available for all non-franchise customers.
- Option 2 (interval metering), if made available, is assumed to coexist with option 1, so that a small customer's retail supplier will be able to choose which one of the full metering and interval metering options is to be used.
- Option 3 (existing metering), if made available, is assumed to coexist with options 1 and 2, so that a small customer's retail supplier will be able to choose which one of the full metering, interval metering and existing metering options is to be used.

The choice of option to be made by the retail supplier (within eligibility limits) will reflect the competitive striving of retail suppliers to maximise the value that, in the particular circumstances, can be generated and passed on to the customer. [\[Back\]](#)

### **3 ANALYSIS OF OPTIONS**

Tabular presentation and discussion notes on the selected options are set out in the attachment to this paper. The description of features and costs was prepared in consultation with NSW distributors. The NSW Government has not endorsed this analysis, and views of stakeholders on all aspects are invited.

The analysis addresses -

- a. A general description of the selected options
- b. Essential (high-level) functions that would give effect to the options - in particular, market settlement arrangements, and process / management aspects
- c. Separable issues - in particular, metering and network losses
- d. Assignment of responsibility for performing the essential functions - and mechanisms which might be used for discharging responsibility for performing the functions
- e. Indicative costs and benefits of the functions
- f. Other consequences for stakeholders. .

### **4 OBSERVATIONS ON THE OPTIONS**

#### ***4.4 Option 1***

Option 1 is included in the analysis for reference as it corresponds with the current contestable supply arrangements on which the Options 2 and 3 proposed in this paper are then built. At the same time it is recognised that any substantial take-up of Option 1 by small customers' retailers would require additional investment in wholesale market infrastructure and implementation improvements.

#### ***4.2 Option 2***

In comparison with Option 1, Option 2 delivers the benefit of avoiding the cost of automatic communication of metered data. Against this benefit, is

- the need to recover the costs of new metering and investment in the additional systems required for registration, transfer and settlement, for those customers wishing to exercise choice of supplier, and
- delay in final settlement of consumption at any connection point until the next (manual) meter reading

#### ***4.3 Option 3***

In comparison with Option 2, Option 3 has the benefit of avoiding the cost of early replacement of existing meters for customers who wish to change supplier. Against this benefit, is

- the need to recover the additional costs (and possibly additional time required) for investment in, and the increased complexity of the settlement systems required (Note the possibility that option 3 may be required for a relatively short time and the need to recover additional investment costs over that shorter term ),
- the muting of incentives for customers to adopt lower-cost patterns of consumption,
- the delay in final settlement of consumption over a meter reading period until all option 2 meters have been read for the period, and

- the costs of carrying revenue variability that arises as a consequence of asynchronous meter reading.

#### ***4.4 Cumulative operation of the options***

As mentioned above, the options are presented "cumulatively" in this paper. It is recognised that other combinations are theoretically possible. For example, providing option 3 without availability of option 2 would reduce some costs and still extend choice of supplier to each customer, but would restrict incentives for customers to support the environmental and economic efficiency of the industry.

#### ***4.5 Variations to option 3***

For the purposes of this paper the simplest feasible design for Option 3 is assumed.

It is recognised that within option 3 there is a range of possible variations, not all mutually exclusive. Under these variations, different categories of customer (e.g. customers with controlled loads, time-of-use metering, calculated demand, various customer classes) with different needs and demand profiles may be assigned different prices.

Each variation and additional feature has the potential to increase significantly the complexity and cost of option 3.

The particular issue of controlled load systems, in which NSW has significant investment (and to which these comments apply), is addressed further below.

### **5 FURTHER ISSUES ARISING FROM THE OPTIONS**

#### ***5.1 Controlled loads***

Load control is a well established method for reducing system peak demands, distribution capital expenditure and DUOS (which accounts for approximately half of a residential customer's bill). There is substantial investment in load control in NSW, and very significant use for off-peak switching of water heating in the small customer segments.

Load control systems can be used under all of Options 1, 2, and 3 both for (surrogate) price signalling and for direct control. Under options 1 and 2, customer response to load control price signalling is readily accommodated. Under option 3, however, distinguishing supply costs between load-controlled and other customers will add complexity and cost to option 3 design and implementation.

#### ***5.2 Assignment of responsibilities and implementation***

The principal conclusions stated above address the key issues involved in making the strategic decisions on whether Options 2 and 3 should be provided.

Within those strategic decisions, decisions will be required as to the deployment of responsibilities for delivering and complying with the systems, procedures and protocols that will form a necessary part of the options. Once the core functions for the options have been specified, this optimisation should be driven by the objective of minimising total costs (including risk carrying costs) of implementation.

For the purposes of analysing in the tabulation the strategic issues relating to Options 2 and 3, it has been projected that:

- Design, development, establishment and operation of common information systems will be centralised with efficient costs being recovered from retailers on the basis of the number and consumption of their customers who have potential to benefit.
- Responsibility for ensuring design, development, establishment and operation, as specified, of the common systems, procedures and protocols will be assigned by government to either NEMMCO or jointly to the holders (in the NSW context) of distribution licences.
- All market participants (defined in the National Electricity Code) will be obligated to comply with the systems, procedures and protocols required for the options adopted.

While Options 2 and 3 assume a centralised information system, it is acknowledged that there could be variations to those options involving decentralised systems. For example, they may be decentralised on a jurisdiction basis or on the basis of distribution districts. Variations involving decentralised systems may incur additional establishment and operating costs as functions would be replicated. Furthermore, if systems were decentralised it would be more difficult to achieve a consistency across the National Electricity Market.

**Note:**

The specifications referenced above will cover

- The essential high-level functionalities and objectives of the systems, procedures and protocols
- The objectives to be pursued in making detailed design decisions
- The manner in which design decisions must be made, including requirements for open consultation to be maintained, opportunities to be extended to make submissions on key issues and to have them fairly considered, and appeal avenues to be provided
- government oversight of the above matters and project management (subject to avenues for dispute resolution).

The essential high-level functionalities and objectives are to be specified by government in full consultation with industry and representative stakeholders.

### ***5.3 Cost recovery***

In the tabulation it is envisaged in the first instance (subject to the following qualification) that

- Transfer (and related) costs that are incurred directly in consequence of a customer's exercising choice of supplier will be met by the chosen retailer.
- Other efficient fixed costs of design, development, establishment and operation of information systems for options 2 and 3 will be recovered from retailers on the basis of the number and consumption of their customers who benefit or have potential to benefit (i.e. customers supplied under option 2 or 3 metering)

These principles need to be qualified as follows -

- If direct transfer costs impose a significant barrier to switching, some degree of cost re-allocation might be allowed (particularly if option 3 is not implemented). However,

this should not introduce economic distortions through artificially promoting customer churn or stimulating uneconomic demand for new meters. Cost re-allocation could, if justified, be introduced later in the competition phase-in period.

- Recovery of efficient fixed costs of design, development, establishment and operation of mandated information systems and other re-allocated costs would be subject to regulatory determination.

It should be recognised that re-allocating direct transfer costs can create economic distortions that will lead to additional regulation and added total costs of the retail market. The extent of cost re-allocation, if required, should reflect a balance of economic efficiency, simplicity and equity among stakeholders.

#### ***5.4 Consumer protection aspects***

Consumer protection regulation in contestable electricity supply in NSW requires retailers supplying electricity customers to:

- Supply under contract;
- Co-operate in delivery of social programs; and
- Provide reasonable opportunity for customers to remedy defaults before terminating supply.

Additionally, distributors have an obligation to ensure supply in their districts (including last resort supply in event of suspension of a retailer of choice).

Other aspects of consumer protection identified in the attached analysis as requiring consideration cover -

- competition monitoring and residual supply price regulation
- service standards
- supervision of systems, procedures and protocols in the retail market.

##### ***5.4.1 Competition monitoring and residual price regulation***

The operation of competition and the benefits that consumers will derive from electricity supply competition will need to be monitored, and where competition is deficient, alternatives found.

This will require monitoring and assessment of competition, and power to impose residual regulation if required. Residual regulation may cover such mechanisms as price determination, cost re-allocation, delivery of social program assistance or other arrangements and will require careful definition of the criteria to be used for triggering the mechanisms.

For example, one proposal is that Option 3 would only be provided if it is assessed that Option 2 will not deliver adequate competition benefits.

##### ***5.4.2 Service standards***

Supply to franchise customers in NSW is subject to service regulation, covering

- Definition of service standards
- Public review of terms and conditions

- Provisions dealing with breaches of standards and contract terms, and
- Customer dispute resolution - ombudsman scheme membership

Consideration needs to be given as to how best to extend a similar level of protection to emerging non-franchise customers, including

- adoption of a code of conduct
- comparability of suppliers' terms and conditions of contract
- price protections where competition is inadequate
- assistance for customers who cannot afford minimum electricity service levels.

#### ***5.4.3 Supervision of supply contestability***

In addition to industry responsibilities, the analysis has identified regulatory supervision functions to be considered in retail market design. These cover essentially the responsibilities to

- require appropriate processes for consultation and decision-making on higher-level specifications and assignment of responsibilities for meeting them
- specify at high-level the functionality of retail market systems, procedures and protocols
- assign obligations and responsibilities for establishing and operating the retail market
- oversee development and operation of the retail market to ensure confidence in the effectiveness of achieving its required functionality
- determine the appropriate levels of certain costs to be recovered - these include efficient costs of mandated systems, procedures and protocols, re-allocated costs and charges for services that are not subject to adequate competition.

Further consultation is planned covering these aspects.

#### ***5.5 Separable issues***

In developing the analysis in this paper, it has been recognised that market design will in due course need to address a number of additional issues covering such matters as

- Metering arrangements
- Distribution losses treatment.

While these issues are important to proper market design, in general terms they either:

- impinge in a similar manner across the options proposed; or
- can be decoupled from the strategic decisions on which options should be provided.

Accordingly, these matters are not addressed explicitly in the principal observations and issues outlined above. Similarly, ongoing developments proceeding in the current wholesale market are not canvassed in this paper.

##### ***5.5.1 Metering***

The analysis highlights two issues in relation to metering to be resolved. They are:

- Metering contestability; and

- Mandatory installation of interval metering for new installations.

Contestability in metering can cover meter provision and other metering services including reading, testing and maintenance services. It is noted that while meter provision for franchise customers is already contestable in NSW (subject to meeting local network service provider standards) it has been common for meter costs to be embedded in network charges.

It has been proposed, if Option 2 is to be the principal mechanism for delivering supply contestability, that the effectiveness of the option would be enhanced by mandating half-hourly interval meters for new installations as soon as practicable.

### ***5.5.2 Distribution losses and global settlement***

This analysis also highlights the long term unsustainability of current arrangements for treating network losses as the proportion of second tier customers increases. It is anticipated that transfer to some form of global settlement will in due course be necessary. This will involve all customers being registered, and ultimately the distinction between first and second tier supply being lost.

## **6. QUESTIONS FOR DISCUSSION CONCERNING THE OPTIONS**

It is not intended to limit the scope of contribution to discussion to these three options for retail electricity supply contestability. In commenting on the options, stakeholders are invited to present their views on the following questions.

### ***6.1 Implications for competition***

- What options, combination of options, or additional options, will best promote competition among retail suppliers, and with what comparative costs and benefits?
- What are the barriers to competition implicit in the options (or a limited availability of options), and at what cost would those barriers be dismantled?

### ***6.2 Implications for consumer protection***

- What options, combination of options, or additional options, will best promote a high standard of customer service, and with what comparative costs and benefits?
- What would the appropriate manner be for extending a similar level of protection to emerging non-franchise customers as is currently enjoyed by franchise customers?
- What additional, essential consumer protections are required in extending options (or some combination of options) for contestability to customers, and with what comparative costs and benefits?
- How would the prospect of residual regulation (for example of electricity supply prices) impact on competition in retail electricity supply in NSW?
- What regulatory alternatives to competition should be available for regulating electricity supply in the retail market, and what should be the basis for determining if and when such alternatives should be invoked (and removed)?

### ***6.3 Implications for the environment***

- What options, combination of options, or additional options, will best promote protection of the environment, consistent with the industry's obligations under its electricity legislation and other programs of government, and with what comparative costs and benefits?

### ***6.4 Stakeholder preferences***

- What options, or additional options, will best meet the diversity of stakeholder preferences, and with what comparative costs and benefits?

### ***6.5 Combinations and availability of options***

- What other options, additional options, variations or combinations of options should be considered in the business case, and what are their comparative costs and benefits?
- What eligibility thresholds should be applied for each option?
- If the alternatives (presented as options in this paper) were to be mandated without choice for different categories of consumer, under what rules would the consumers be categorised, and with what comparative costs and benefits?

### ***6.6 Assignment of functional responsibilities***

- What assignment of functional responsibilities for delivering the options will most efficiently achieve supply contestability (including responsibility for IT development)?
- How would these responsibilities be best imposed (e.g. through licence conditions or through amendment to the National Electricity Code)?

### ***6.7 Implementation and operating cost***

- What is the cost of designing, establishing and implementing the systems necessary for customer registration and transfer and for wholesale settlement by retailers under each of the Options?
- What is the annual cost of operating and maintaining the information systems under each of the Options?

### ***6.8 Costs recovery***

- What is the appropriate balance for reallocating direct costs related to customer transfers?
- What is the appropriate basis for recovering the fixed costs of design, development, establishment and operation of the information systems required for the options? This question really involves two parts:
  - a. What charging mechanism will be used to recover costs?
  - b. From whom will costs be recovered?
- If both options 2 and 3 were to be provided, what would the likely demand be for option 3, and what would the likely period be over which option 3 would have significant use? What implications would this have for the cost-effectiveness of option

3 and the need to recover (in part) its costs from customers' suppliers who do not stand to benefit from its availability?

### **6.9 Metering**

- Which metering functions should be franchised and regulated (rather than contestable) and for how long?
- What action should be initiated to require that all new installations be fitted with half-hour interval meters, and when should this take effect?

What standards should be mandated for half-hour interval meters?

## **APPENDIX 1**

### **NSW ELECTRICITY SUPPLY FULL RETAIL COMPETITION Analysis Notes for Selected Design Options**

This appendix is intended to provide a structure for considering and evaluating the implications of selected market design options for delivering electricity supply contestability to "small" customers.

The structure is presented in the form of a matrix, covering in order for each of the options being considered;

- a. A general description of the selected options
- b. Essential (high-level) functions that would give effect to the options - in particular, market settlement arrangements, and process / management aspects
- c. Separable issues - in particular, metering and network losses
- d. Assignment of responsibility for performing the functions and mechanisms which might be used for discharging responsibility for performing the functions
- e. Indicative costs and benefits of the functions
- f. Other consequences for stakeholders.

While the order outlined above is deliberate, it is recognised that the consideration and evaluation of the options necessarily requires an iterative approach. In particular, it is proposed that other options can be analysed using this broad structure.

System features	Option 1 - full metering at spot price	Option 2 - interval metering at spot price	Option 3 - existing metering at average price	Remarks
<b>General description</b>				
Customer options	Full metering (with communications) for all 2 <sup>nd</sup> tier customers - current arrangements	Option for "small" 2 <sup>nd</sup> tier customers to have interval metering (readings on standard billing cycle)	"Small" 2 <sup>nd</sup> tier customers to have additional option of retaining existing single register meter (readings on standard billing cycle)	<b>Note:</b> options are cumulative in this analysis - availability of option 3 assumes availability of option 2 etc.
Customer threshold	While all contestable customers would be eligible, cost will at the present time make this option unattractive for most small customers' retailers	Maximum eligible size to be set <ul style="list-style-type: none"> <li>• E.g. current contestability level</li> <li>• Envisaged to be reduced progressively</li> </ul>	As for option 2 except that <ul style="list-style-type: none"> <li>• Max eligible size expected to be smaller - e.g. 25 MWh/year initially, reducing progressively</li> <li>• From a date to be fixed (i.e. earliest date for economic introduction) all new installations to have interval (Option 2) type metering to a common specification</li> </ul>	<b>Note in this table:</b> <ul style="list-style-type: none"> <li>• Option 3 could be introduced only where option 2 is expected not to deliver adequate results</li> <li>• Option 3 is envisaged to be transitional as existing meters are gradually phased out.</li> <li>• Ultimately, as communications costs decline, retailers would take up more Option 1</li> </ul>

**Note:** For the purpose of this analysis, options available are not exhaustive - e.g. for the purposes of this table a "controlled load" option has been omitted

System features	Option 1	Option 2	Option 3	Remarks
<b>Retail Market System functions</b>				
Market settlement	<p>Single stage settlement directly in the wholesale market</p> <p>Each retailer is responsible for demand as registered on meter</p>	<p>Two phase settlement -</p> <ul style="list-style-type: none"> <li>• <b>1<sup>st</sup> phase</b> for wholesale settlement - <b>either</b> demands are estimated prior to meter reading <b>or</b> one agency accepts responsibility for wholesale settlement, and</li> <li>• <b>2<sup>nd</sup> phase</b> - allocation of charges based on actual meter readings</li> </ul>	<p>Two phase settlement -</p> <ul style="list-style-type: none"> <li>• <b>1<sup>st</sup> phase</b> for wholesale settlement - As for Option 2</li> <li>• <b>2<sup>nd</sup> phase</b> - either</li> </ul> <ol style="list-style-type: none"> <li>1. As for Option 2 with some added complexity for the simplest form of Option 3, or</li> <li>2. Greatly increased complexity for more sophisticated 2<sup>nd</sup> tier settlement</li> </ol>	<p>For Option 2 (and 3), with one agency accepting responsibility for wholesale settlement, compensation for cash-flow delay and security costs are required.</p> <p>For Option 3, systems to compensate agencies carrying cost of net revenue variability (due to asynchronous meter reading) are required</p>

**Note:** For simplest form Option 3, residual-demand-weighted average spot price over each meter reading interval applies. (Note delay while Option 2 meters are read to calculate option 3 residual demand)

**Note:** Compensation costs noted above will provide market incentives for retailers with lower-cost demand customers to invest in metering and transfer from option 3 to option 2 (and ultimately to option 1) in order to capture their higher value

**Note:** Revenue variability (due to asynchronous meter reading) needs to be managed, although variations are not directly measureable (without moving to global settlement). Compensation arrangements may need to be regulated. Measures which may help reduce (at some cost and greater management complexity), but cannot eliminate variability, may include -

- tactical placement in the network of fully metered supply points, and
- meter reading management - e.g. shorter reading cycles

System features	Option 1	Option 2	Option 3	Remarks
-----------------	----------	----------	----------	---------

## General process / management aspects

Customer registration and transfer process	NEMMCO function	<p>Compatibility with existing NMI system - whether integrated with or separate from existing wholesale market systems</p> <p>Procedures need to be more streamlined than current wholesale market arrangements with scope for automated transfer systems</p>	As for Option 2	<p>Registration can be limited to 2<sup>nd</sup> tier customers only for all options assuming</p> <ul style="list-style-type: none"> <li>• continuation of current distribution losses treatment</li> <li>• simplest form of Option 3 settlement</li> </ul> <p>If these assumptions are not met, universal registration may be appropriate.</p>
Last resort supply responsibility	Responsibility in NSW lies with the holder of the distribution licence (embedded retailer)	To be incorporated - as for Option 1	As for Option 2	
Dispute resolution	Provisions in the National Electricity Code	Disputes anticipated to be principally among retailers and settlement/registration agency - resolution based on National Code arrangements	As for option 2 - some additional scope for disputation envisaged if multiple customer classes are accommodated	Resolution of customer disputes subject to consumer protection requirements (see below)
Systems, procedures and protocols capability / integrity management	No change	Projects to be managed and overseen to ensure delivery and integrity of systems, procedures and protocols	As for Option 2	

System features	Option 1	Option 2	Option 3	Remarks
<b>Metering functions</b>				
Meter provision	Contestable for retailer (LNSP fallback)	As for Option 1 with meters to comply with common specification,	As for Option 2	The issue of meter provision and metering services can be decoupled from the retail system design and decisions made separately
Metering services (MDA)				

**Note:** It is proposed that, to facilitate effective retail supply contestability, "standard" half-hourly interval metering should be mandated for new installations as soon as practicable

System features	Option 1	Option 2	Option 3	Remarks
<b>Network losses</b>				
Calculated distribution losses	Current arrangement - Retailers are responsible for calculated distribution losses spread, using an average loss factor, in proportions of energy supplied	<ul style="list-style-type: none"> <li>As for option 1</li> </ul>	<ul style="list-style-type: none"> <li>As for option 1</li> </ul>	<p>The method of treating losses needs to be consistent over all options</p> <p><b>Note:</b> Current method of treating losses will not be sustainable as the proportion of 2<sup>nd</sup> tier customers increases</p> <p>The issue of treatment of network losses to be decoupled from the retail market system design.</p> <p>With all options, risks could be allocated more efficiently through</p> <ul style="list-style-type: none"> <li>Regional loss calculations, and</li> <li>Dynamic loss factors</li> </ul>
Distribution loss - risk of variation from calculation  (Includes - <ul style="list-style-type: none"> <li>Time based profile risk</li> <li>Weather risk</li> <li>Location-[on-network/geographic] risk</li> <li>Demand cross-correlation risk)</li> </ul>	Currently carried by local retailer(s) - responsible for demand at next-higher level fully-metered supply point (transmission supply point)	<ul style="list-style-type: none"> <li>As for option 1</li> </ul>	<ul style="list-style-type: none"> <li>As for option 1</li> </ul>	
Transmission losses	Current arrangements continue to apply			

For a sustainable treatment, network losses would be spread proportionately over retailers according to measure of responsibility. In this case

- registration of all 1<sup>st</sup> tier customers would become appropriate
- appropriate obligations are needed for distribution loss management (one proposition is for the LNSP, which is in the best position to manage network losses, to take responsibility and pass on costs to retailers as a regulated charge)

System features	Option 1	Option 2	Option 3	Remarks
<b>Functional responsibility assignment</b>				
Establishment and administration of retail market infrastructure  1. customer registration & transfer, and 2. settlement	NEMMCO function  No change	Assignment of obligation to <b>either</b>  1. NEMMCO - subject to willingness / capability; to deliver; <b>or</b> 2. Distribution licence holders (currently embedded retailers) to have obligation to ensure delivery - jointly or separately  <b>Alternatives: -</b> <ul style="list-style-type: none"> <li>• Centralised system across jurisdictions - subject to risks/costs</li> <li>• Centralised within each jurisdiction (possibly with the intention to merge after establishment of competition)</li> <li>• Decentralised to distribution district level</li> </ul>	As for Option 2	<b>Note:</b> Assignment of <b>responsibility</b> to a particular agency does <b>not</b>  <ul style="list-style-type: none"> <li>• Exclude requirements for consultation and agreement with other stakeholders, <b>nor</b></li> <li>• Imply that the agency must <b>directly</b> implement (implementation by third party agency to be considered - e.g.: contract with NEMMCO or other 3<sup>rd</sup> party agency to provide retail competition capability, <b>nor</b></li> <li>• Free the agency from the obligation to meet high-level specifications approved by government</li> </ul> <b>Note:</b> consideration of added ringfencing requirements if responsibility is assigned to distribution licence holders
Compliance with systems, procedures, protocols, and consumer protection requirements	National Electricity Code participants and NSW Electricity Supply Act licence holders	<ul style="list-style-type: none"> <li>• retail suppliers</li> <li>• LNSPs</li> <li>• Registration &amp; transfer, and settlement agencies</li> <li>• Other industry stakeholders parties</li> </ul>	As for option 2	
Other functions	No change	NEMMCO - Interface with existing wholesale market	As for option 2	

**Note: List of industry stakeholders (to be considered for other functional responsibility assignments)**

<p><b>Monopoly service providers</b></p> <ul style="list-style-type: none"> <li>• Central agency - NEMMCO</li> <li>• Distribution licence holder</li> <li>• Retail franchise supply licence holder</li> <li>• Separate regional agencies</li> </ul>		<p><b>Regulatory and quasi-regulatory agencies</b></p> <ul style="list-style-type: none"> <li>• NECA</li> <li>• Price regulator IPART</li> <li>• Other jurisdictions</li> <li>• Competition regulators - ACCC, NCC</li> <li>• National Standards Commission</li> <li>• Dispute resolution - NSW Energy Ombudsman, Code agencies</li> <li>• Appeal bodies</li> </ul>
<p><b>Contestable service providers</b></p> <ul style="list-style-type: none"> <li>• Retail suppliers - distributor, former retailer, and retailer of choice</li> <li>• Meter providers</li> <li>• MDA's</li> <li>• 3<sup>rd</sup> party service providers</li> </ul>		<p><b>NSW Government</b></p>

**Note:** Those stakeholders listed are envisaged to have functional responsibility for delivery of various aspects of competition outcomes.

It is intended that all stakeholders will have the opportunity to comment on and provide input to the design of the functional processes. Refer to page 10.

**Note:** There is a range of implementation mechanisms available regardless of where the principal functional responsibilities are assigned

- Statutory authority
- Joint venture, corporation
- Outsourcing (e.g. to NEMMCO or an independent 3<sup>rd</sup> party organisation)
- Direct action
- Other

**Note:** Wherever functional responsibility lies, regulatory interfaces will need to be established to define

- Obligations to be discharged (note: greater complexity with Option 3)
- Performance monitoring requirements
- Consultation and decision making processes
- Enforcement mechanisms
- Appeal mechanisms

System features	Option 1	Option 2	Option 3	Remarks
<b>Industry incremental functional costs</b>				
Design, development, establishment, operation	No change Some redesign of systems anticipated if the number of option 1 customers grew substantially	Customer connection point & metering registration, transfer system and settlement system \$150m (\$60-90m plus \$10-15m for each of 6 distributors) plus operating costs	Additional \$10-\$40 million for simplest option 3 plus operating costs <b>Note:</b> Option 3 costs in this analysis are additional to option 2 costs	<b>Note:</b> All costs are speculative / order-of-magnitude, pending estimates to be submitted and developed for the business case.
Transfer costs - all combinations, including transfers 1. 1 <sup>st</sup> to 2 <sup>nd</sup> tier, and 2. option 3 to option 2	No change	\$20-30 per transfer depending on systems design Meter provision - \$200 (adjusted for meter life extension if any) for transfer into option 2 Meter reading costs - est \$12pa higher than existing metering	\$20-30 per transfer depending on systems design \$30 for each out of period meter reading (not required if transfers synchronised to meter readings)	Option 3 requires out-of-period meter readings for each service termination / commencement (not essential for option 2) Transfer processes need to be simplified in comparison to current option 1, and automated

**Note:** Design, development, establishment and operation costs assume

- inclusion of a NSW centralised registration, transfer and settlement infrastructure, to avoid duplication of fully decentralised design (note however potential for savings using existing LNSP databases),
- delivery of this function on a competitively tendered basis, and
- exclusion of each distributor's separate responsibility for its own basic customer information system

Further cost savings to be secured by consolidating development across jurisdictions.

System features	Option 1	Option 2	Option 3	Remarks
<b>Other economic costs / benefits</b>				
Demand response	As for option 2	<p>Incentives to respond to price signals</p> <p>Potential for environment &amp; network management benefits - indicative value of \$40 per customer (relative to option 3)</p>	Incentive to respond to price signals is diffused.	Response to price signalling through existing controlled loads - feasible for 1 <sup>st</sup> tier customers, option 1 and 2 customers and as a variant (although with added complexity) of option 3
Cost recovery / implications of cost re-allocation	No change	<p>Recovery of <b>fixed costs</b> of competition infrastructure through residual retail supply (i.e. non-fully-metered supply)</p> <p>Economic costs of premature metering investment if meter provision costs are reallocated (also potential to inflate meter supply costs). Economic costs of churning if customer transfer cost is subsidised</p>	<p>Recovery of <b>incremental fixed costs</b> of option 3 supply infrastructure to be through option 3 and 1<sup>st</sup> tier supply</p> <p><b>Note:</b> investment lifetime likely to be shorter than for option 2 (with consequent higher unit costs or stranding risks), unless subsidised from option 2 supply</p>	

System features	Option 1	Option 2	Option 3	Remarks
<b>Customer aspect</b>				
Customer incentives	<p>Scope to extract benefits from competing suppliers</p> <p>Incentive for efficiency from scope to capture the benefits of lower-cost consumption patterns</p> <p>High fixed costs of communications and participation in the wholesale market discourage uneconomic investment in large-scale adoption of option 1</p>	<p>Scope to extract benefits from competing suppliers extended to all customers</p> <p>Incentive for efficiency from scope to capture the benefits of lower-cost consumption patterns</p> <p>Costs of meters to be recovered from option 2 customers through retailers' supply charges</p> <p>Costs of establishing and operating competition infrastructure would be recovered through supply to all non-fully-metered customers.</p>	<p>Scope to extract benefits from competing suppliers extended to all customers</p> <p>Effectively no scope to capture the benefits of lower-cost consumption</p> <p>No additional meter provision costs.</p> <p>Costs of transfer to be recovered from customers through retailers' supply charges</p> <p>Costs of added complexity and for establishing and operating additional competition infrastructure to be recovered through supply to option 3 and 1<sup>st</sup> tier customers.</p>	<p><b>Note:</b> likely shorter capital recovery time for additional option 3 investment</p> <p><b>Note:</b> if option 3 is unavailable some re-allocation of option 2 meter costs may, on balance, become justified</p>
Consumer protection	Current arrangements apply	<p>Small customer protection provisions anticipated</p> <ul style="list-style-type: none"> <li>• competition monitoring and residual supply price regulation</li> <li>• code of conduct</li> <li>• customer dispute resolution - ombudsman scheme membership</li> <li>• supply obligations and supply termination obligations are in place</li> <li>• social program delivery obligations are in place</li> <li>• systems, procedures and protocols supervision</li> </ul>	As for option 2	<p>Consumer protection - anticipated for contestable supply to small customers - can be considered separately from the retail market detailed system design (protocols will need to be consistent with consumer protection requirements)</p>

System features	Option 1	Option 2	Option 3	Remarks
<b>Other stakeholder consequences</b>				
Public generally	As for option 2	Scope for economic and environment benefits through operation of incentives for low-cost demand and supply	Little incentive to realise potential benefits of low-cost demand and supply	
Government	No change	Relatively little additional regulatory activity, once competition infrastructure is established Scope to cease supply price regulation where competition is adequate Consumer protection against improper competitive behaviour, and where competition is lacking	Additional regulatory supervision complexity Otherwise as per option 2	

## APPENDIX 2

### Bibliography

*"Development of a Conceptual Metering and Settlement Design for Full Retail Competition in the National Electricity Market"* - prepared by Putnam, Hayes & Bartlett Asia Pacific Pty Ltd and Lacuna Consulting Limited for the Metering and Retail Settlement Steering Committee of NEMMCO.

*"Contestability for Residential and Other Low Use Electricity Customers"* - prepared by SRC International Pty Ltd for the Independent Pricing and Regulatory Tribunal of NSW