行政院及所屬各機關出國報告

（出國類別：實習）

電力市場自由化之電價制度

服務機關：台灣電力公司
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行政院及所屬各機關出國報告提要

出國報告名稱： 電力市場自由化之電價制度

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出國計畫主辦機關/聯絡人/電話

出國人員姓名/服務機關/單位/職稱/電話

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自由市場可鼓勵競爭，提昇效率及降低成本；澳洲自 1990 年初即進行電業之重整，電力部門被水平分割為發、輸、配、售電部門， 其中發、售電部門已建構完全競爭市場，輸、配電部門則仍於自然獨占之產業特性下由政府管制。

澳洲於 1998 年成立國家電力市場（NEM），躉售電力之競比方式係以價及量配對方式投標，得標之邊際機組價格即為市場成交價格；輸配電服務價格則以反映各項網路服務（提出、進入、系統使用與一般服務）成本為基礎，並於政府法定收入上限（revenue-cap）之管制下訂定調整；至售電部門則於 2002.1 完全開放用戶購電選擇權（NSW）後，用戶可選擇與零售商個別議訂價格，或由原標準零售商以標準售價供應，標準售價於法定收入管制下，逐年趨近政府所訂之目標價格。

本文電子檔已傳至出國報告資訊網（http：//report.gsn.gov.tw）

目　　錄

附件一：「Transgrid's Transmission Prices (1 July 2002 to 30 June 2003)」

附件二：「EnergyAustralia Information Document—Application of Network Prices and Calculation of Usage Components」June 2002.

附件三：「EnergyAustralia Network Price List（Effective from 1 August 2002）」

附件四：「EnergyAustralia Regulated Retail and Green Tariffs（Effective from 1 August 2002）」

壹、 前言

一、研習緣起

本公司為一垂直整合之電力事業體，成本結構受到輸、配電部門規模經濟特性之影響，具有在某一範圍內呈現成本遞減之特性，並形成自然獨占之市場結構，電價之制定即在此結構及政府管制下進行。

依據國外電業經驗，電業自由化後原先垂直整合之電業結構將依水平分割，其中屬競爭市場之發、售電部門，前者通常將建構具競爭機制之批發電力市場，以競價方式進行交易，後者則開放大用戶與售電業者進入躉售市場，並開放用戶用電選擇權，售電價格由管制電價轉由協商電價；至仍具獨佔或區域獨佔特性之輸、配部門之定價方式仍於政府管制下進行，惟管制方式由原保證報酬率轉由價格上限（price-cap）或法定收入上限（revenue-cap）取代，以促使業者於管制下尋求提昇效率、降低成本。

電業自由化之目的係引進市場競爭機制，提昇電業整體經營績效，各國之市場制度皆配合其整體政治及經濟環境進行規劃，政府對市場架構重新加以規劃後，相關電價制度乃配合市場結構與制度發展方向作調整，我國行政院版電業法修正草案已送立法院審議，未來電業自由化之方式及電力市場結構雖仍未完全底定，惟事先蒐集國外電業相關電價資料及電業自由化過程中之電價制度改革經驗，將可作為本公司因應未來自由化市場之參考。

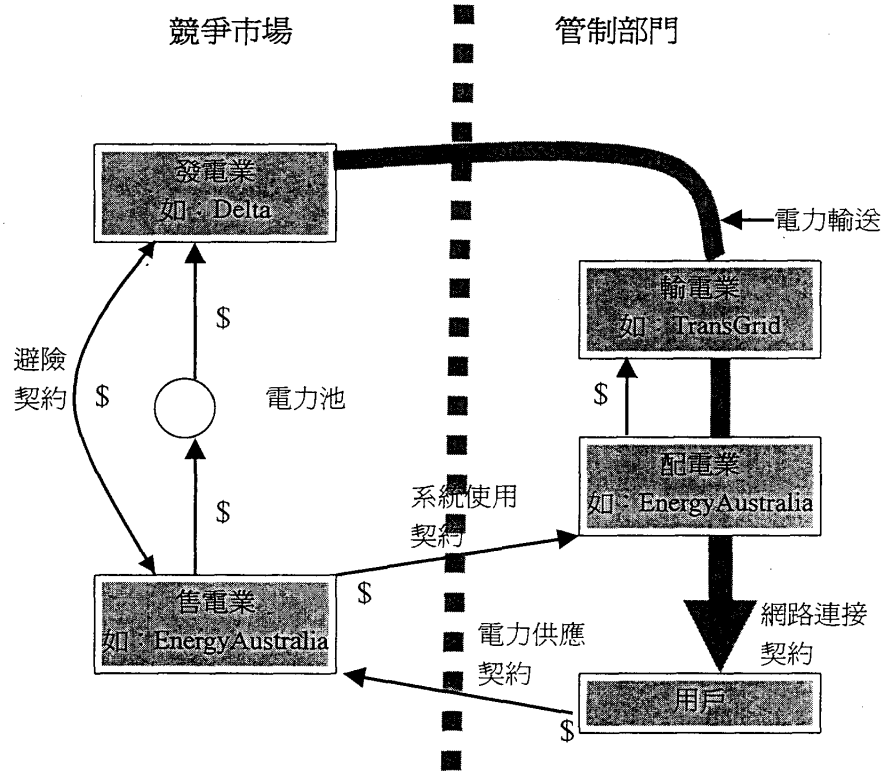
二、研習行程

配合研習主題，本次研習地點選擇發電及售電市場已進入完全競爭市場、輸配電業則仍受管制之澳洲 New South Wales（NSW），研習機構包括管理 National Electricity Market 之 National Electricity Market Management Co.（NEMMCO），及 NSW 之配售電業，包括 EnergyAustralia、AGL 等，藉由資料之蒐集，分別對躉售市場之運作及現貨價格之決定、輸配電管制與訂價方式及售電部門開放用戶選擇權後之電價制度作一概覽。

本次研習日期為九十一年八月六日至九十一年八月二十日，共計十五天。

貳、澳洲電業自由化之過程

澳州電業自 1990 年初開始進行電業之重整，電力部門被水平分割為發電、輸電、配電、售電部門，並開始進行公司化及民營化；目前發電部門於完全競爭市場下進行交易（National Electricity Market；NEM），輸配電部門則仍於產業獨占特性下受國家電力法規（National Electricity Code；NEC）管制，至售電部門亦於逐步開放用戶選擇權下進入完全競爭市場；其市場架構圖如下：



來源： EnergyAustralia Price and Service Report, 2001

整體而言，澳洲電業之自由化係以國家及地方雙軌進行，即分為國家及地方層級之改革。

一、國家層級之改革情形

由於電業過度資本化、備用電力過多、大量設備閒置等，澳洲政府於1990年由產業委員會進行電業重整之研究，屬於全國性之電業改革重要事項如下表：

時間	改革事項
1990年11月	產業委員會提出電業改革之建議，其中包括省營事業之民營化或公司化。
1991年5月	成立國家網路管理審議會，發展訂定國家電力法規。
1993年	國家競爭策略回顧報告確認包括電力、水、瓦斯等產業之重整將為澳洲經濟帶來顯著之效益。
1994年10月	國家網路管理審議會在「澳洲電力產業重整」報告中提出發展國家電力市場之過渡市場安排及目標。
1995年4月	澳洲政府審議會通過國家競爭政策之改革，即國家競爭法案，其中提供對消費者及企業權益之保護並增加競爭。
1995年4~7月	發布國家電力法規草案。
1995年9月	國家網路管理審議會提出國家電力法規之市場功能之報告。
1996年9月	國家電力法規（NEC）完成。
1997年5月	第一階段國家電力市場於South Wales、Victoria及Australia Capital Territory開始進行。
1997年10月	除了市場規則及系統安全外，所國家電力法規之管

時間	改革事項
	制事項於國家電力市場營運前由省之法規監管。
1997 年 10 月	Queensland 加入國家電力市場系統。
1998 年	依據 NEC，國家電力市場系統開始營運，完全競爭市場建構完成。
1998 年	South Australia 發電業加入國家電力市場。

二、地方層級之電業改革時程—以 New South Wales 為例

㈠結構重整：

在電力產業重整前，NSW 僅有一個電力事業單位-- Pacific Power，掌控了 NSW 發電容量及省屬之輸電資產；另 25 個配電局，其規模有達年售電量 16,000GWh（超過 1 百萬用戶），或年售電量僅 20 GWh（約 2,400 用戶）者，其中有 14 個配電局售電量皆不及總售電量之 1% 。下表為 NSW 之電業結構改革過程：

時間	改革事項
1991 年 8 月	省營獨占電力產業—NSW 電力委員會改名為 Pacific Power（PP），內部重整為六個事業單位。
1995 年	民營汽電共生廠及火力發電廠相繼加入市場。
1995 年 5 月	於 Electricity Reform Statement 宣佈電業重整政策
1995 年 10 月	25 個配電局整合為六個事業單位。
1996 年 2 月	PP 之輸電網路事業單位個別成立為輸電局（TransGrid）
1996 年 3 月	--將 PP 分割為三個發電事業單位。 --將二個發電事業單位（Delta Electricity、Macquarie Generation）、TransGrid 及 6 個配電事業單位轉為省屬公司。

時間	改革事項
1996 年 5 月	過渡時期之躉售市場開始運作。
1996 年 6 月	公告電力零售競爭政策。
1997 年 5 月	NSW 之財政部長發布將省屬電力資產民營化之聲明
1998 年 11 月	NEM 開始運作，過渡時期之躉售市場結束。
1999 年 11 月	NSW 財政部成立市場實施小組，負責零售競爭之規劃。
2000 年 8 月	Eraring Energy 從 PP 分離為一省營公司
2001 年 1 月	電價平衡基金公布實施
2001 年 7 月	合併三個配電公司為 Country Energy。

㈡零售競爭（開放用戶購電選擇權）：

自 1996 年 10 月起 NSW 政府以階段式開放用戶購電選擇權，至 1998 年幾乎有一半售電量來自競爭之之零售市場，從 2002 年 1 月起所有 NSW 之用戶可自由選擇電力供應商，開放時程如下：

時間	對象	用戶種類	戶數	累計售電量
1996 年 10	每年電力使用超過 40,000MWH 之用戶	大醫院、工廠	47	14%
1997 年 4 月	每年電力使用超過 4,000MWH 之用戶	大型商業廣場、食品加工廠	660	29%
1997 年 7 月	每年電力使用超過 750MWH 之用戶	超市	3,500	40%
1998 年 7 月	每年電力使用超過 160MWH 之用戶	素食餐館、服務站	11,000	47%
2001 年 1 月	每年電力使用超過 100MWH 之用戶	百貨公司、農場	19,000	49%

時間	對象	用戶種類	戶數	累計售電量
2001年7月	每年電力使用超過40MWH之用戶	餐廳、咖啡廳、藥局	52,000	53.5%
2002年1月	完全開放用戶選擇權	住家、不動產公	2.7百萬	100%

㈢NSW電力產業現況：

- 發電業：Delta Electricity、Macquarie Generation、Eraring
- 輸電業：Transgrid、EnergyAustralia
- 配電業：EnergyAustralia、Country Energy、Australia Inland Energy、Integral Energy
- 零售業：除4家省營配業外，尚有如Actewagl等13家電力零售商。

參、各部門之電價制度

一、發電部門（競爭市場）

㈠國家電力市場（National Electricity Market；NEM）之簡介：

國家電力市場（NEM）於1998年成立，最主要之功能為促成電力生產與供應任一階段之競爭，目前NEM以一個併聯之國家網路供應7.7百萬澳洲居民電力，該網路遍及Queensland，New South Wales, Victoria及 South Australia、Australia Capital Territory等區域；成立NEM之目的包括：提供電力用戶直接購電之選擇、無歧視使用輸配電網路、排除發電及零售市場之進入障礙、促進區域間與區域內之電力交易。NEM包含超過70多個參與者，以參與市場交易方式可分為：國家電力市場管理公司（National Electricity Market Management Company Limited；NEMCO）、發電業者、市場用戶（電力零售商、大電力用戶）、網路服務者（DNSPs、 TNSPs）。

- 國家電力市場管理公司（NEM）：依據國家電力法規，NEMMCO負責電力系統與躉售現貨市場之管理，即負責於NEM中發電業者及電力零售商間之電力交易及電力調度，NEMMCO每日依照發電業者宣告之發電容量配合其預估之需求決定是否有足夠之容量應付尖峰需求，同時需因應發電機組或輸電網路之故障而提供足夠之備用容量；NEMMCO須自負營虧，前述五大州之州政府為NEMMCO之股東，每個州政府指派代表組成NEMMCO委員會。
- 發電業者：發電業者生產並銷售電力，澳洲幾乎完全依賴化石燃料（如煤、油、氣）發電，依據其發電容量及參與NEM應負之義務，可分為四類：

◎ 市場之發電者：所有發電皆躉售於NEMMCO之現貨市場

◎ 非市場發電業者：所發電力皆於現貨市場外售於區域性之零售商或用戶。

◎ 編制內（規劃）之發電業者：個別或一群發電業者，其發電容量超過 3 萬 KW，其發電係由 NEMMCO 規劃調度。

◎ 非編制內（規劃）之發電業者：個別或一群發電業者，其發電容量介於 0.5 至 3 萬 KW 間，必需向 NEMMCO 登記。

➢網路服務者：包括

◎ TNSPs：擁有、營運並控制負責於發電端與配電網路間電力傳輸之較高電壓之輸電設備，其輸電設備容量必須向 NEMMCO 報備。

◎ DNSPs：擁有、營運並控制負責於配電中心與用戶間電力傳輸之低電壓配電網路，必須提供如地下線路建造、設備偵測及路燈等技術服務。

➢市場用戶：包括電力零售商及直接從 NEM 買電之終端用戶。

◎ 電力零售商：所有想要躉購電力者須向 NEMMCO 登記為市場用戶，在 NEM 中之每一區域皆有許多之電力零售商，零售商可由現貨市場或承諾將所有電力出售之區域零售商買電，購得之電力將被包裝並賣給終端電力使用者。有些零售商同時經營電力網路業務。零售商亦可經由所謂之「避險契約」直接向發電業者購電。

◎ 大電力用戶：年用電需量超出 1 萬瓩之電力用戶。

㈡現貨價格之決定：

澳洲電力池之競價方式僅以價和量配對來投標，而得標之最後（邊際）機組價格決定市場之成交價格。此制度之設計係反映

在一個電業自由化之市場中，其價格之決定不須經由過於複雜之競標規則，即無須規範業者之出價須反映成本或以成本為基礎，而係由市場機制決定價格之精神。

一般而言，所有電力必須透過現貨市場交易，發電業者在特定價格下提供市場不同供給量，由所有提供者提出後，NEMMCO選擇之發電者在以最具成本效率之供給配合需求基礎下發電，發電業者可依據競標規則更改標單或重新提出標單。

➢價格決定過程：

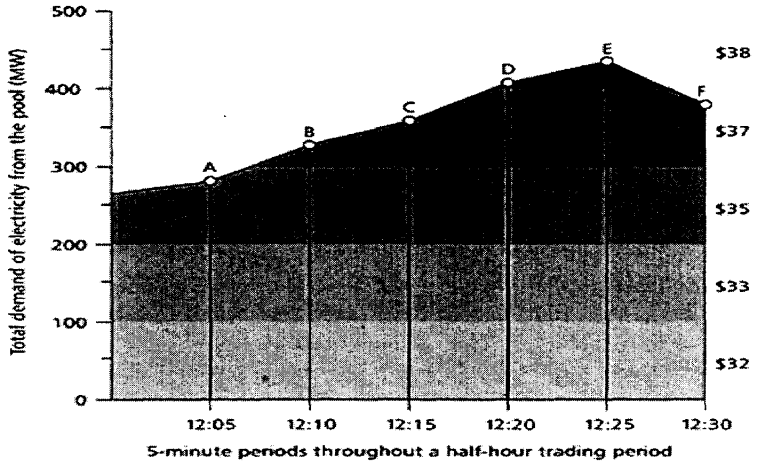
現貨市場之交易日自東部標準時間凌晨四時起之24小時，調度指令每五分鐘會送達發電業者以便規劃發電量，州與州間因其人口、工業及商業發展狀況不同；電力需求互異，一天內各時段之電力需求亦不相同，每一調度時段區間應計算價格，調度價格即每一調度區間之供電邊際成本，一般而言也就是最高標價機組之價格，每半個小時共計算六個調度價格，此六個價格將被平均作為現貨價格，每一天有48個交易之現貨價格，其他影響價格之因素尚包括併聯線路容量、系統負載、電廠故障、頻率控制、輸電事故等；現貨價格將被用來在NEM所有交易之計費依據，即發電者、電力零售業者及大電力用戶皆依該價格結算購售電費。

發電機組排程及價格計算如下例（參考圖示）：

--發電業者1、2、3、4、5之報價分別為32、33、35、37、38（AU$/Mwh）

--調度區間A、B、C、D、E、F之邊際價格分別為35、37、37、38、38、37（AU$/Mwh）

--半小時之現貨價格為(35+37+37+38+38+37)/6=37(AU$/Mwh)



來源：NEMMCO 之 WebSite

現貨價格上限明訂於國家電力法規內，價格上限為發電者於市場競標可獲取之最高價格；為使市場達到供需平衡，於供給之成本效率下排定調度之優先順序，NEMMCO 依據發電業者之標單決定那一個發電業者將被調度在那個時間發多少電，電能之提供將依價格由低往上累計直到滿足電能需求，當電力需求增加，較貴之發電業者將加入供電，惟發電規劃同時受限於兩個地區間電力併聯線路之容量，當有此種情形產生時，區域內較電力池價格為高之發電業者將發電供應此需求，這也就是區域間現貨價格差異之原因。

二、輸電及配電部門（獨佔市場）

依據澳洲電業法對輸電網路之定義，凡輸電電壓超出 66KV 者為輸電網路，以下者為配電網路，輸配電網路開放以無歧視供市場參與者使用，基於其自然獨占之產業特性，目前仍屬管制事業，輸配電費率分別由澳洲競爭及消費者委員會（ACCC）與獨立定價及管制法庭（IPART）管制。

㈠輸電網路訂價及管制(由 Australian Competition and Consumer Commission 管制；ACCC)

1. 管制方式：

依據電業法規定，ACCC 自 1999.7.1 起負責 NSW 及 ACT 輸電網路收入之管制，並以漸進方式擴大管制對象，預計於 2003.1.1 起對所有 NEM 之輸電網路採一致之管制方式。

ACCC 之管制目標為廢止獨占定價方式，提供輸電網路者合理報酬率，促進經營者降低成本提昇內部效率；管制重點為：

- 以預估管制期間服務成本為基礎建立誘因導向之收入上限（revenue cap）。
- 建立稅前架構，將稅捐視為成本之一部份。
- 考慮通貨膨脹因素，價格上限依消費者物價指數調整。
- 使用最適成本重置法訂定以資產為基礎之收入上限（AARR）。
- 效率提昇效益由業者與用戶分享。
- 每一網路業者須提出一套服務準則，其中每向準則皆須訂定一服務水準點。

➢ 以五年為一管制期間。

其管制方式為收入上限法，此上限每五年調整一次，上限之計算因素包括預期之電力需求成長、服務水準之要求、效率之提昇、資本成本、折舊、稅捐等。ACCC 針對 NSW 輸電公司 Transgrid 與 EnergyAustralia 分別訂定其 ARRR，而其每年輸電收入之成長將不得超過 CPI＋1.3%及 CPI－1.4%。

2. 輸電網路服務訂價：

在澳洲，由於其電力系統係各州自行發展之獨立系統，因此其輸電費率自然以區域計價（Regional Pricing）為機制，由於各區域間輸電瓶頸嚴重，其因壅塞引起之處理費率即有所不同，另按兩個發電廠所在地之長距離或消費者與中央調度之定點計算輸電損失，此一損失因素（Loss Factor）每年由 NEMMCO 決定，當系統壅塞產生時，中央調度軟體會自動以最低成本原則調整個別電廠所使用之線路。

輸電服務訂價明訂於 NEC 之第六章之 PART-C，其訂價步驟為：

➢ 確認輸電服務之分類：輸電服務包括提供發電業者之進入服務（entry service）、提出服務（exit service）、使用輸電網路之服務（network use of system service）及系統安全維護之一般服務（common service）。

➢ 根據服務項目之分類，將輸電業者之資產及成本分類，並將 ARRR（Aggregate Annual Revenue Requirement）依資產成本（連接服務成本、系統使用成本及一般服務成本）佔比分攤，分攤公式如下：

$$AAR_{ij} = \frac{AARR_j \times ORC_{ij}}{ORC_{ij}}$$

AAR_{ij}：第 j 種資產分類第 i 項資產分攤之法定收入

$AARR_j$：第 j 種服務之法定年收入

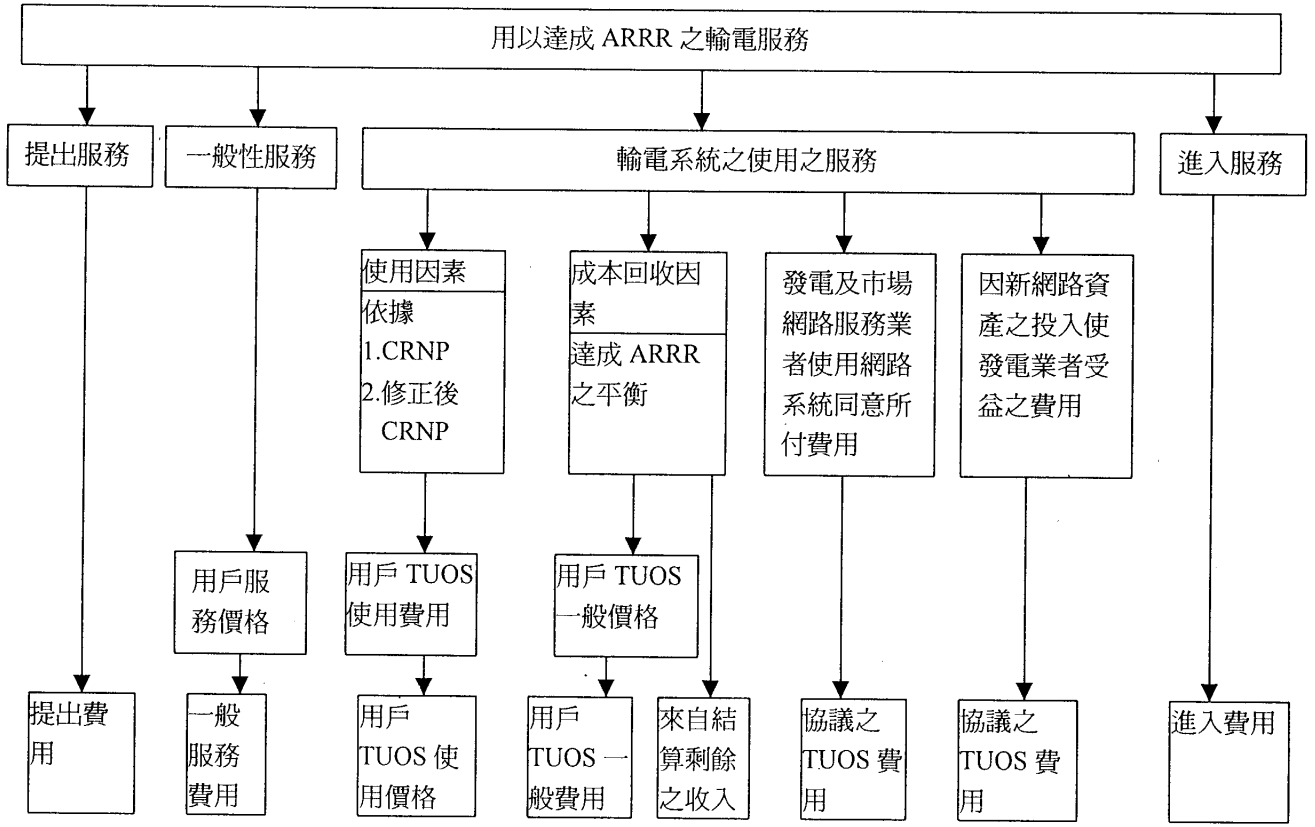
ORC_{ij}：最適之配置成本

i：第 i 類資產

j：資產之種類

- 輸電服務價格之訂定：各項服務之價格及費用必須足以回收各項分攤之成本並達成收入之目標，其訂價方式為：
  - 發電業者之進入費用係反映進入成本之固定年費用
  - 輸電用戶之提出費用係反映提出成本之固定年費用
  - 用戶使用系統價格及費用係依使用型態及使用程度訂定，其價格結構通常包括：
    --以需量為計價基礎之費率（$/KW or$/ KVA）
    --以電能為計價基礎之費率（/Kwh or /Kvah）
    --固定費用（$）
  - 一般服務價格包括依使用量計費之能量費率及依裝置容量計費之需量費用。
- 由於輸電損失是以邊際損失而非平均損失計算，因此市場交易完成後將會產生結算剩餘，此剩餘將會作為支付網路服務之提供並作為抵減網路使用費之用。

有關輸電服務種類及成本回收與訂價之關係圖如下：



來源：National Electricity Code

網路計價原則係以能回收輸電網路業者之投資、考量其投資風險並應足以鼓勵業者興建新的輸配電設備以因應未來輸電需求之增加為原則；另系統壅塞費係在尖峰時間使用數電網路所增加之額外費用，此一費用應足以鼓勵用戶移轉使用線路之時間。Transgrid 2002 之輸電網路價格如附件一

㈡配電網路訂價及管制（由 Independent Pricing and Regulation Tribural；IPART）

在國家電業法規下，IPART 負責管制配電業電價之訂定，IPART 首先決定各配電業者之收入上限（revenue cap），配電業者則將收入上限轉換為其配電網路價格。

1. 管制方式：

IPART 於 1999.12 之 NSW 配電網路管制決策中已決定各 DNSPs 之收入水準，各 DNSPs 則必須於此管制收入下，依 2001.7 生效之"Pricing Principles and Methodologies for Prescribed Electricity Distribution Services"（PPM）訂價，也就是 IPART 以收入上限（Annual aggregate revenue requirement；AARR）管制 DNSPs 之配電價格；AARR 之計算因子包括基本收入（Base revenue）及直接轉嫁成本（pass-through cost），基本收入是由營運成本、折舊及投資報酬，直接轉嫁成本原則是變動性較大且每年發生後才確認之成本，包括輸電成本（Transmission Usage of System；TUOS）、向其它配電業者收取或支付之配電費用及 GST 等。AARR 管制方式為：

- 平均配電網路價格之變動不得超出消費者物價指數之變動

（CPI），或

- 住宅用戶於與上一年相同使用量及型態情形下，估算其網路使用費用變動率全年不得超出 CPI 加 2% 或 A$30。

PPM 之主要內容為：

- 規範網路價格訂定原則（包括訂價目標、訂價原則及訂價方法）
- 提供 IPART 對於與價格上限及 PPM 規範不符之定價計畫之審核準則。
- 要求 DNSPs 每年定期發布「價格與服務之報告」，其中至少應包括：
  - 價格表
  - 提供服務之標準
  - 定價過程、方法及成本基礎
  - 價格及服務標準之中期方向

2. 配電網路服務訂價

網路價格最主要係反映提供網路服務之成本，DNSPs 最常用之方法為將 AARR 依成本項目作完全分配，並以資產使用情形將各項成本分配至各類用戶；影響價格之因素包括用戶種類（住家或商業用戶）、引接電壓、電能使用型態及使用量、計量電表種類等因素；以 NSW 之四個配電網路業者為例，其成本分攤及價格結構如下表：

配電業	成本分攤	用戶種類之劃分	電價結構
Energy Australia	·將 AARR 依資產種類或成本池分配 ·依各類用戶使用網路資產情形分配成本	·電壓別 ·電表種類 ·區域	·固定之網路連接費 ·流動電費（包括 TOU） ·需量契約基本電費（TOU）或 ·裝置契約基本電費（TOU）
Integral Energy	·分配 AARR 至資產分類（網路項目） ·依用戶分類決定成本池 ·將成本池轉換為以使用量為基礎（Kwh, Kva）之價格及電價表費率	·電壓別 ·電表種類 ·區域 ·負載型態	·固定之網路連接費 ·流動電費（包括 TOU） ·部分包括基本電費（包括 TOU） ·部分包括負載控制費率
Country Energy	·以用戶使用配電網路情形分配 AARR ·依用戶種類將成本池轉換成以使用量為基礎之網路價格	·電壓別 ·電表種類 ·區域 ·負載型態	·固定之網路連接費 ·流動電費（包括 TOU） ·部分包括 TOU 基本電費 ·部分包括負載控制費率
AIEW	·以配電服務種類分配 AARR。 ·將成本分配至九個成本池。 ·依 Kwh 使用比例將成本分配至每一電價。	·電壓別 ·區域 負載型態	·固定項目 ·流動項目 ·部分包括 TOU 項目 ·部分包括需量項目

來源："Price and Service Report for 2000/01-NSW Distribution Network Service Providers" published by IPART Sep. 2002.

NSW 之各個 DNSPs 未來之訂價策略方向如下：

- Austealia Inland Energy & Water (AIEW)

  簡化電價結構並改善成本反映機制，即減少交叉補貼及促使用戶及區域間各類電價之公平，平均價格之上升顯示成本有效反映之趨勢。

- Country Energy

  中程目標為整合北方及中央區部分網路價格，特別是都市及鄉村及商業之一般供應價格，於收入不變下，調整變動價格項目使固定價格項目將逐漸標準化，。

- EnergyAustralia

  改善價格結構提供明確之經濟訊號，包括：

  - 以價格誘因鼓勵大用戶改善負載因數。
  - 調漲商業用戶之基本電費，以促使改善用電型態。
  - 對適合用戶提供 TOU 電表，以擴大低壓時間電價之使用。

- Integral Energy

  發展以需量為基礎之電價，對用戶提供更適當之價格訊號，價格之改變包括現有電價之重整及引進包括用戶費用、基本電費與流動電費之電價結構，於 2002 年電價設計之主要特色為對中大型用戶收取尖峰電價並對中小型用戶提供時間電價。

EnergyAustralia 2002.6 提出之"Application of Network Prices and Calculation of Usage Components"如附件二，2002.7 公佈實施之配電網路電價表如附件三。

三、售電部門（競爭市場）

在2002年1月以前，尚未有購電選擇權用戶之電價係由IPART管制訂定（由 Electricity Supply Act 1995授權），在完全開放用戶用電選擇權後，用戶可選擇與現有供應商協商新的供電契約，或與新的供應商協商新契約，惟基於保護用戶之考量（用戶必須有一段時間選擇適當之契約、對於依些無協商條件之用戶-->如偏遠地區或用量很小之用戶等），用戶仍可選擇由原區域零售商（於NSW為EnergyAustralia、Country Energy、Australia Inland Energy、Integral Energy）於標準合約條款下供應電能，其電價仍由IPART管制，至其他用戶則與零售商個別議定價格。

㈠售電價格之管制及調整

IPART於2001年七月提出一份200.1.1至2004.6管制電價之報告，此報告詳細規範管制電價之訂定方式及目標價格之訂定如下：

1.目標價格之訂定：

管制價格必須以合理反映成本為原則，管制之目標價格過低，將無法促使零售商提供較佳之服務品質，且無法達成管制下之競爭效益，管制價格過高則對無談判條件之用戶不利。IPART 發展出一套可適當反映成本之定價方式並有系統地使現存之管制電價逐漸朝目標價格趨近。在此同時，競爭之零售商將透過提供加值服務等較標準電價具吸引力之產品及透過降低成本提昇競爭力。

一般而言，用戶電費帳單中約有46% 為能源成本、45% 為網路費用、9% 為售電成本，用戶通常不會收到個別成本項目

之帳單(用戶可要求於帳單中另列網路費用),零售商會將發、輸、配電成本整合納入最後之零售價格中;故目標價格所反映之成本項目如下:

項目	內容	估算依據
購電成本	長期邊際發電成本及購買再生能源之成本;約A$36~56/MWh	電價平衡基金、零售商之再生能源配比義務、發電業者應繳納NEMMCO費用及輔助服務費並參考相關之研究報告
網路費用	支付配電業者之費用	配電費由IPART決定,輸電費用則由ACCC決定,以直接轉價方式納入售電價格。
損失成本	電力輸送過程之線損成本;都市之線損率約5~6%,鄉村則為20%。 現損可分為配電損失,區域內輸電損失及區域間之輸電損失,其中區域間之輸電損失已反映於現貨價格,即包含於購電成本中。	依據NEMMCO公佈之數據。
其它費用	依NEC規定NEMMCO向零售商收取之費用(NECA及NEMMCO設置成本費用、市場用戶之一般費用)及輔助服務費用。	依據NEMMCO收費標準
零售成本及合理利潤	如計費及行銷等費用,大多為固定成本	

目標價格計算公式＝N＋R

N:使用網路成本項目;即配電網路業者向零售商收取之費用；依實計發生之費用列計。

R：零售成本項目；除網路成本外之其它成本即費用，分為固定之用戶成本及變動成本，依 IPART 提出之"Regulated retail price for electricity to 2004"報告，固定成定為 AU$37.5/年（2001 年價位），變動成本則參照都市與農村不同之損失率並反映控制負載（離峰）用電較低之能源成本訂定為：

¢/Kwh

標準供應商	都市		農村	
	標準	負載控制	標準	負載控制
EnergyAustralia	5.16	3.55	5.16	3.55
Integral Energy	5.41	3.61	5.42	3.70
Australia Inland Energy	5.87	3.96	5.86	3.95
Country Energy（以 North Power 為代表）	5.78	3.76	6.08	4.00

2.價格調整方式：

由於在 NSW 存有 500 多個管制零售電價，其中有高於或低於 IPART 設定之目標價格，為避免對用戶造成電費大幅變動，IPART 採取漸進之管制調整方式，允許業者訂定過渡時期（至 2004 年）電價，其中低於目標價格者，每年可依消費者物價指數（CPI）變動調整，但以用戶前一年相同用電型態及用電量下，其電費支出之變動不得超出：

□ 住家用戶：消費者物價指數（CPI）之變動率或 AU$25。

□ 商業用戶：消費者物價指數（CPI）之變動率加 5% 或 AU$50。

$$CPI = \frac{CPI_{Mar\ (t+1)} + CPI_{June\ (t+1)} + CPI_{Sep\ (t+1)} + CPI_{Dec\ (t+1)}}{CPI_{Mar\ (t)} + CPI_{June\ (t)} + CPI_{Sep\ (t)} + CPI_{Dec\ (t)}} \times 100\%$$

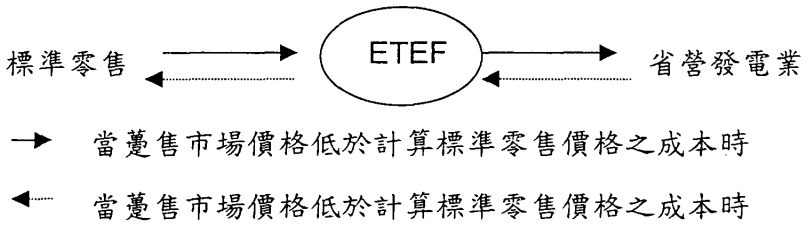
對於目前零售價格已高於目標價格者，則不得再提出提高電價，其實質電價價位則將逐年降低（名目價位不變）；各售電業者依規定於每年七月一日調整電價。EnergyAustralia 於 2002.7 公佈實施之標準零售價格如附件四。

售電市場開放競爭，短期而言，可藉由增加消費者之選擇而促進分配效率，促使加入市場之電力零售商為爭取用戶而擠壓原本之利潤空間，促使電價下降，長期而言售電市場之競爭會進一步促使業者提昇經營效率，使電價下降；澳洲因開放電力市場之競爭，於 1996 年起電價即呈下降趨勢。

㈡電價平衡基金

電價平衡基金（Electricity Tariff Equalisation Fund；ETEF）係針對提供管制電價之標準零售商因應躉售電力市場購電成本變動之風險管理，當躉售價格低於用以計算零售價格之成本時，零售商必須繳納基金，當躉售價格高於用以計算標準零售價格之成本時，則必須由 ETEF 提撥基金支付標準零售商，以確保標準零售商於管制下之報酬。以此方式可避免標準零售商因躉售價格之變動而獲得超額利潤或產生虧損之情形。

為因應因躉售價格持續上揚而基金可能短缺之情形，州政府所屬之發電業者被納入基金架構內，扮演基金補充者之角色（因躉售價格上漲而獲利），而當零售業者再度依此機制繳交基金時，ETEF 則必須提撥基金返還該等發電業者；繳交基金或受基金補貼金額之多寡視躉受價格之變動而定。其程序如下：



肆、結　論

自由市場可鼓勵競爭、提昇效率及降低成本，惟電業自由化並非一蹴可及，依國外電業經驗，需有事前之縝密規劃與完善之法令制度加以配合，才得以順利進行，此外，於自由競爭市場下，還需要適當之管制機制以避免業者以一些手段操控價格；澳洲電業自由化之過程中，除以其電業法規指導電業重整之方向及原則，完善之法令與因應不同任務而成立之專責管理機構，均為促成其電業重整順利進行之原因。

就產業特性而言，發電與售電屬於競爭性產業，而輸配電則屬於獨占性產業，競爭市場需有一套解除管制及建構競爭環境之機制，獨占市場則需有效管制程序；澳洲電力市場競爭非常激烈，係因為聯邦政府及州政府對於市場結構模式及市場運作作了極週延之規劃（如將原先幾個大發電公司分割成許多小公司互相競爭），而澳洲電力池於市場機制決定價格之原則下，競價方式僅以價和量配對來投標，同時決定市場之成交價格；另因澳洲有所多過剩之發電容量，激列競爭之結果產生低廉電價，澳洲自 1996 年起，其電價即呈逐年下降之趨勢。

澳洲之輸配電業雖仍受政府管制，惟政府係採取介於管制與競爭市場之誘因管制法（收入上限）進行管制，業者於某一收入水準下，將透過改善經營績效、提昇效率及改售電價結構以更精確反映輸配電成本方式提高利潤空間，其反映成本之輸電服務訂價方式，則可作為我國未來實施電力代輸之參考。

澳洲電力市場開放用戶購電選擇權後，無論家庭用電或商業用電皆可依其生活作息或生產特性選擇對其最有利之費率種類，為提昇競

爭力，業者必須提供更多種費率供用戶選擇，此將有助於電價費率結構之改善，此外，零售市場自由化亦提供售電業者更多誘因去發展新的、多樣化之售電服務，以滿足用戶之用電需求，同時促進電力需求面之管理（如提供整套之能源服務，如電力、瓦斯、水等）。

目前行政院版電業法修正草案已送立法院審議，初步規劃本公司仍將維持綜合電業型態之公用事業，負有供電義務，電價之訂定與調整仍於政府管制下進行，惟未來本公司勢將面臨電業自由化後開放用戶購電選擇權之競爭市場，由國外電業改革經驗，未來電力產業之產品競爭力倚賴價格優勢之情況將更為明顯，不同區域及不同用電需求與消費型態用戶間之價格差異將更為拉大，預期訂價方式將是影響銷售之主因；訂價如何合理反映各部門之供電成本，避免部門間及用戶間之交叉補貼，澳洲電業各部門之電價制度或可提供一些基本概念，如對大用戶實施即時電價、採用區域訂價法（以計價機制解決南北電源開發不均衡之情況）等，此外，提供多樣化之費率因應用戶之不同需求及套裝式之能源服務亦為未來留住用戶之基本策略。

參考資料：

1. Statement of Principles for the Regulation of Transmission Revenues , ACCC, May 1999
2. NSW and ACT Transmission Network Revenue Caps 1999/00-2003/04, ACCC, Jan. 2000
3. Regulation of NSW Electricity Distribution Networks-Pricing Principles and Methodologies for Prescribed Electricity Distribution Services, IPART, June 2002
4. Price and Service Report for 2000/01-NSW Distribution Network Service Providers, IPART, Sep. 2002
5. EnergyAustralia Price and Servicce Report.2001, EnergyAustralia, Feb. 2002
6. Regulated Retail Prices For Electricity To 2004（final report）, IPART, Jan.2001
7. Payment Rules for the Electricity Tariff Equalisation Fund, ETEMC, Jan 2001
8. Australia National Electricity Code, Chapter 6, Part C

附件一

TRANSGRID'S TRANSMISSION PRICES

1 July 2002 to 30 June 2003

All rates quoted are exclusive of Australian Goods and Services Tax (GST))

Customer Charges

Common service and general charges

These rates apply at all connection points

	Energy Rate (c/kWh)	Contract Rate ($/kW)
Common Service Charge	0.1611	7.5070
General Charge	0.2588	12.0651

Usage and Exit Charges

			Usage charge rates				
Customer	Connection Point	Exit ($/day)	Fixed ($/day)	Peak (c/kWh)	Shoulder (c/kWh)	Off-Peak (c/kWh)	Demand ($/kW/mth)
ActewAGL	CANB132A	661.54	-	0.1471	0.1471	-	0.3633
ActewAGL	QNBN066A	500.71	-	0.2356	0.2356	-	0.5712
AIEW*	BRKH022A	1842.68	-	0.9553	0.9553	-	2.2016
AIEW	BRLD022A	829.52	-	0.6717	0.6717	-	1.1263
AIEW	DENL066A	336.42	-	0.7849	0.7849	-	1.5322
* Australian Inland Energy and Water							
Country Energy	ALBU132A	490.34	-	0.2256	0.2256	-	0.5338
Country Energy	ARMD066A	1269.39	-	0.2345	0.2345	-	0.5103
Country Energy	BERL066A	1401.88	-	0.3629	0.3629	-	0.7750
Country Energy	CMBY132A	39.40	-	0.4120	0.4120	-	0.8958
Country Energy	COFF066A	1618.94	-	0.6252	0.6252	-	1.4950
Country Energy	COOM011A	502.55	-	0.5657	0.5657	-	1.0847
Country Energy	COOM066A	738.27	-	0.9443	0.9443	-	1.2769
Country Energy	COOM132A	108.07	-	0.4289	0.4289	-	0.9564
Country Energy	CWRA066A	1124.46	-	0.4934	0.4934	-	0.9579
Country Energy	DENL066A	1240.36	-	0.7849	0.7849	-	1.5322
Country Energy	DLPT132A	375.82	-	0.4170	0.4170	-	0.9246
Country Energy	DORR132A	-	-	0.5703	0.5703	-	1.1964
Country Energy	FNLY066A	651.40	-	0.8798	0.8798	-	1.2465
Country Energy	FRBS066A	1196.81	-	0.4842	0.4842	-	0.9155
Country Energy	GLEN066A	691.72	-	0.6042	0.6042	-	0.9677
Country Energy	GRIF033A	1594.98	-	0.5627	0.5627	-	1.3449
Country Energy	GUNN066A	1340.82	-	0.3153	0.3153	-	0.7326
Country Energy	INVR066A	1233.91	-	0.6024	0.6024	-	0.9685
Country Energy	KMPS033A	500.24	-	0.4296	0.4296	-	1.0273
Country Energy	KMPS066A	570.52	-	0.4296	0.4296	-	1.0273
Country Energy	KOOL066A	971.69	-	0.6565	0.6565	-	1.3835
Country Energy	LISM132A	492.41	-	0.6840	0.6840	-	1.0783
Country Energy	MOLO066A	716.61	-	0.3188	0.3188	-	0.3893
Country Energy	MREE066A	1349.58	-	0.7327	0.7327	-	1.6321
Country Energy	MRLN132A	672.14	-	0.1232	0.1232	-	0.3042

TRANSGRID'S TRANSMISSION PRICES

1 July 2002 to 30 June 2003

Customer	Connection Point	Exit ($/day)	Usage charge rates				
			Fixed ($/day)	Peak (c/kWh)	Shoulder (c/kWh)	Off-Peak (c/kWh)	Demand ($/kW/mth)
Country Energy	MUGT132A	-	-	0.3416	0.3416	-	0.7073
Country Energy	MUNY033A	694.95	-	1.9069	1.9069	-	3.0010
Country Energy	MUNY132A	-	-	0.8203	0.8203	-	1.7198
Country Energy	MURB132A	-	-	0.2308	0.2308	-	0.4274
Country Energy	MURU066A	1252.80	-	0.3607	0.3607	-	0.6057
Country Energy	NAMB066A	691.26	-	1.1912	1.1912	-	2.8483
Country Energy	NARA066A	1532.99	-	0.5257	0.5257	-	1.2304
Country Energy	ORNG066A	2127.25	-	0.2822	0.2822	-	0.6853
Country Energy	ORNG132A	105.99	-	0.2298	0.2298	-	0.6335
Country Energy	PANO066A	1421.24	-	0.2497	0.2497	-	0.5621
Country Energy	PRKS066A	580.66	-	0.4551	0.4551	-	0.9185
Country Energy	PRKS132A	128.34	-	0.3434	0.3434	-	0.9040
Country Energy	PTMQ033D	1506.49	-	0.4213	0.4213	-	0.9749
Country Energy	QNBN066A	1173.31	-	0.2356	0.2356	-	0.5712
Country Energy	SNOW066A	-	-	1.0857	1.0857	-	0.9174
Country Energy	STRD132A	-	-	0.3069	0.3069	-	0.6339
Country Energy	TARE033A	1064.55	-	0.3367	0.3367	-	0.7296
Country Energy	TARE066A	1339.90	-	0.3676	0.3676	-	0.8062
Country Energy	TENT022A	667.30	-	0.5744	0.5744	-	1.3965
Country Energy	TMWT066A	1667.33	-	0.1710	0.1710	-	0.3607
Country Energy	TUMT066A	1033.67	-	0.2507	0.2507	-	0.5609
Country Energy	WAGA066A	1819.41	-	0.2214	0.2214	-	0.5272
Country Energy	WAGA132A	120.51	-	0.2994	0.2994	-	0.5576
Country Energy	WELL132A	675.83	-	0.2694	0.2694	-	0.6394
Country Energy	WELL132T	-	-	0.4051	0.4051	-	0.7259
Country Energy	WWSS066A	364.76	-	0.1255	0.1255	-	0.3019
Country Energy	WWSS132A	120.28	-	0.1661	0.1661	-	0.3314
Country Energy	YANC033A	1262.71	-	0.4267	0.4267	-	0.9874
Country Energy	YASS066A	522.13	-	0.2266	0.2266	-	0.4826
Country Energy	YASS132A	186.18	277.65	0.2266	0.2266	-	0.4483
Energy Australia	BFLW132A	1914.34	8870.03	-	-	-	-
Energy Australia	LIDD330B	-	-	0.0558	0.0558	-	0.1088
Energy Australia	MBRK132A	1924.02	-	0.0701	0.0701	-	0.1377
Energy Australia	MUNM330C	-	-	0.1059	0.1059	-	0.2239
Energy Australia	NEWC132A	1319.85	6114.33	-	-	-	-
Energy Australia	SYDE132A	2753.30	23524.96	-	-	-	-
Energy Australia	SYDN132A	1406.72	5137.47	-	-	-	-
Energy Australia	SYDS132A	3835.36	8380.37	-	-	-	-
Energy Australia	VPPS033A	-	-	0.0854	0.0854	-	0.1768
Energy Australia	VPPS132C	1499.90	-	0.2029	0.2029	-	0.2074
Energy Australia	WWST132A	133.87	-	0.1311	0.1311	-	0.2836

TRANSGRID'S TRANSMISSION PRICES

1 July 2002 to 30 June 2003

Customer	Connection Point	Exit ($/day)	Usage charge rates				
			Fixed ($/day)	Peak (c/kWh)	Shoulder (c/kWh)	Off-Peak (c/kWh)	Demand ($/kW/mth)
Integral Energy	DAPT132A	6445.34	-	0.1283	0.1283	-	0.3360
Integral Energy	ILFT132A	-	-	0.2283	0.2283	-	0.4402
Integral Energy	INGL066A	2217.34	-	0.1369	0.1369	-	0.3209
Integral Energy	LIVP132A	2721.05	-	0.1462	0.1462	-	0.3096
Integral Energy	MRLN132A	672.14	-	0.1232	0.1232	-	0.3042
Integral Energy	MTPA066A	1160.17	-	0.1318	0.1318	-	0.2974
Integral Energy	RGVL132A	3064.37	-	0.1552	0.1552	-	0.3251
Integral Energy	SYDN132A	382.04	-	0.3029	0.3029	-	0.6216
Integral Energy	SYDW132A	9332.06	-	0.1224	0.1224	-	0.2854
Integral Energy	VINY132A	1988.77	-	0.1391	0.1391	-	0.2969
Integral Energy	WWSS066A	1376.08	-	0.1255	0.1255	-	0.3019
Integral Energy	WWSS132A	360.84	-	0.1661	0.1661	-	0.3314

Generator Charges

Generator	Name	Bus	Note	Entry Charge ($/day)
Delta	Mt Piper	MTPP023A	gen	703.01
Delta	Mt Piper 132	MTPP066A	aux	114.96
Delta	Munmorah	MUNM018A	gen	1,740.69
Delta	Munmorah	MUNM330A	aux	646.53
Delta	Vales Point	VPPS023A	gen	831.90
Delta	Vales Point	VPPS033A	aux	346.90
Delta	Vales Point	VPPS132A	aux	546.24
Delta	Wallerawang	WANG022A		1,017.97
Eraring Energy	Broken Hill	BRKH012A		88.54
Eraring Energy	Burrinjuck	BURJ007A		105.09
Eraring Energy	Eraring	ERAR023A	330 kV	1,007.94
Eraring Energy	Eraring	ERAR023B	500 kV	1,426.23
Eraring Energy	Hume	HUME011A		104.76
Eraring Energy	Kangaroo Valley	KANG016A		869.26
Macquarie Generation	Bayswater	BAYS023A		1,749.92
Macquarie Generation	Liddell	LIDD022A	gen	1,900.76
Macquarie Generation	Liddell	LIDD330A	aux	651.97

TransGrid's transmission network prices have been calculated in accordance with Chapter 6 of the National Electricity Code and in accordance with the decision by the Australian Competition and Consumer Commission on NSW and ACT Transmission Network Revenue Caps 1999/00-2003/04 dated 25 January 2000.

Charges to customers will comprise exit, usage, general and common service charges. Charges to generators will comprise only entry (connection) charges.

TRANSGRID'S TRANSMISSION PRICES

1 July 2002 to 30 June 2003

Exit Charges and Entry Charges

For each customer connection point the TransGrid assets providing exit services have been identified in accordance with the rules in the Code. The annual revenue requirement for those assets was calculated as a fixed annual amount and converted to a daily rate. A similar process was applied to calculate entry charges for generators.

Usage Charge

For each connection point, which may include supply to more than one customer, the annual revenue requirement has been determined in accordance with the Code. Of the amount to be recovered through usage prices, half will be recovered through energy prices and half through demand prices, as follows:

Energy (peak and shoulder) price:

The price is applied to the energy consumed in peak and shoulder periods with the peak period being between 07:00 – 09:00 and 17:00 – 20:00 on working weekdays and the shoulder period being between 09:00 – 17:00 and 20:00 – 22:00 on working weekdays. These times will be set on Eastern Daylight Saving Time when daylight saving is in force as, on advice from NSW distributors, this more accurately reflects the higher demand period.

Demand price:

The price will be applied to the maximum half hourly demand in each month in order to bill the customer for each connection point for that month.

Fixed price:

For some connection points where there are special circumstances a fixed price is applied as a daily rate.

General Charge and Common Service Charge

The general and common service prices are the same for every connection point in TransGrid's network.

Customers have the option of having these charges based on their historical energy consumption or on a nominated maximum demand. Customers can only choose the demand basis if they have a contract with TransGrid that provides for nomination of the maximum demand and applies substantial penalties if the demand is exceeded.

Where these charges are billed on the basis of energy, each month the energy rate will be multiplied by the total energy consumption in the equivalent invoice period in 2000-01 to determine the monthly charge. Where the energy consumption history is not available for the complete 2000-01 financial year for an individual connection point, or where TransGrid has obtained special approval from the ACCC, the energy consumption within the current billing period is to be used. TransGrid will advise customers where current data, rather than 2000-01 data is to be used.

Where the charges are billed on the basis of nominated maximum demand, the annual rate will be applied to the nominated demand and the amount adjusted for the number of days in the invoice period. If the customer's demand exceeds the nominated level, the penalty will be applied.

TRANSMISSION CHARGES – SHARED NETWORK
1 July 2001 to 30 June 2002

(All rates quoted are exclusive of Australian Goods and Services Tax (GST))

Customer	Fixed Charge $/pa	Energy Rate Cents/kWh	Demand Rate $/kW/pa
Actew AGL	10,614,903.34	0.3381	8.957527
Australian Inland Energy	2,143,271.65	0.7232	14.712179
Country Energy (Advance)	8,620,751.94	0.5222	14.571780
Country Energy (GSE)	12,746,632.14	0.5910	14.833331
Country Energy (Northpower)	21,329,438.69	0.6578	17.308654
Energy Australia	53,039,377.61	0.3026	8.387055
Integral Energy	56,392,477.08	0.3408	9.072691

TransGrid's transmission network prices have been calculated in accordance with Clause 9.16 of the National Electricity Code, a New South Wales derogation and in accordance with the final determination of the Australian Competition and Consumer Commission of 25 January 2000.

The energy rate is applied to peak and shoulder energy ***only*** with peak energy being the energy transmitted between 07:00 – 09:00 and 17:00 – 20:00 on working weekdays, and shoulder energy between 09:00 – 17:00 and 20:00 – 22:00 on working weekdays.

The average demand used for network pricing comprises an average of the following quantities:

- the ten highest half hourly demands occurring on different days in June, July and August (the winter survey period); and
- the ten highest half hourly demands occurring on different days in December, January and February (the summer survey period). The summer demand figures are scaled up (multiplied) by the ratio of the average winter demand to the average summer demand for all NSW distributors.

Further details of TransGrid's pricing can be obtained from TransGrid's Manager/Transmission Pricing who can be contacted by telephoning 61 2 9284 3252 or email chris.baker@tg.nsw.gov.au.

附件二

EnergyAustralia™

Application of Network Prices and Calculation of usage Components

Information Document

June 2002

Version 2.0 dated 20 June; 2002

Table of Contents

1 Introduction

This information document has been prepared to assist Customers, Retailers and Meter Data Agents in understanding the application of EnergyAustralia's Network Prices for the Financial year 2002/03 (FY03). EnergyAustralia Network is a business unit of EnergyAustralia and is responsible for electricity distribution in the Sydney and Hunter Areas.

The Network Price List sets out the prices to apply to consumption quantities that are read from the customer's metering instruments or estimated in accordance with the NSW metrology procedure. This document explains the calculation of chargeable quantities from the consumption data. It is recommended that this document be read in conjunction with the network price list. For more information on the applicability of Network Prices, please refer to ES 7. ES 7 is a publication of Energy Australia and describes the general requirements and conditions for Application of Electricity Tariffs.

This document illustrates how consumption data is used to calculate network charges. This guide should also assist the reader to understand the network price categories and the approach to charging for the use of network. The goals of network pricing are set out in EnergyAustralia's Price and Service Report.

All of these documents are available on EnergyAustralia's website at:
http://energy.com.au/ea/earetail.nsf/Content/Pricing_OurNetwork

Contact Details

Please direct your questions to EnergyAustralia's National Electricity Market Support group.

E-mail: nbilling@energy.com.au
Phone: (02) 9277 3539

Disclaimer

EnergyAustralia has prepared this document in good faith as a guide to assist retailers, meter data agents and customers in understanding the various components of network prices and their application. Although utmost care has been taken in preparation of this information guide, EnergyAustralia does not offer any warranty to its accuracy nor accepts any liability for any loss or damage whatsoever arising from its use. In the event of a dispute on the interpretation of this document, the interpretation of the Manager-Network Regulatory Affairs would prevail.

2 Metering data

Customers' consumption is recorded periodically by meters at their premises and charges are based on the meter registrations. Large installations are usually equipped with meters that read consumption on a half-hourly basis. These half-hourly registrations are translated into billable quantities of various charge types. This document mostly talks about application of tariffs to installations with half hourly metering.

EnergyAustralia Network bases the calculation of all consumption quantities on 30-minute data intervals. The consumption on the half-hourly intervals between *'the hour'* and *'the half hour'* are recorded as half hourly energy. Where a meter records data in 15-minute intervals, the consumption quantities in two adjacent 15-minute intervals in each *'half hour'* are added, prior to the demand component being calculated

The type of meters and their purpose can be found under metrology procedures at the website of NEMMCO: http://www.nemmco.com.au/

3 Network Access Charge

This is applied in the form of a fixed daily charge for each connection point to EnergyAustralia's network. Application of Network Access Charge (NAC) is based on the number of connection points. For any non-standard connection or special connection arrangements, EnergyAustralia Network will assess the number of NACs applicable on a case by case basis.

4 Definition of New Time Periods

Time of use energy tariffs apply different prices to energy consumed within different time periods. From 1 August 2002, the timebands for Peak, Shoulder and Off-Peak of all business Time of Use tariffs will be changed. Essentially, there is no longer a morning peak period and the evening peak period has been extended to cover late afternoon as well as the evening. The reason for this change is that the peak period needs to cover periods of high network loading, which require the network to be augmented. This is explained in more detail in EnergyAustralia's Pricing and Service Report.

The time periods applicable to energy components for various Time of Use Network Prices are given below:

4.1 Business Time of Use

The following times apply to all business Time of Use network prices.

Peak Period	**is 2.00pm – 8.00pm on working weekdays**
Shoulder Period	**is 7.00am – 2.00pm and 8.00pm – 10.00pm on working weekdays**
Off-Peak Period	**is at all other times, including weekends and public holidays**

4.2 Domestic Time of Use (obsolete)

The following times apply only to Domestic Time of Use network prices.

Peak Period	**is 5.00pm – 8.00pm on weekdays and weekends**
Shoulder Period	**is 7.00am – 5.00pm and 8.00pm – 10.00pm on weekdays**
Off-Peak Period	**is at all other times**

4.3 LV Energy40 Time of Use

Energy Australia introduced the *LV Energy40 Time of Use* Price from 1 July 2001 for low voltage electricity supplied to premises for any domestic or small business purpose where the consumption is below 40MWh per annum.

The Shoulder timeband for *"LV Energy40 Time of Use"* will be extended to include weekends from 1 August 2002.

The new time periods for *LV Energy40 ToU* are as given below:

Peak period	**is 2.00pm – 8.00pm on working weekdays.**
Shoulder period	**is 7.00am – 2.00pm and 8.00pm – 10.00pm on working weekdays and 7.00am – 10.00pm on weekends and public holidays**
Off-Peak period	**is at all other times**

This price is only available to customers who have Types 3, 4 or 5 metering installations that record the energy, consumed within the above specified time periods.

4.4 Controlled Load

This applies to electricity load that is separately metered and controlled by EnergyAustralia Network and used for operating storage water heaters, thermal storage space heaters, and other approved fixed wired appliances.

The **Controlled Load 1** is normally available for six hours between 10.00 p.m. and 7.00 am.

The **Controlled Load 2** is usually available for sixteen hours, but is not available during system peak hours

NOTE: EnergyAustralia reserves the right to vary the switching times of either of the above-mentioned loads to manage system loading conditions.

4.5 Interruptable Load

Interruptable Load is a new concept of controlled load, which is being developed and likely to be introduced in 2003/04. It will be available on application for low voltage fixed wired appliances, at an installation consuming less than 40MWh per annum. The controlled load facility will be separately metered and remotely controlled by EnergyAustralia.

This ***Interruptable Load*** option also comprises peak, shoulder and off-peak time periods similar to the ***LV Energy40 ToU*** price with discounted prices for Peak and/or Shoulder period in return for volunteering to be interrupted at times of high system loads, network constraints, etc.

The terms and conditions applicable to the "interruptable load" option are being developed. Supply of Electricity will remain available except during specified periods as stated above. This price will only be made available where EnergyAustralia approved metering and control devices are installed.

Note: All time definitions are referred in local time. Local time is Australian Eastern Standard Time (AEST) and adjusted to Daylight Saving Time (AEDST) when it is in force.

Refer to section 8 for more details.

5 Energy usage Component

The energy rates are applied to the energy usage in the predefined time periods to arrive the energy usage charges. The energy usage is the product of the demand in kW and the time in hours for which the demand applied.

6 Demand Component

The ST, HV and LV Demand Time of Use network prices include a monthly Demand charge. It is a monthly charge to a customer based on the maximum capacity of network that is used by the customer in the month.

From 1 August 2002, the method for calculating demand charges will follow a new mechanism with measurement of separate maximum demand in Peak, Shoulder and Off Peak periods. The maximum kVA demand in peak, shoulder and off peak periods is multiplied by the corresponding rate in $/kVA and the three charges added together to arrive at a total Demand Charge. This facilitates application of demand charges on individual customer demand profile in each period rather than a single charge with Off Peak discount as applied in the past.

6.1 Calculation of kVA Demand component

The monthly Demand rates are applied to the maximum half hourly kVA value in each of the Peak, Shoulder and Off Peak period for the month and then aggregated to get the total monthly demand charge.

The Maximum Demand in kVA for each month is calculated as follows:

1. For each half-hour calculate the Real (kW) and Reactive (kVAR) Power.

   1.1 Real Power (kW)

   $$Real\ Power\ kW = \frac{RealEnergy\ kWh}{hours} = \frac{RealEnergy\ kWh}{0.5} = RealEnergy\ kWh * 2$$

   Where the Real Energy kWh are measured over a *half-hour* period

NB: Real Energy is a measure of energy (in kWh) and chargeable at the corresponding energy rate as explained in Section 5.

   1.2 Reactive Power (kVAR)

   Similarly,

   $$Reactive\ Power\ kVAR = (Reactive\ Energy\ kVARh) * 2$$

   Reactive Energy is either measured by the meter or calculated as follows:

   $$Reactive\ Energy\ kVARh = |Lagging\ kVARh| + |Leading\ kVARh|$$

   Most meters will automatically perform this calculation. Where they do not, leading and lagging kVARh are stored separately and EnergyAustralia's meter Data Agent (MDA) performs the above calculation.

2. For each half hour calculate the Demand kVA

   The demand in kVA is calculated with the formula given below by using the above Real Power (kW) and Reactive Power (kVAR) figures.

   $$Demand\ kVA = \sqrt{Real\ Power\ kW^2 + Reactive\ Power\ kVAR^2}$$

   This calculation provides a kVA demand for each half-hour.

3. The maximum kVA values of Demand in each of the Peak, Shoulder and Off Peak periods are stored separately, as different demand rate will apply to each of them

4. The Peak, Shoulder and Off Peak demand rates in $/kVA are applied to the Maximum Demand in kVA for the Peak, Shoulder and Off Peak periods of the month and added together to derive the total Demand charge.

5. The Maximum Demand values are also used to determine the monthly Capacity component, as described in section 7.

For more information refer to Appendix 2.

6.2 Summation of multiple data streams

For sites with more than one connection point, the Maximum Demand is the sum of the individual monthly Maximum Demands of each connection point for that NMI. This is an 'arithmetic' summation, and is the **default calculation for Energy Australia connections**.

Coincident summation of demands involves adding together the demand values from each connection point, for each half-hour period. The maximum of the added values for the month is then picked as the Maximum Demand.

Summation of coincident demands is not normally permitted, as network charges have been formulated on the basis of arithmetic summation. In special circumstances, approval may be given for summated demand by the Manager Network Regulatory Affairs.

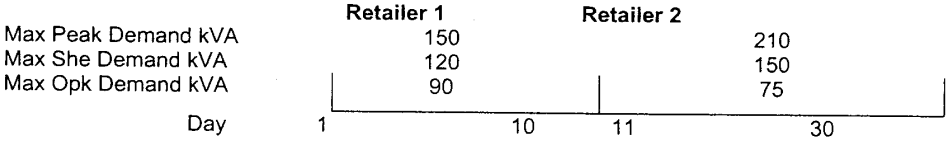
Application for coincident demand must be made in writing to the Manager Network Regulatory Affairs. A decision will be based on the network configuration.

6.3 *Calculation of kVA Demand for part months*

Where a site is transferred to a retailer during the month and billed for part of the month by the both retailers, the demand charge is applied for the period billed by each retailer. As shown in Section 6.1, the Maximum Demand is calculated but is pro-rated, based on the number of days to which it is applicable:

$$Chargeable\ Demand\ kVA = Maximum\ Demand\ kVA * \left(\frac{number\ of\ days\ applicable}{number\ of\ days\ in\ the\ month} \right)$$

For example, if a customer changes retailer on the 10th day of a 30-day month, the chargeable demand for each retailer is calculated as follows:



Chargeable Peak Demand	= 150*(10/30) = 50kVA	= 210*(20/30) = 140kVA
Chargeable Shoulder Demand	= 120*(10/30) = 40kVA	= 150*(20/30) = 100kVA
Chargeable Off Peak Demand	= 90*(10/30) = 30kVA	= 75*(20/30) = 25kVA

Retailer 1 is charged for 50kVA, 40kVA and 30kVA respectively for peak, shoulder and off peak periods. Retailer 2 is charged for 140kVA, 100kVA and 25kVA respectively.

The customer is effectively charged 190kVA, 140kVa and 55kVA in total in the month of the transfer, less than the actual maximum demand of 210kVA, 150kVA and 75kVA.

Please note this procedure also applies to capacity charges but with minor variation– more details in section 7.7

7 Capacity Component

On 1 July 2000, the ST, HV and LV Demand Time of Use network prices were modified to include both a monthly Maximum Demand component and a monthly capacity component. The capacity charge is based on the maximum demand registered in the preceding months. The LV kW Capacity Time of Use network price has only a monthly kW capacity component. The capacity charge is intended to recover the cost of providing capacity of network that needs to be kept available to serve the customer. This ***"chargeable maximum demand in the current and preceding months"*** is termed 'Capacity Value'.

Each peak, shoulder and off peak capacity value is subject to a reset on 1st of July each year. The reset value is the maximum monthly kW or kVA demand recorded in the previous financial year. Hence, the chargeable capacity value for a particular month is the greater of the reset value, or the maximum demand recorded (including the current month) since the last reset.

With the introduction of separate demand charges for the peak, shoulder and off peak periods from 1 August 2002, capacity charges will also follow the same time bands. There will be separate peak, shoulder and off peak capacity charges applied to the capacity values for the peak, shoulder and off peak periods since reset.

As there is no history of peak, shoulder and off peak capacity values, the capacity charge for all existing customers on demand/capacity network prices will be reset to the August 2002 demands. All customers who are subsequently placed on these Network Prices will have their first month demands as their start up capacity values. Irrespective of the starting date on these network prices the subsequent reset date remains same for all at 1st of July each year.

For more information, refer to Appendix 3

The capacity values are generally measured in kVA, unless metering does not provide this data, in which case kW is used as a substitiute.

7.1 Calculation of kW Components

To calculate kW from kWh:

$$kW = \frac{kWh}{h}$$

Where the kWh is measured over a half-hour period:

$$kW = \frac{kWh}{1/2} = kWh * 2$$

The same Maximum Demand values are used to determine the monthly Capacity components.

7.2 Calculating the Capacity Values

The Capacity Values for peak, shoulder and off peak periods are reset annually (on 1 July) to the Maximum Demand recorded during the previous financial year. All three Capacity Values

will be increased each month (ie. they ratchet) where they exceed the previous annual Capacity values. The new maxima will be used from that month onwards until another month exceeds any of the figures. There are no cross-references between the Peak, Shoulder and Off Peak demands. All three are individually assessed and applied.

Table 1 illustrates the sequence of events and application of capacity charge for one measured element of the capacity value calculation. (Eg: Peak)

The financial year capacity is updated each month – but no charge is applied. The value of the financial year capacity at the end of June is carried over to the next financial year as the reset capacity value

The Capacity Value is updated each month. The capacity charge rate is applied to the capacity value each month

Month	Demand value Required for calculation	Calculation for Financial Year Capacity Value	Financial Year Capacity (kVA or kW)	Calculation for Capacity Value	Capacity (kVA or kW)
End of Financial Year					
Reset02/03 = YTDJun2002					
Jul 2002	Reset02/03 July2002	= July2002	YTDJul02	**Maximum of (Reset02/03,Jul02)**	CapJul02
Change of Network prices – Aug2002					
Aug 2002	Aug2002	=Aug2002	YTDAug2002	=Aug2002	CapAug02
Sep 2002	CapAug02 Sep2002	Maximum of (YTDAug02, Sep02)	YTDSep02	Maximum of (CapAug02,Sep02)	CapSep02
Oct 2002	CapSep02 Oct2002	Maximum of (YTDSep02, Oct02)	YTDOct02	Maximum of (CapSep02,Oct02)	CapOct02
:	:	:	:	:	:
Jun 2003	CapMay03 Jun2003	Maximum of (YTDMay03, Jun03)	YTDJun03	Maximum of (CapMay03,Jun03)	CapJun03
End of Financial Year					
Reset03/04 = YTDJun2003					
Jul 2003	Reset03/04 July2003	= July2003	YTDJul03	**Maximum of (Reset03/04,Jul03)**	CapJul03
Aug 2003	CapJul03 Aug2003	Maximum of (YTDJul03, Aug03)	YTDAug03	Maximum of (CapJul03,Aug03)	CapAug03
Sep 2003	CapAug03 Sep2003	Maximum of (YTDAug03, Sep03)	YTDSep03	Maximum of (CapAug03,Sep03)	CapSep03
Oct 2003	CapSep03 Oct2003	Maximum of (YTDSep03, Oct03)	YTDOct03	Maximum of (CapSep03,Oct03)	CapOct03
:	:	:	:	:	:
:	:	:	:	:	:

Table 1 Calculation of Capacity value

For more information, refer to Appendix 3

Similarly, Shoulder and Off-Peak rates apply to their respective capacity values as well. To enable this, the Peak, Shoulder and Off Peak Capacity Values and the stored financial year Capacity Values are provided for peak, shoulder and off-peak time periods.

7.3 Calculating the Capacity Charge

The capacity charge for each month is calculated as follows:

kVA Capacity Charge

$$Capacity\,Charge = (kVAp * C_P + kVA_S * C_S + kVA_{OP} * C_{OP})$$

Where

kVA_P is the Maximum Capacity during peak periods as determined for the month (as the result in the Capacity value column in Table 1);

kVA_S is the Maximum Capacity during shoulder periods as determined for the month (result in the Capacity value column in Table 1 as shown for Peak);

kVA_{OP} is the Maximum Capacity during off-peak periods as determined for the month (result in the Capacity value column in Table 1 as shown for Peak);

C_P is the peak capacity rate in $/kVA/month,

C_S is the shoulder capacity rate in $/kVA/month and

C_{OP} is the off-peak capacity rate in $/kVA/month.

kW Capacity Charge

$$Capacity\,Charge = (kW_P * C_P + kW_S * C_S + kW_{OP} * C_{OP})$$

Where

kW_P is the Maximum Capacity during peak periods as determined for the month (as the result in the Capacity value column in Table 1);

kW_S is the Maximum Capacity during shoulder periods as determined for the month (result in the Capacity value column in Table 1 as shown for Peak);

kW_{OP} is the Maximum Capacity during off-peak periods as determined for the month (as the result in the Capacity value column in Table 1);

C_P is the peak capacity rate in $/kW/month,

C_S is the shoulder capacity rate in $/kW/month and

C_{OP} is the off-peak capacity rate in $/kW/month.

7.4 Reset of Capacity Charge

The default date for the annual reset of the Capacity charge is 1 July. However, EnergyAustralia will consider resetting the capacity charge in the following circumstances:

- Where a customer has implemented a demand management initiative which will permanently reduce the peak demand in any of the Peak, Shoulder and Off Peak periods at the installation, such as the installation of power factor correction; or

- Where an increase in the capacity charge has been caused by a change to the network configuration initiated by EnergyAustralia;

A customer wishing to apply for a reset of the capacity charge should make an application to EnergyAustralia's National Electricity Market Support group. Contact details are provided in Section 1.

7.5 Retail Transfers

When a customer transfers, the following historical information will be required by the new retailer to replicate the capacity calculations:

- *Last charged Capacity values* for Peak, Shoulder and Off Peak

If those *Capacity* values not surpassed subsequently, then the incumbent retailer need to check again for the new reset values at the next due date for reset. If any of them has been surpassed subsequently the new higher value would be the reset value for the next financial year.

All three Capacity values for Peak, Shoulder and Off Peak reset on 1st of July each year.

This information can be sourced from the National Electricity Market Support group of EnergyAustralia - for contact details refer to Section 1.

7.6 Price Category Changes

Where a customer changes price category, the capacity value and the financial year capacity value will have no historical values, unless the transfer is within a similar price category group (as given in Table 2). When the transfer is within a similar price category group the existing capacity and financial year values are retained.

Price Category	Price Names	Network Price Numbers
LV kW Capacity	LV kW Capacity ToU (System) LV kW Capacity ToU (Substation)	290 291
LV Demand	LV kVA Demand ToU (System) LV kVA Demand ToU (Substation)	310 320
HV Demand	HV Demand ToU (System) HV Demand ToU (Substation)	370 380

Table 2 Tariff Group

For more information see Appendix 2.

7.7 Calculation of kVA Capacity for part month

Where a site is transferred to a retailer part way through a month and billed for part of the month by the both retailers, the capacity charge is still applied for the period billed by each retailer on pro rate. As shown in Section 6.1 for demand calculations, the capacity charge is also calculated and pro-rated, based on the number of days to which it is applicable:

$$Chargeable\,Capacity = Capacity\,Value * \left(\frac{number\,of\,days\,applicable}{number\,of\,days\ \ in\,the\,month} \right)$$

The last known capacity value is passed on to the new retailer who would follow the capacity value calculation for the rest of the month in accordance with the capacity charging mechanism. If there is a higher demand observed in the second part month it will be used to update the capacity value and charges will be based on it for the second period. The first period however, would have been billed on the old value.

8 Daylight Saving Time

The time periods defined in Section 4 relate to local time. Local time is Eastern Standard Time except when Daylight Saving Time is gazetted by NSW Government for use as local time.

Where customers have code compliant meters installed, half-hourly data is forwarded to EnergyAustralia's Meter Data Agent (MDA). The MDA stores all data in Eastern Standard Time (EST). During the period that daylight saving operates, EnergyAustralia's MDA converts the customer's energy consumption to local time for the purpose of calculating consumption quantities in each period. This involves shifting the data forward by 1 hour. When daylight saving ends, the data is shifted back by 1 hour so that it aligns with EST.

Reference: New South Wales Government Website:
http://www.lawlink.nsw.gov.au/crd.nsf/pages/time1

Example of the data shifting process during Daylight Saving Time and the effect on customers:

Eastern Standard Time	Local Time during Daylight Saving	Billing Implications
6:00 – 6:30am	7:00 – 7:30am	This ½ hour now falls into the Shoulder Period rather than Off-Peak Period

For more information see the Appendix 4.

9 Public Holidays

EnergyAustralia Network has defined all consumption in gazetted NSW public holidays as Off-Peak periods with the exception of *LV Energy40 ToU.*

On public holidays, LV Energy40 ToU and Interruptable Load prices will have 7:00 am – 10:00 pm as shoulder period from 1 August 2002.

For the list of public holidays please refer the NSW Department of Industrial Relations website: www.dir.nsw.gov.au/misc/pubhols.htm

10 Application of Distribution Loss Factor

Each Network price category is allocated a Distribution Loss Factor (DLF). Network prices are charged on the metered quantities and are not subject to DLF. However, it is the responsibility of Network businesses to determine and publish DLFs.

The DLFs are used by retailers in the energy trading and market settlement process to account for electrical losses in the distribution network. The DLF varies depending upon the point and voltage of customer's connection.

Similarly, Transmission Loss Factors are also used in the market settlement of energy to take account of electrical losses in the transmission network.

Appendix 1 Three Rate Demand and Capacity

The Three-Rate Demand structure applies a time-of-use dimension to the Capacity and Maximum Demand component of the Network Price.

The Three Rate Demand and Capacity prices are designed to communicate to customers the relative value of network capacity at different times of day. This is to encourage customers to shift their usage pattern towards the off-peak period to attain a financial benefit or to pay a fair share for their contribution to network costs, which is primarily driven by the capital requirements for infrastructure enhancement to handle the peak load.

Customers can make significant savings if their Maximum Demand and/or Maximum Capacity occur in the off-peak period and the general load in the Peak & Shoulder periods are maintained at lower levels. The application of the Three Rate Demand and Three Rate Capacity structure will not adversely affect customers whose Maximum Demand occurs in the peak period. As the total payable demand charges are the aggregation of Peak, shoulder and Off Peak demand charges. The benefit of the Off Peak discount is thus received by all.

Availability

The Three Rate demand and Capacity will be applied to all customers where appropriate metering exists and who were previously on tariffs that have Demand /Capacity components.

Definitions

kVA_P	Maximum Demand recorded in the Peak period
kVA_S	Maximum Demand recorded in the Shoulder period
kVA_{OP}	Maximum Demand recorded in the Off-Peak period
D_P	Demand rate applying to the Peak period
D_S	Demand rate applying to the Shoulder period
D_{OP}	Demand rate applying to the Off-Peak period
$\$D_P$	Demand charge calculated for the Peak period $= D_P * kVA_P$
$\$D_S$	Demand charge calculated for the Shoulder period $= D_S * kVA_S$
$\$D_{OP}$	Demand charge calculated for the Off-Peak period $= D_{OP} * kVA_{OP}$

Structure

The structure of the energy rates and network access charge (see section 2) remains basically unchanged other than the shift in timesplits for energy rates. The variation in structure is restricted to the Demand and Capacity components.

- Maximum Demand is recorded separately for the peak, shoulder and off peak periods,
- Separate rates apply for the peak, shoulder and off peak periods. The Off-Peak rate is less than the Shoulder and Peak rates, $D_{OP} < D_S < D_P$.
- Three separate Demand charges are then calculated,
- All three peak, shoulder and off peak charges are then aggregated to obtain the total demand charges.

	Maximum Demand	Rate	Calculation of Charge
Peak	kVA_P	D_P	$\$D_{PS} = kVA_P * D_P$
Shoulder	kVA_S	D_S	$\$D_{PS} = kVA_S * D_S$
Off-Peak	kVA_{OP}	D_{OP}	$\$D_{OP} = kVA_{OP} * D_{OP}$
Total Demand Charges			$\$D_{total} = kVA_P * D_P + kVA_S * D_{S+} kVA_{OP} * D_{OP}$

The example given above is for kVA demand, but they are equally valid for kVA capacity and kW capacity calculations.

Appendix 2 Demand Calculation

This appendix describes the standard method of demand calculation that applies to the demand component of Demand Time of Use prices contained in EnergyAustralia's Network Price List. This method of demand calculation has been in use since February 1994. It applies to almost all large customers.

1. Definitions

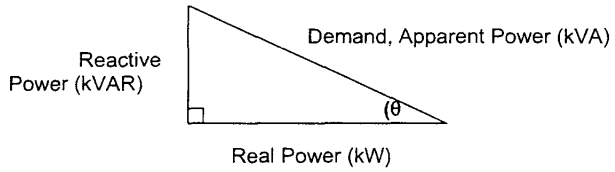
The Demand charge is based on the Apparent Power (ie: kVA) and the Apparent Power is generally referred as Demand in NSW. The relationship between all three demands is better explained by the power triangle.

Demand Component	Measurement Units
Real Power	kW
Reactive Power	kVAR
Apparent Power	kVA

2. Power Triangle - Power Factor

This diagram shows the power triangle. It is a graphical representation of the relationship between Demand, Real Power and Reactive Power. The power factor is given by the real power to apparent power 'cosine' ratio.

Power Triangle



Power factor = $\cos\theta$ = Real Power/Apparent Power

The real power is proportional to the work done. A low power factor means high apparent power if the real power to remain same.

3. Demand Principle

A customer's demand is a measure of the capacity which must be provided by the network. That demand has two components, termed real and reactive. The real power is that which performs useful work, such as providing heating and motion. The reactive component is necessary for the flow of real power, and is part of the total demand upon the supply system. Reactive power may be likened to the head on a glass of beer – it is essential for a satisfactory result, but consumes valuable space within the glass.

Energy (kWh) is a measure of electricity consumption, or "throughput" in terms of actual work done - Real Energy. Energy does not take into account the customer's power factor.

The Maximum Demand for a month is a measure of the largest capacity used by the customer in any half-hour period. Since the electricity network required to serve the customers' Maximum Demands, it is prudent to apply usage charges based on it. However, in the past the customers those who had their maximum demand occurred in Off Peak period were given a discount in comparison to their usage in peak period. In the new structure, separate demand charges for the maximum demands in Peak, Shoulder & Off peak periods are introduced. This provides more explicit discount for use in off peak period and it would be available irrespective of their maximum demand in Peak and Shoulder periods.

As the Demand takes into account a customer's power factor. Customers with poor power factors will see higher Maximum Demand charge components in the overall charges.

4. Demand Calculation

The chargeable demand is the square root of the addition of *the square of the real power* and the *square of the reactive power*, as measured over a fixed half-hour period. The reactive energy is the addition of the absolute value of lagging VARhs and the absolute value of leading VARhs.

For each half-hour calculation of the real (kW) and reactive (kVAR) power as follows:

$$Real\ Power\ kW = (RealEnergy\ kWh) * 2$$

Real Energy is measured by the meter and generally known as electricity consumption

$$Reactive\ Power\ kVAR = (Reactive\ Energy\ kVARh) * 2$$

Réactive Energy is either measured by the meter or calculated as follows:

$$Reactive\ Energy\ kVARh = |Lagging\ kVARh| + |Leading\ kVARh|$$

Most meters will automatically perform this calculation. Where they do not, leading and lagging kVARh are stored separately, and EnergyAustralia's MDA performs the calculation.

For each half-hour in the peak, shoulder or off peak period the calculation of the Demand kVA as follows:

e.g: for Peak Demand kVA

$$Demand\ kVAp = \sqrt{Real\ Power\ kWp^2 + Reactive\ Power\ kVARp^2}$$

and similarly,

$$Demand\ kVAs = \sqrt{Real\ Power\ kWs^2 + Reactive\ Power\ kVARps^2}$$

for shoulder demand and ,

$$Demand\ kVAop = \sqrt{Real\ Power\ kWop^2 + Reactive\ Power\ kVARop^2}$$

for off peak demand.

Suffix 'p' for demand or power in peak periods and 's' for shoulder and 'op' for off peak.

The peak, shoulder or off peak demand rates are applied to the each Maximum Demand kVA of the respective period calculated for the month.

Appendix 3 Capacity Charge

The diagram below is an example of a customer's maximum demand within the **peak,** each month over five years. In this example the two features of the capacity charge are shown:

- Monthly review of capacity charge (ratcheting)
- Annual reset of capacity.

The bold line shows the capacity value to which the capacity charge would apply. During each financial year, when a monthly Maximum Demand (Either Peak or Shoulder or Off Peak) exceeds the capacity value, the line ratchets up (these are the months labelled "New **Peak**").

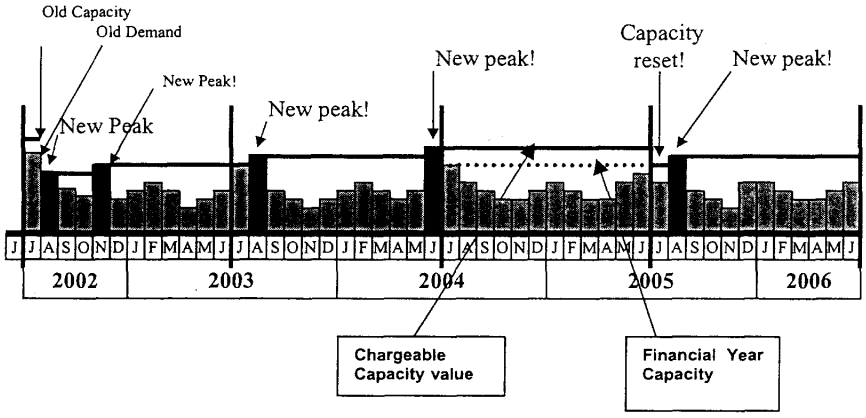
At the end of each financial year the capacity value is reset to the Maximum Demand in the year – this is shown by the "Reset" line.

When the new Price Structure is introduced in August 2002, the default capacity value will be the Maximum Demand for August 2002 irrespective of July 2002 demands or previous demands.

In November 2002, the capacity value ratchets up because there is a new peak. The November 2002 value is also the highest in the financial year (leaving out the July2002), so at 1 July 2003 the capacity value is reset to that level.

In 2003/2004 the capacity value ratchets up twice. The June 2004 value is the highest in the financial year, so at 1 July 2004 the capacity value is reset to that level.

In 2004/2005 the capacity value does not ratchet up. Each Maximum Demand is lower than the capacity value. The highest Maximum Demand for the financial year is July 2004. On 1 July 2005 the capacity value is reset to the July 2004 level. The effect of the capacity reset is to lower the capacity value.



Appendix 4 Daylight Saving Time

The time periods defined in EnergyAustralia's Network Price list and ES7 apply to local time in New South Wales. Local time is the same as Daylight Saving Time while it is in operation, and for the rest of the year, local time is the same as Eastern Standard Time.

EnergyAustralia's network prices are structured to follow the local time, whether that is Australian Eastern Standard or Daylight Savings time.

Customers on non-Time of Use network prices are not affected by Daylight Saving Time (DST). Customers on Time of Use network prices, but without code compliant meters installed, have their meters programmed to adjust automatically to DST.

Where customers have joined the contestable market and have code compliant metering, half hourly energy consumption data is forwarded to EnergyAustralia's Meter Data Agent (MDA). For the period that DST operates MDA converts the customer's energy consumption to local time for the purpose of calculating consumption in each time period. MDA stores all data in Eastern Standard Time (EST).

Start and End of Daylight Saving Time

Reference: New South Wales Government Website
http://www.lawlink.nsw.gov.au/crd.nsf/pages/time2

The following convention is used in NSW.

Start: Daylight Saving Time (DST) begins at 2am Eastern Standard Time (EST) on the last Sunday in October. Therefore at 2am EST the clocks are put forward by one hour. The time then becomes 3am DST.

During Daylight Saving, Local time in New South Wales is one hour in advance of Eastern Standard Time.

Finish: Daylight Saving Time ends at 3am DST on the last Sunday in March. Therefore at 3am DST the clocks are put back by one hour. The local time then goes in line with 2am.EST.

Example 1: The day Daylight Saving Time commences

The month of October will have 1 less hour in Local Time calculations. Where the hour is shown, for example, "1am", this is to be read as the hour ending at 1am.

EST	kW	Local Time	kW
1 am	125	1 am	125
2 am	130	3 am	130
3 am	135	4 am	135
4 am	140	5 am	140
5 am	145	6 am	145
6 am	150	7 am	150
7 am	150	8 am	150
8 am	165	9 am	165
9 am	170	10 am	170
10 am	185	11 am	185
11 am	190	12 p.m.	190
12 p.m.	195	1 p.m.	195
1 p.m.	200	2 p.m.	200
2 p.m.	210	3 p.m.	210
3 p.m.	200	4 p.m.	200
4 p.m.	190	5 p.m.	190
5 p.m.	185	6 p.m.	185
6 p.m.	180	7 p.m.	180
7 p.m.	175	8 p.m.	175
8 p.m.	160	9 p.m.	160
9 p.m.	150	10 p.m.	150
10 p.m.	145	11 p.m.	145
11 p.m.	130	12 am	130
12 p.m.	125	1am	125

Assuming Daylight Saving Time commences. 1 hour lost (2-3am) on the day the change occurred. Only 23 hours in the day in Local Time are recorded and an hour shifted backwards until adjusted at the end of the summer.

The last hour of the day in EST becomes the first hour of the following day in Local Time (DST)

Example 2: The day Daylight Saving Time ends

The month of March will have 1 extra hour in Local Time calculations.

EST	kW	Local Time	kW
12 am	120	1 am	120
1 am	125	2 am	125
2 am	130	3 am	130
3 am	135	3 am	135
4 am	140	4 am	140
5 am	145	5 am	145
6 am	150	6 am	150
7 am	150	7 am	150
8 am	165	8 am	165
9 am	170	9 am	170
10 am	185	10 am	185
11 am	190	11 am	190
12 p.m.	195	12 p.m.	195
1 p.m.	200	1 p.m.	200
2 p.m.	210	2 p.m.	210
3 p.m.	200	3 p.m.	200
4 p.m.	190	4 p.m.	190
5 p.m.	185	5 p.m.	185
6 p.m.	180	6 p.m.	180
7 p.m.	175	7 p.m.	175
8 p.m.	160	8 p.m.	160
9 p.m.	150	9 p.m.	150
10 p.m.	145	10 p.m.	145
11 p.m.	130	11 p.m.	130
12 am	125	12 am	125

Assuming Daylight Saving Time finishes, one hour is gained.
25 hours in Local Time on the day time charged.

Network Price List *(excludes GST)*

EnergyAustralia™

ABN 67 505 337 385

Effective from 1 August 2002

Network Use of System Prices

Network Price No.	Network Price	DLF	Network Access Charge ¢/day	Network Energy Rates				Monthly Demand Rates			Monthly Capacity Rates		
				Non ToU ¢/kWh	Peak ¢/kWh	Shoulder ¢/kWh	Off-Peak ¢/kWh	Peak $/ mth	Shoulder $/mth	Off-Peak $/mth	Peak $/ mth	Shoulder $/mth	Off-Peak $/mth
10 & 210	**Domestic** *	**1.05410**	**11.40**	**3.790**									
25	**LV Energy40 ToU**	**1.05160**	**16.90**		**7.870**	**1.920**	**0.520**						
27	*Interruptable Load*	1.05160	16.10		5.900	1.440	0.520						
30 & 250	Controlled Load 1	1.05410	1.10	0.520									
40 & 260	Controlled Load 2	1.05410	1.10	2.050									
401	Public Lighting	1.0733		2.570									
402	Constant Unmetered	1.0504		3.120									
50 & 270	LV Business non-ToU *	1.05160	33.90	3.790									
290	LV Business ToU (System) *	1.05160	153.20		6.960	3.560	1.390						
291	LV Business ToU (Substation) *	1.03390	107.90		6.960	3.560	1.390						
302	**LV KW Capacity ToU (System)** #	**1.05160**	**136.3**		**3.560**	**2.470**	**1.130**				**1.00**	**0.56**	**0.19**
303	LV KW Capacity ToU (Substation) #	1.03390	99.70		3.560	2.470	1.130				1.00	0.56	0.19
310	**LV KVA Demand ToU (System)**	**1.05160**	**156.20**		**2.120**	**1.260**	**0.590**	**1.22**	**0.81**	**0.32**	**1.08**	**0.68**	**0.26**
320	LV KVA Demand ToU (Substation)	1.03390	123.80		2.120	1.260	0.590	**1.22**	**0.81**	**0.32**	**1.08**	**0.68**	**0.26**
350	HV Business ToU	1.02220	413.00		6.800	3.910	1.060						
370	**HV Demand ToU (System)**	**1.02220**	**407.90**		**1.690**	**1.020**	**0.510**	**0.99**	**0.64**	**0.21**	**0.91**	**0.54**	**0.17**
380	HV Demand ToU (Substation)	1.01650	407.90		1.690	1.020	0.510	0.58	0.31	0.08	0.50	0.25	0.06
390	ST Demand ToU	1.00960	469.80		1.340	0.840	0.460	0.52	0.28	0.07	0.44	0.25	0.06
	Contract - above 10 MW	CRNP											

1. Prices marked * are only available to customers who do not have a Type 5 meter or above (as per the National Electricity Code).
2. The monthly capacity rates for prices marked # are in $/kW/month.
3. The time periods for the LV Energy40 ToU and Interruptable Load prices are different to the other time of use prices. Refer to the price category section for details.
4. Prices highlighted in **BOLD** print are **default prices**:

Domestic price applies to domestic customers consuming less than 10MWh pa.
LV Energy40 ToU price applies to customers consuming between 10MWh and 40MWh pa.
KW Capacity ToU prices apply to customers consuming between 40MWh and 735MWh pa.
Demand ToU prices apply to customers consuming 735MWh pa & over.

附件二

Definitions

Supply Voltages EnergyAustralia reserves the right to determine the voltage at which supply shall be made available to any particular customer. The general voltage levels referred to in the prices are:

Low Voltage (LV)	nominally 240/415 V
High Voltage (HV)	nominally 5, 6.6, 11 or 22 kV
Subtransmission (ST)	33 kV and above.

Distribution Loss Factor (DLF) This factor is used by retailers in the market to account for losses in the distribution network. The energy consumed by the customer is increased by an average energy loss factor (DLF) which can be expressed as a percentage (e.g. 5.16%) or a factor (e.g. 1.05160). The distribution loss factor does not include the Transmission Loss Factor used in NEMMCO's market settlements to account for transmission network losses.

Network Access Charge (NAC) This is a fixed charge (¢/day) applied to each connection point at which EnergyAustralia's energy or demand/energy is measured/recorded. A separate NAC may be applied to each connection point and their associated metering point/s as determined by EnergyAustralia Network.

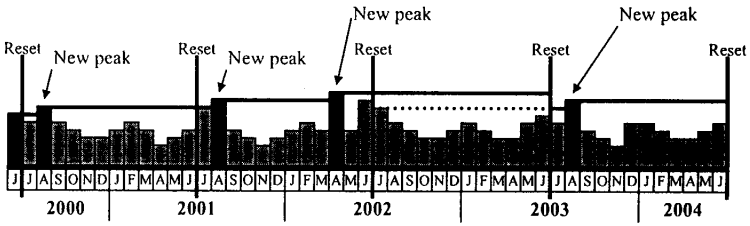
Non-ToU Rates The Non Time of Use charge (¢/kWh) is applied to the total energy determined from an energy only meter.

Time of Use (ToU) Rates All installed meters capable of recording the time of use of electricity consumption, will have the energy charged according to peak, shoulder and off-peak time periods. Refer to the specific network price details for the time periods of each component. NOTE: From 1 August 2002 the time periods applicable for all EnergyAustralia network time of use prices will change.

KVA Demand The Demand charge ($/kVA/month) may be applied to any connection points at which a Type 3 meter is installed irrespective of the annual energy consumption of the connection. The monthly kVA demand is the maximum half hour demand in the month and is calculated using the kWh and kVARh energy components recorded by the Type 3 code compliant meter. A separate demand is applied at each individual connection point and their associated metering point. **Coincident or summated demand** from multiple connection points **is not** permitted without the written approval of the Manager Network Business Operations.

Peak, Shoulder and Off-Peak Components From 1 August 2002, Peak, Shoulder and Off-Peak rates are applicable to the Demand ToU and Capacity ToU components of a given network price. In the case of Demand ToU the applicable Monthly Demand charge is the sum of (Peak Demand x Peak Demand Rate) + (Shoulder Demand x Shoulder Demand Rate) + (Off-Peak Demand x Off-Peak Demand Rate). NOTE: Peak, Shoulder & Off-Peak time periods are as defined for the LV Business ToU time periods.

Monthly Capacity Charge The Capacity Charge ($/kW/month or $/kVA/month) is applied on a monthly basis to the half hour maximum kW or kVA that occurs in the current month or preceding months. The maximum consumption is reset on 1 July each year to the highest recorded value in the previous 12 months, as shown in the diagram. The kW or kVA Demand for Peak, Shoulder and Off-Peak components are recorded on a monthly basis for charging purposes as shown above. From 1 August 2002, the capacity charge that will be applied each month will be the sum of the (Peak Capacity x Peak Capacity Rate) + (Shoulder Capacity x Shoulder Capacity Rate) + (Off-Peak Capacity



x Off-Peak Capacity Rate). Note: The Peak, Shoulder and Off-Peak Capacity measured values may not necessarily occur in the same month.

By following the above diagram it is seen, the annual capacity value is automatically increased in a month if it exceeds the previous capacity (i.e. the capacity charge has a "ratchet"). The new maximum will be used from that month onwards unless another month exceeds that figure or the charge is reset. If the customer or their retailer wish the capacity charge to be reviewed in circumstances where a demonstrated permanent reduction in the demand of the premises has been made through demand management or the like, applications should be made in writing to the Manager Network Regulatory Affairs including their reasons for the load reduction. EnergyAustralia Network will assess each case and make the final decision on the applicable capacity charge to apply.

The kVA capacity component is derived from the monthly maximum demand. As with demand charges, a separate capacity charge is applied at each connection point and its associated metering point. **Coincident or summated capacity charges** from multiple connection points **are not** permitted without the written approval of the Manager Network Regulatory Affairs.

Metering A customer's metering installation must have a meter which is capable of measuring the relevant electrical components of energy and demand before a given default price can be applied. If a customer or retailer wishes an alternative meter to be installed they may be required to pay a contribution towards its cost.

Further Details on the above network prices can be obtained in the following EnergyAustralia documents: ES7 "Application of Network Use of System Charges" and "Calculation of Network Price Components"

Network Price List enquires: These can be directed to our Call Centre on telephone **13 13 67** or referenced from our website on www.energy.com.au.

Address for correspondence:

Manager – Network Regulatory Affairs
GPO Box 4009,
Sydney NSW 2001

Network Price List *(includes GST)*

EnergyAustralia™

ABN 67 505 337 385

Effective from 1 August 2002

Network Use of System Prices

Network Price No.	Network Price	DLF	Network Access Charge ¢/day	Network Energy Rates				Monthly Demand Rates			Monthly Capacity Rates		
				Non ToU ¢/kWh	Peak ¢/kWh	Shoulder ¢/kWh	Off-Peak ¢/kWh	Peak $/mth	Shoulder $/mth	Off-Peak $/mth	Peak $/mth	Shoulder $/mth	Off-Peak $/mth
10 G & 210 G	**Domestic** *	**1.05410**	**12.54**	**4.169**									
25 G	**LV Energy40 ToU**	**1.05160**	**18.59**		**8.657**	**2.112**	**0.572**						
27 G	Interruptable Load	1.05160	17.71		6.490	1.584	0.572						
30 G & 250 G	Controlled Load 1	1.05410	**1.21**	**0.572**									
40 G & 260 G	Controlled Load 2	1.05410	**1.21**	**2.255**									
401	Public Lighting	1.0733		2.827									
402	Constant Unmetered	1.0504		3.432									
50 G & 270 G	LV Business non-ToU *	1.05160	**37.29**	**4.169**									
290 G	LV Business ToU (System) *	1.05160	168.52		7.656	3.916	1.529						
291 G	LV Business ToU (Substation) *	1.03390	118.69		7.656	3.916	1.529						
302 G	**LV KW Capacity ToU (System)** #	**1.05160**	**149.93**		**3.916**	**2.717**	**1.243**				**1.100**	**0.616**	**0.209**
303 G	LV KW Capacity ToU (Substation) #	1.03390	109.67		3.916	2.717	1.243				1.100	0.616	0.209
310 G	**LV KVA Demand ToU (System)**	**1.05160**	**171.81**		**2.332**	**1.386**	**0.649**	**1.342**	**0.891**	**0.352**	**1.188**	**0.748**	**0.286**
320 G	LV KVA Demand ToU (Substation)	1.03390	136.17		2.332	1.386	0.649	1.342	0.891	0.352	1.188	0.748	0.286
350 G	HV Business ToU	1.02220	454.30		7.480	4.301	1.166						
370 G	**HV Demand ToU (System)**	**1.02220**	**448.68**		**1.859**	**1.122**	**0.561**	**1.089**	**0.704**	**0.231**	**1.001**	**0.594**	**0.187**
380 G	HV Demand ToU (Substation)	1.01650	448.68		1.859	1.122	0.561	0.638	0.341	0.088	0.550	0.275	0.066
390 G	ST Demand ToU	1.00960	477.51		1.474	0.924	0.506	0.572	0.308	0.077	0.484	0.275	0.066
	Contract - above 10 MW	CRNP											

1. Prices marked * are only available to customers who do not have a Type 5 meter or above (as per the National Electricity Code).
2. The monthly capacity rates for prices marked # are in $/kW/month.
3. The time periods for the LV Energy40 ToU and Interruptable Load prices are different to the other time of use prices. Refer to the price category section for details.
4. Prices highlighted in **BOLD** print are **default prices**:

Domestic price applies to domestic customers consuming less than 10MWh pa.
LV Energy40 ToU price applies to customers consuming below 40MWh pa.
KW Capacity ToU prices apply to customer consuming between 40MWh and 735MWh pa.
Demand ToU prices apply to customer consuming 735MWh pa & over.

Price Categories

***Domestic* |10 & 210|:** Available for consumption in premises used wholly or principally as private residential dwellings, that consume less than 10MWh per annum and have a single register energy only meter installed (known as a Type 6 meter as per the National Electricity Code). A private residential dwelling is a house, flat, home unit, town house or similar qualifying residential premises. A premise ceases to be eligible for the Domestic price when annual consumption exceeds 10MWh in a year and has a meter capable of recording interval data (Type 5 meter or above).

Charging Periods for ToU Prices From 1 August 2002, the time periods applicable for all ToU prices will change. Each price category specifies the applicable time periods for that price.

***LV Energy40 Time of Use* |25|:** Applicable to low voltage electricity supplied to premises for any domestic or small business purpose where the consumption is below 40MWh per annum. This price is available to customers who have interval metering (Type 5 meter or above) that provide the energy consumed within the following specified time periods:

Peak period is from 2.00 pm - 8.00 pm on working weekdays.

Shoulder period is from 7.00 am - 2.00 pm and 8.00 pm - 10.00 pm on working weekdays and from 7.00am – 10.00pm on weekends and public holidays.

Off-Peak period is at all other times.

NOTE: 1) After 1 January 2002 customers who sign a negotiated supply contract with a retail supplier, have a Type 5 meter (or above) installed, and consume between 10MWh and 40MWh pa will be automatically placed on the ***LV Energy40 ToU*** Network Price. This price will continue to apply to such a customer whether or not the customer continues to receive their supply under a negotiated customer supply contract or a standard form customer supply contract.

2) New Domestic and Small Business customers connected to EnergyAustralia's network after 1 August 2001 with a Type 5 (or above) meter installed, and assessed to consume between 10MWh and 40 MWh pa will be placed on the ***LV Energy40 ToU*** network price.

3) From 1 January 2002 all new multi-phase installations and existing installations upgraded to a multi-phase installation (consuming below 40MWh per annum) must install an interval meter (Type 5 meter or above) and must be placed on the ***LV Energy40 ToU*** network price.

4) If a customer wishes to be placed on an alternative network price the customer must make application on the Network Price Application Form with supporting documentation to EnergyAustralia Network.

5) Customers placed on the ***LV Energy40 ToU*** price with 12 months actual consumption below 10MWh will be permitted to change to a non-ToU network price upon application. If at any time the annual load exceeds 10MWh pa EnergyAustralia may automatically place the customer on the ***LV Energy40 ToU*** price.

Interruptable Load* |27|:** This is a new controlled load option where the supply is generally available and may be interrupted any time at EnergyAustralia's discretion for demand management reasons. The option is available only for low voltage supplies consuming below 40MWh pa, which are separately metered and controlled by EnergyAustralia. The eligible low voltage supplies are all fixed wired appliances including air-conditioners, storage water heaters, and thermal storage space heaters. The ***Interruptable Load price is a discounted price similar in structure to the ***LV Energy40 ToU*** price. NOTE: This price cannot be applied until an EnergyAustralia approved control device is installed. The control device must remain in place or the supply will revert to LV Energy40 ToU price and be back billed to the time the control device was removed.

***Controlled Load*:** Applicable to electricity which is separately metered and controlled by EnergyAustralia and used for operating storage water heaters, thermal storage space heaters, and other approved fixed wired appliances. The ***Controlled Load 1* |30, 250|** price is available for supply that is usually available for a six hour duration between 10.00 pm and 7.00 am. The ***Controlled Load 2* |40, 260|** price is available for supply that is usually available for sixteen hours including more than 6 hours between 8pm and 7am and more than 4 hours between 7am and 5pm.

NOTE: EnergyAustralia reserves the right to vary the switching times of any of the above mentioned loads at its discretion. Controlled Load prices can only apply when a correctly connected and operative load control device is controlled by EnergyAustralia Network. EnergyAustralia's load control relay must not be electrically bypassed or removed without the written approval of the Manager Network Regulatory Affairs. If the Load Control Relay is incorporated into the meter, that meter must not be removed without EnergyAustralia's approval.

***LV Business Non-Time of Use* |50, 270|:** Available for low voltage supplies to premises for any non-domestic purpose, where the annual consumption is less than 40MWh and a single register energy only meter is installed (Type 6 metering installation). A corresponding price is not available for customers taking supply at high voltage. A premise ceases to be eligible for the LV Business Non-ToU price when annual consumption exceeds 40MWh in a year and has a meter capable of recording interval data (type 5 meter or better).

***Business Time of Use* [290, 291, 350]:** Available for electricity supplied to premises for any non-domestic purpose where the annual consumption is between 40MWh and 735MWh. This price is only available to customers who do not have a Type 5 meter (or above) which records the energy consumption used within specified time periods as listed:

Peak period is from 2.00 pm - 8.00 pm on working weekdays.

Shoulder period is from 7.00 am - 2.00 pm and 8.00 pm - 10.00 pm on working weekdays.

Off-Peak period is at all other times.

NOTE: It is proposed the *LV Business Time of Use* prices will be made obsolete on 1 July 2003.

To obtain a ***LV Business ToU (Substation)* [291]** price the customer must make application on the Network Price Application Form with supporting documentation to EnergyAustralia Network.

***LV KW Capacity Time of Use* [302, 303]:** This price is an extension of the Business Time of Use price to include a kW capacity component. Customers with an estimated load between 40MWh pa and 735MWh pa and having Type 5 or above meters will be charged the ***LV KW Capacity ToU (System)* [302]** network price. To obtain a ***LV KW Capacity ToU (Substation)* [303]** price the customer must make an application on a Network Price Application Form with supporting documentation to EnergyAustralia Network.NOTE: Prior to the 1st August 2002 the *LV KW Capacity Time of Use* prices had capacity charges with a single peak/shoulder rate with an off peak discount. From 1 August 2002, separate peak, shoulder and off peak charges apply which are additive. The monthly capacity charge is calculated in accordance with the method outlined on the definitions page attached.

***KVA Demand Time of Use* [310, 320, 370, 380, 390]:** These prices apply to electricity supplied to premises for any non-domestic purpose. All Demand ToU Network Prices include both a Monthly kVA maximum Demand charge and a Monthly kVA Capacity charge. Large energy users may achieve significant cost savings by correcting the power factor of their electrical installation in order to minimise the kVA demand and the kVA capacity charges.

NOTE: Prior to the 1st August 2002 *KVA Demand Time of Use* prices had demand and capacity charges with a single peak/shoulder rate with an off peak discount. From 1 August 2002, separate peak, shoulder and off peak charges apply which are additive.

From 1 August 2002, the maximum demand charge that is applied each month is the sum of (Peak Demand x Peak Demand Rate) + (Shoulder Demand x Shoulder Demand Rate) + (Off-Peak Demand x Off-Peak Demand Rate). Similarly, the capacity charge that is applied each month is the sum of (Peak Capacity x Peak Capacity Rate) + (Shoulder Capacity x Shoulder Capacity Rate) + (Off-Peak Capacity x Off-Peak Capacity Rate). Note: The Peak, Shoulder and Off-Peak Capacity measured values determined each month are the higher measured value comparing the current month to the previous month. The Peak, Shoulder and Off-Peak Capacity measured values may not necessarily occur in the same month. Refer to the definitions section for more information.

Customers with a load of 735MWh per annum or above will automatically be charged the ***KVA Demand ToU System* [310, 370, 390]** network price applicable to the voltage of their installation. To obtain a ***KVA Demand ToU (Substation)* [320, 380]** price the customer must make an application on a Network Price Application Form with supporting documentation to EnergyAustralia Network.

NOTE: From 1 August 2002, the time periods applicable for all ToU prices will change. The peak, shoulder and off-peak time periods for the Demand ToU price are the same time periods as the LV Business ToU network price. Refer to ***LV Business Time of Use*** price for details.

Contract (generally above 10 MW): EnergyAustralia Network calculates a Cost Reflective Network Price (CRNP) specific to an individual large customer's connection to the network. To receive a CRNP price at a given connection point a customer must have a measured demand 10 MW or over, on three separate occasions over the 12 month period of assessment. The CRNP price takes into account the customer's annual utilisation of the network assets.

CRNP customer's electrical supplies must be individually metered. When two or more connection points supplying the one customer utilise common network assets, EnergyAustralia may combine the loads at each point and treat them as an equivalent single point of connection for the CRNP analysis, applying the CRNP price to each separate connection point.

NOTE: From 1 August 2002, the time periods applicable for the CRNP tariffs will change. The peak, shoulder and off-peak time periods for the CRNP tariffs are the same time periods as the LV Business ToU network price. Refer to ***LV Business Time of Use*** price for details.

***Public Lighting* [401]:** Available for metered and unmetered supplies that are deemed to have a similar usage profile to public lighting and have some form of on/off control. The form of on/off control may be photoelectric cell, timer, ripple or other control.

***Unmetered Supply* [402]**: Available to all unmetered supplies other than those deemed to have a profile similar to public lighting. This price would generally apply to connections to certain small consumer installations located in public places e.g bus stop shelters, public conveniences, floodlights, and public telephones.

Standby Charges Where a customer's annual load factor at a point of supply is less than 15%, the chargeable demand may be based upon an assessment of the capacity provided. The standby arrangements are intended for application to loads not normally connected to the network. Refer to EnergyAustralia's ES7 document for more details. All applications for standby supply must be made in writing to EnergyAustralia Network. EnergyAustralia Network reserves the right to reassess existing standby supplies at any time for their impact on the electricity system and apply revised or new standby prices according to current metering and pricing methodologies. Alternatively, the standard network price may be applied where the capacity charge component would substitute for a separate standby charge.

Seasonal Network Prices EnergyAustralia plans to introduce a variety of network prices aimed at providing price signals which will focus on seasonal Demand Management initiatives. Our proposals will be outlined in our Pricing Information Package to be delivered to IPART in the second half of this year 2002.

Network Price Changes The Network Price for a specific installation is dependent on a number of factors including the customer's load, supply voltage, metering, and/or connection point configuration. Applications to change a network price should be made on a Network Price Application Form and if approved will apply from the start of the next billing period following the date of receipt of the price change application.

Customers placed on the Interruptable Load and Energy40 ToU prices must remain on these prices for a minimum of one year. After this period, customers on the Interruptable Load price may request to be changed to the ***LV Energy40 ToU*** price only.

Domestic customers who are on the ***LV Energy40 ToU*** price, and have a measured consumption for the previous 12 month period below 10MWh will qualify for a price change to the Domestic energy only price.

"Qualifying" in relation to particular Network Prices indicates that EnergyAustralia Network reserves the right to determine and approve the application of particular Network Prices to individual customers and/or groups of customers in its geographic area.

***Default Network Prices*:** Apply to installations which have appropriate metering and with annual consumption that falls between the ranges listed in the notes to the Price List Tables eg **KW Capacity ToU (Types 3,4 or 5 meters)** network prices apply to loads between 40MWh and 735MWh pa.

DayLight Saving

Daylight Saving Time applies to all EnergyAustralia Network Prices.

Interest Payable on Network Use of System Charges

EnergyAustralia may charge interest on all overdue Network Use of System Charge accounts.

Electricity Distributor Levy (EDL) and Transmission Operators Levy (TOL)

From 1 July 2001 the Electricity Distributor Levy (EDL) and/or Transmission Operators Levy (TOL) has been suspended by the NSW Treasurer.

EnergyAustralia

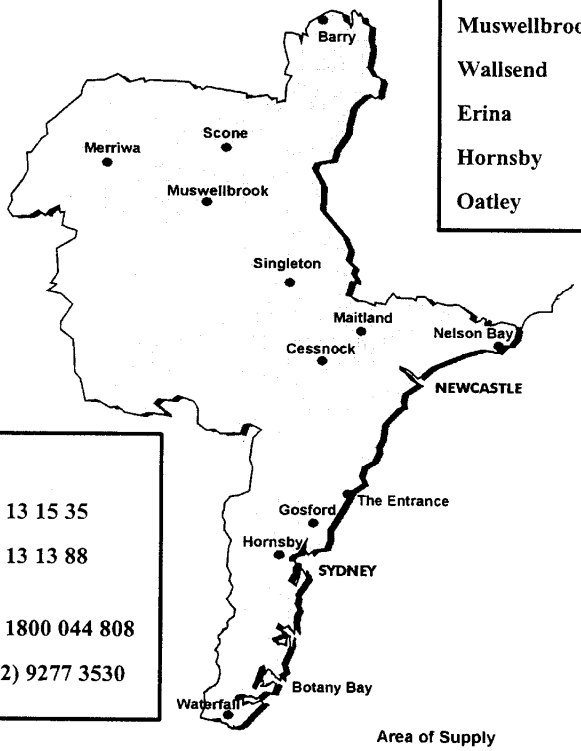
Supply Area

EnergyAustralia supplies electricity to customers in the following Local Government areas:

Ashfield	Gosford	Maitland	Pittwater	Strathfield
Auburn	Hornsby	Manly	Port Stephens	Sutherland
Bankstown	Hunters Hill	Marrickville	Randwick	Sydney
Botany	Hurstville	Merriwa (partly)	Rockdale	Warringah
Burwood	Kogarah	Mosman	Ryde	Waverley
Canterbury	Ku-ring-gai	Muswellbrook	Scone	Willoughby
Cessnock	Lake Macquarie	Newcastle	Singleton	Woollahra
Concord	Lane Cove	North Sydney	South Sydney	Wyong
Drummoyne	Leichhardt			

Connection Inquiries:

Muswellbrook	**(02) 6542 9017**
Wallsend	**(02) 4951 9930**
Erina	**(02) 4325 8537**
Hornsby	**(02) 9477 8201**
Oatley	**(02) 9585 5774**



Inquiries:

General	**13 15 35**
24 Hour Emergency Service	**13 13 88**
Street Lights Out	**1800 044 808**
NEM Transfers	**(02) 9277 3530**

附件四

Explanatory Guide to the Regulated Retail and Green Tariffs - Domestic Effective 1 August 2002

Default Tariffs

PowerSmart is the default regulated retail tariff for all premises with a Type 5 meter installed. The amount charged for energy usage will depend on the amount of consumption in each of the peak, shoulder and off peak time periods.

Domestic All Time is the default regulated retail tariff for all premises that have a Type 6 meter installed. The amount charged for energy usage will be calculated from the total energy consumption, regardless of the time period in which it is consumed.

Please refer to the EnergyAustralia Network publication ES7 – Application of Network Use of System Charges to find out more about EnergyAustralia Network's metering policy and the determination of the network price applicable to customers.

PowerSmart

The time periods for peak, shoulder and off peak are changing on 1 August 2002 to reflect the new time periods applied by EnergyAustralia Network. The table below shows the changes:

Charging Period	Time Periods to 31 July 2002	Time Periods from 1 August 2002
Peak	From 5pm – 8pm all days	From 2pm – 8pm on working weekdays
Shoulder	From 7am – 5pm and 8pm – 10pm Monday to Friday	From 7am – 2pm and 8-10pm on working weekdays and from 7am – 10pm on weekends and public holidays
Off Peak	All other times	All other times

PureEnergy

Due to the constraints in securing GreenPower-accredited renewable generation in the market, EnergyAustralia is not able to increase its volume of PureEnergy sales and has therefore changed the way the PureEnergy option is offered to new customers. There is now a waiting list for customers wanting to sign up to PureEnergy and this list will be used to fill any vacancies created by existing customers moving away from the PureEnergy option.

In order to allow new customers to gain the greatest environmental benefit from their PureEnergy subscription, the PureEnergy option will now only be offered at the 100% level and will also apply to off peak consumption. Therefore new customers to PureEnergy will make the maximum contribution toward the reduction of greenhouse gases from their electricity usage and will be charged the following rates:

Standard Consumption	-	17.90 c/kWh
Off Peak 1 Consumption	-	12.35 c/kWh
Off Peak 2 Consumption	-	14.24 c/kWh
Service Availability Charge	-	22.42 c/kWh

NSW Government Pensioner Rebate

On 1 January 2002, the NSW Government streamlined the application of the pensioner rebate by replacing the existing gas and electricity rebates with a single energy rebate, which is administered through pensioners' electricity bills. This rebate has been set at 30.68 cents per day ($112 per year).

Regulated Retail and Green Tariffs
Domestic (Inclusive of GST)

EnergyAustralia™

ABN 67 505 337 385

EFFECTIVE FROM 1 AUGUST 2002

This price list sets out EnergyAustralia's regulated retail and green tariffs and regulated retail charges for the purposes of EnergyAustralia's Standard Form Customer Supply Contract (October 2001). Information and conditions relating to EnergyAustralia's tariffs are set out in EnergyAustralia's Explanatory Guide to the Regulated Retail and Green Tariffs. The tariff rates in this price list includes network use of systems charges. All enquires should be referred to EnergyAustralia Customer Service 13 15 35.

PRINTED AUGUST 2002

DOMESTIC ALL TIME

Energy	**All Customers**
Cents per kWh	10.68
Service Availability Charge: Cents per day	22.42

CONTROLLED LOAD

Energy: Cents per kWh	**All Customers**
Off-Peak 1 (Night Rate)	4.48
Off-Peak 2 (Extended Hours)	7.57
Only available in conjunction with the Domestic, PowerSmart tariffs and customers on pre-existing PureEnergy arrangements.	

GREEN TARIFF - PURE ENERGY +

Energy: Cents per kWh	**All Customers**
PureEnergy 100%	17.90
PureEnergy 100% - Off Peak 1*	12.35
PureEnergy 100% - Off Peak 2*	14.25
Service Availability Charge: Cents per day	22.42
* This tariff only applies to customers who elect a PureEnergy Option after 1 August 2002	
+ PureEnergy comprises a regulated tariff component and an unregulated green premium.	

POWERSMART

Energy: Cents per kWh	**All Customers**
Peak: 2 pm - 8 pm on working weekdays	15.88
Shoulder: 7 am - 2 pm and 8 pm - 10 pm working weekdays and 7 am - 10 pm on weekends and public holidays	9.06
Off-Peak: All other times	4.35
Service Availability Charge: Cents per day	26.40

ENERGY BUY - BACK RATE

The Energy Buy-Back Rate is the same as the corresponding principal tariff on the account with appropriate adjustments where GST is not payable. The Energy Buy-Back Rate does not apply to obsolete tariffs.

PURE ENERGY (Obsolete)+*

Energy: Cents per kWh	**All Customers**
PureEnergy 25%	12.65
PureEnergy 50%	14.39
PureEnergy 75%	16.16
PureEnergy 100% (1-year premium)*	17.68
PureEnergy 100% (3 year premium)*	17.35
Service Availability Charge: Cents per day	22.42
*A fee may be applied if the contract option is broken	
+ PureEnergy comprises a regulated tariff component and an unregulated green premium.	

NSW GOVERNMENT PENSIONER REBATE

On application, the rebate to eligible pensioners on any of the above tariffs will be 30.68 cents per day. The rebate is applied prior to GST.

MEDICAL REBATES

On application the following medical rebates are available to customers with life support systems approved by the NSW Ministry of Energy & Utilities. The rebate is applied prior to the GST.

Home Dialysis Machines	50.00 cents per day
Oxygen Concentrators	83.00 cents per day
Continuous Positive Airways & Pressure Regulators	13.00 cents per day
Iron Lung or Phototherapy Equipment For The Treatment of Crigler Najjar Syndrome	166.00 cents per day
Enteral Feeding Pump (Kangaroo Pump)	20.00 cents per day

**OBSOLETE TARIFFS*

Obsolete tariffs only apply to customers with existing arrangements. These tariffs are reviewed frequently. They will be progressively eliminated and replaced by current tariffs.

Regulated Retail and Green Tariffs
Domestic (Exclusive of GST)

EnergyAustralia™

ABN 67 505 337 385

EFFECTIVE FROM 1 AUGUST 2002

This price list sets out EnergyAustralia's regulated retail and green tariffs and regulated retail charges for the purposes of EnergyAustralia's Standard Form Customer Supply Contract (October 2001). Information and conditions relating to EnergyAustralia's tariffs are set out in EnergyAustralia's Explanatory Guide to the Regulated Retail and Green Tariffs. The tariff rates in this price list includes network use of systems charges. All enquires should be referred to EnergyAustralia Customer Service 13 15 35.

PRINTED AUGUST 2002

DOMESTIC ALL TIME

Energy	All Customers
Cents per kWh	9.71
Service Availability Charge: Cents per day	20.38

CONTROLLED LOAD

Energy: Cents per kWh	All Customers
Off-Peak 1 (Night Rate)	4.07
Off-Peak 2 (Extended Hours)	6.88
Only available in conjunction with the Domestic PowerSmart tariffs and customers on pre-existing PureEnergy arrangements.	

GREEN TARIFF - PURE ENERGY+

Energy: Cents per kWh	All Customers
PureEnergy 100%	16.27
PureEnergy 100% - Off Peak 1*	11.23
PureEnergy 100% - Off Peak 2*	12.95
Service Availability Charge: Cents per day	20.38
*This tariff only applies to customers who elect a PureEnergy Option after 1 August 2002.	
+ PureEnergy comprises a regulated tariff component and an unregulated green premium.	

POWERSMART

Energy: Cents per kWh	All Customers
Peak: 2 pm - 8 pm on working weekdays	14.44
Shoulder: 7 am - 2 pm and 8 pm - 10 pm working weekdays and 7 am - 10 pm on weekends and public holidays	8.24
Off-Peak: All other times	3.95
Service Availability Charge: Cents per day	24.00

ENERGY BUY - BACK RATE

The Energy Buy-Back Rate is the same as the corresponding principal tariff on the account with appropriate adjustments where GST is not payable. The Energy Buy-Back Rate does not apply to obsolete tariffs.

PURE ENERGY (Obsolete)+*

Energy: Cents per kWh	All Customers
PureEnergy 25%	11.50
PureEnergy 50%	13.08
PureEnergy 75%	14.69
PureEnergy 100% (1-year premium)*	16.07
PureEnergy 100% (3 year premium)*	15.77
Service Availability Charge: Cents per day	20.38
*A fee may be applied if the contract option is broken	
+ PureEnergy comprises a regulated tariff component and an unregulated green premium.	

NSW GOVERNMENT PENSIONER REBATE

On application, the rebate to eligible pensioners on any of the above tariffs will be 30.68 cents per day. The rebate is applied prior to GST.

MEDICAL REBATES

On application the following medical rebates are available to customers with life support systems approved by the NSW Ministry of Energy & Utilities. The rebate is applied prior to the GST.

Home Dialysis Machines	50.00 cents per day
Oxygen Concentrators	83.00 cents per day
Continuous Positive Airways & Pressure Regulators	13.00 cents per day
Iron Lung or Phototherapy Equipment For The Treatment of Crigler Najjar Syndrome	166.00 cents per day
Enteral Feeding Pump (Kangaroo Pump)	20.00 cents per day

**OBSOLETE TARIFFS*

Obsolete tariffs only apply to customers with existing arrangements. These tariffs are reviewed frequently. They will be progressively eliminated and replaced by current tariffs.

EnergyAustralia™

Regulated Retail Charges Price List

ABN 67 505 337 385

EFFECTIVE FROM 1 AUGUST 2002

This price list sets out EnergyAustralia's regulated retail charges for the purposes of EnergyAustralia's Standard Form Customer Supply Contract (October 2001). The regulated retail charges are regulated by the June 2002 Determination by the Independent Pricing and Regulatory Tribunal – Mid-Term Review of Regulated Retail Prices for Electricity to 2004. All enquires should be referred to EnergyAustralia's Customer Service on 13 15 35.

Printed August 2002

Security Deposit

If EnergyAustralia requires a security deposit the amount will be:-

Domestic Customers	$120.00
Non-Domestic Customers who are billed quarterly*	1.5 times the average quarterly account[T]
Non-Domestic Customers who are billed monthly*	2.5 times the average monthly account[T]

* Alternatively, security levy fee or bankers guarantee is acceptable

[T] The average account is the average account for the particular business class to which the customer belongs

Dishonoured Bank Transaction Charge

If your bank transaction (cheque, credit card and direct debit) is dishonoured you will be charged twice the bank fee.

Late Payment Fee

Late payment fee $5.00 (if EnergyAustralia determines that a late payment fee is payable)

Explanatory Guide to the Regulated Retail and Green Tariffs – Business Effective 1 August 2002

Default Tariffs

LoadSmart (Low Voltage) is the default regulated retail tariff for all low voltage premises that have a Type 5 meter installed. The amount charged for energy usage will depend on the amount of consumption in each of the peak, shoulder and off peak time periods. Please see below for further information about the LoadSmart tariff.

General Supply (Low Voltage) is the default regulated retail tariff for all low voltage premises that have a Type 6 meter installed. The amount charged for energy usage will be calculated from the total energy consumption, regardless of the time period in which it is consumed.

General Supply Time of Use (High Voltage) is the default regulated retail tariff for all high voltage premises. The amount charged for energy usage will depend on the amount of consumption in each of the peak, shoulder and off peak time periods.

Please refer to the EnergyAustralia Network publication ES7 – Application of Network Use of System Charges to find out more about EnergyAustralia Network's metering policy and the determination of the network price applicable to customers.

Time Periods – All Tariffs

The time periods for peak, shoulder and off peak are changing on 1 August 2002 to reflect the new time periods applied by EnergyAustralia Network. The table below shows the changes:

Charging Period	Time Periods to 31 July 2002	Time Periods from 1 August 2002
Peak	From 7am – 9am and 5pm – 8pm on working weekdays	From 2pm – 8pm on working weekdays
Shoulder	From 9am – 5pm and 8pm – 10pm on working weekdays	From 7am – 2pm and 8pm – 10pm on working weekdays
Off Peak	All other times	All other times

Note: Time periods for the Process Heating Time of Use tariff (Obsolete) are not changing on 1 August 2002.

LoadSmart

In addition to the changes to the time periods described above, from 1 August 2002 the LoadSmart tariff will have a capacity, rather than a demand charge applied in addition to the energy charge. Please refer to the EnergyAustralia Network publication ES7 – Application of Network Use of System Charges and the Network Price List for more information regarding the calculation of capacity charges.

PureEnergy

The PureEnergy option is no longer available to new customers.

Rationalisation of Obsolete Tariffs

Irrigation Time of Use

All two-rate customers will be progressively transferred to three-rate pricing over the next 12 months. This transfer will occur as EnergyAustralia Network changes these customers' metering. In the transitional period there will be no difference in the two-rate and three-rate prices.

Process Heating Single Rate

Customers taking supply on the Process Heating Single Rate tariff will have this consumption progressively transferred to the General Supply (Low Voltage) tariff over the next 12 months. These two tariffs have the same price, so there will be no financial impact to the customer.

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ABN 67 505 337 385

*GENERAL SUPPLY (High Voltage) (Obsolete)**

Energy:	High Voltage
Cents per kWh	10.87
Service Availability Charge: Cents per day	70.95

GREEN TARIFF PURE ENERGY (Obsolete) +*

Energy: Cents per kWh	Low Voltage
PureEnergy 25%	13.07
PureEnergy 50%	14.85
PureEnergy 75%	16.62
PureEnergy 100%	18.40
Service Availability Charge: Cents per day	42.20

+ PureEnergy comprises a regulated tariff component and an unregulated green premium.

*PROCESS HEATING (Obsolete)**

Energy:	Low Voltage
Cents per kWh	10.87
Service Availability Charge: Cents per day	42.20

*PROCESS HEATING TIME OF USE (Obsolete)**

Energy: Cents per kWh	Low Voltage
Day Rate: 7 am - 10 pm all days	12.01
Night Rate: 10 pm - 7 am all days	5.36
Service Availability Charge: Cents per day	61.48

*IRRIGATION (Obsolete)**

Energy: Cents per kWh	13.45
Service Availability Charge: Cents per day	*27.13

*IRRIGATION TIME-OF-USE (Obsolete)**

Energy:	Three-Rate	Two-Rate
Peak: 2 pm - 8 pm on working weekdays	16.83	16.83
Shoulder: 7 am - 2 pm and 8 pm - 10 pm on working weekdays	16.83	16.83
Off-Peak: All other times	6.20	6.20
Service Availability Charge: cents per day	28.70	28.70

**OBSOLETE TARIFFS*

Obsolete tariffs only apply to customers with existing arrangements. These tariffs are reviewed frequently. They will be progressively eliminated and replaced by current tariffs.

EnergyAustralia can decide to transfer a customer from an obsolete tariff to a current tariff if that tariff is not financially disadvantageous to the customer. This decision will be based on the customer's electricity consumption data for the preceding 12 months.