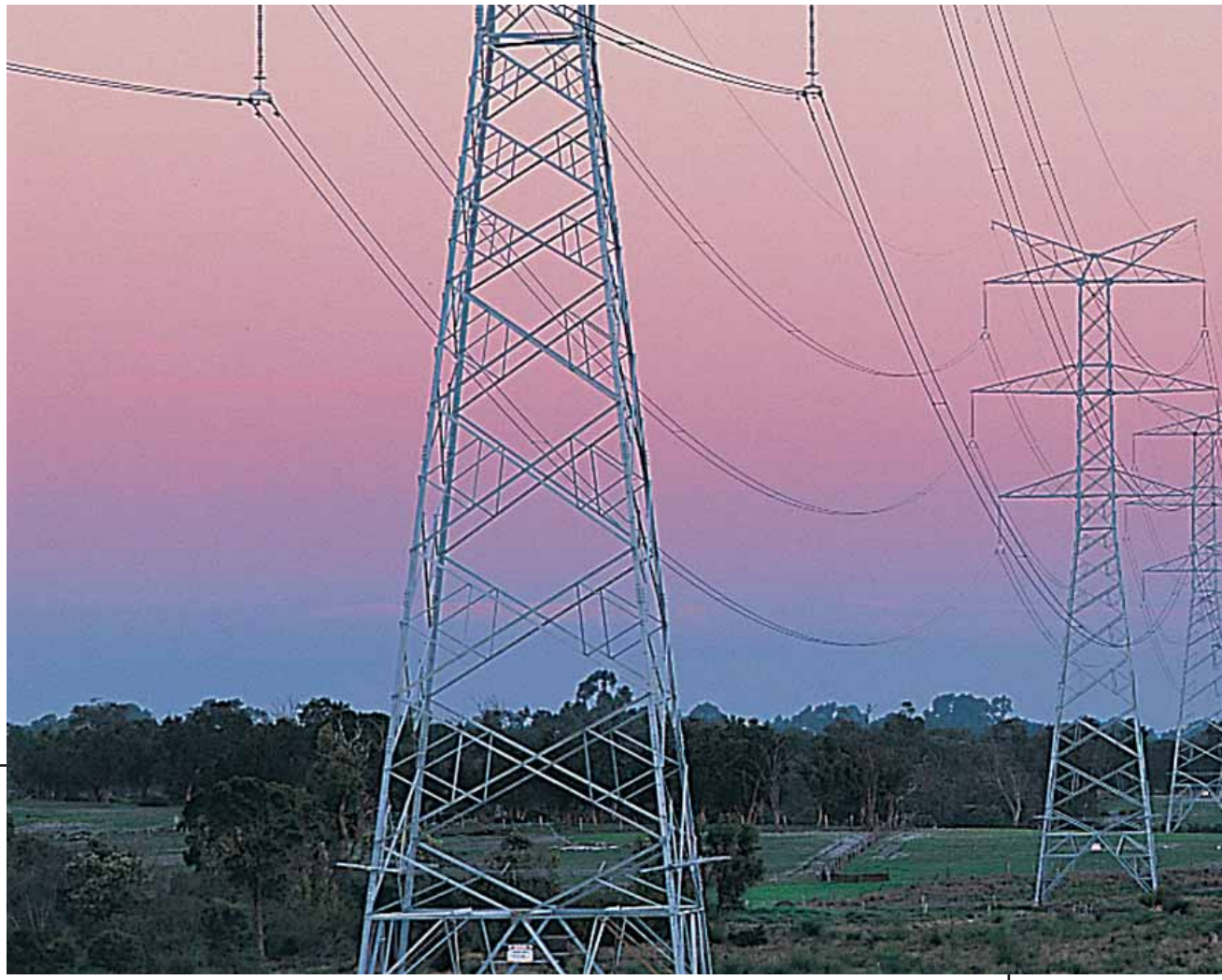

7 BEYOND THE NATIONAL ELECTRICITY MARKET

Two jurisdictions have electricity markets that are not interconnected with the National Electricity Market—Western Australia and the Northern Territory. Western Australia has recently introduced a number of electricity market initiatives, including new wholesale market arrangements. The Northern Territory has introduced electricity reforms but at present there is no competition in generation or retail markets. The Northern Territory has introduced an access regime for electricity networks, which has been certified as effective under the *Trade Practices Act 1974*.

7 BEYOND THE NATIONAL ELECTRICITY MARKET

7.1 Western Australia's electricity market

Western Australia's electricity market is thousands of kilometres from the NEM in eastern and southern Australia. There is neither physical interconnection nor governance linkages between the two markets. With a customer base spread over a third of the national landmass, Western Australia's electricity industry faces some unique challenges.

Statewide, around 60 per cent of installed capacity is fuelled by natural gas, 35 per cent from coal and 2 per cent from oil. There is growth in generation from renewable sources (3.2 per cent in 2005–06), mainly comprising wind, hydro and biomass.[1]

The government has set a target of 6 per cent of electricity to be sourced from renewable energy by 2010.

7.1.1 The networks

Reflecting Western Australia's geography, industry and demographics, the state's electricity infrastructure consists of several distinct systems (figure 7.1):

- the South West Interconnected System (SWIS)
- the North West Interconnected System (NWIS)
- 29 regional, non-interconnected power systems.

The largest network, the SWIS, serves Perth and other major population centres in the south-west, while the NWIS serves towns and resource industry loads in the north-west of the state.

The South West Interconnected System

The SWIS is the major interconnected electricity network in Western Australia, supplying the bulk of the south-west region. It extends to Kalbarri in the

north, Albany in the south, and Kalgoorlie in the east. The network supplies 840 000 retail customers with 6000 km of transmission lines and 64 000 km of distribution lines. It comprises 4200 megawatts (MW) of installed generation capacity, of which about 75 per cent is owned by the state utility Verve. The remaining 25 per cent is privately owned but principally dedicated to resource projects.

The principal base load generators are located near Collie, about 200 km south of Perth, near the state's only coal mining facilities. The majority of principal peak load (open cycle gas turbine) generators are located near the Dampier to Bunbury natural gas pipeline north of Perth. There are also plants at Kemerton and Kalgoorlie, and a large mixed fuel generation station at Kwinana, south of Perth.

The largest renewable energy facilities are the 90 MW Alinta wind farm, near Geraldton, the 80 MW Emu Downs wind farm and the 22 MW Albany wind farm owned by Verve.

Most independent power producers with plants connected to the SWIS use gas as their primary fuel.[2] The North West Shelf Gas project supplies most of the gas, which is transported through the Dampier to Bunbury, Parmelia and Goldfields gas pipelines.

The SWIS has high-voltage transmission capacity between Bunbury, Collie and Perth, with several 330 kilovolts (kV) lines serving the region's generators, industrial loads and population centres. Transmission links to rural towns and outlying cities like Geraldton and Albany have less capacity. The mining city of Kalgoorlie is connected to Collie via 220 kV lines and has local gas-fired generators served by the Goldfields gas pipeline.

Western Australia introduced a wholesale electricity market in the SWIS in September 2006 (section 7.1.4).

The North West Interconnected System

A second, separate interconnected network—the NWIS operates in the north-west of the state and centres around the industrial towns of Karratha and Port Hedland and resource centres. The network is significantly smaller than the SWIS and its purpose is to supply the resource industry's operations and associated townships in the area.

The NWIS has a generation capacity of 400 MW. The plants are mainly fuelled by natural gas, some of which is shipped on the Pilbara Energy Pipeline, which runs from Karratha to Port Hedland.

Horizon Power is responsible for the transmission, distribution, and retailing of electricity to customers through the NWIS. Horizon purchases power from private generators in the region and sells it to residential and commercial customers. Private generators serve the major resource companies in the Pilbara. These include Hamersley Iron's 120 MW generation plant at Dampier, Robe River's 105 MW plant at Cape Lambert and Alinta's 105 MW plant at Port Hedland.

Due to the small scale of this system, the NWIS will not see a wholesale market introduced in the manner of the SWIS in the foreseeable future.

Regional non-interconnected systems

Further small, non-interconnected distribution systems operate around towns in rural and remote areas beyond the SWIS and NWIS networks.[3] Horizon Power operates the 29 distribution systems located in these regions, but independent generators supply much of the electricity.

1 Office of Energy (WA) 2006, *Electricity generation from renewable energy*, fact sheet.

2 Griffin Power is currently seeking to construct a coal base load plant near Collie in the south-west.

3 The networks are located in such areas as Broome, Gascoyne Junction, Menzies, Camballin, Halls Creek, Mount Magnet, Carnarvon, Hopetoun, Norseman, Cue, Kununurra, Nullagine, Denham, Lake Argyle Village, Sandstone, Derby, Laverton, Wiluna, Esperance, Leonora, Wittenoom, Exmouth, Marble Bar, Wyndham, Fitzroy Crossing, Meekatharra and Yalgoo.

Figure 7.1

Electricity infrastructure map—Western Australia

Source: ERA

7.1.2 Electricity market reform

Consistent with the eastern and southern states, Western Australia's electricity industry was historically dominated by a single, vertically integrated utility under government ownership. There was no effective third-party access to electricity networks, no independent entry and no electricity market competition.

When in 1993 Australian governments decided to reform the electricity industry and create a national market, it was thought impractical for Western Australia to join. Geography dictated that its networks could not be physically interconnected with the other states. Western Australia retained a vertically integrated monopoly industry structure for almost a decade longer than the other states; however, it did introduce some reforms in the electricity sector. The government:

- disaggregated the State Energy Commission into separate electricity and gas corporations—Western Power and AlintaGas—in 1995
- introduced transmission access in 1996 and phased distribution access from 1997
- progressively introduced retail contestability for large consumers connected to the distribution system during the period 1997–2005. Customers using more than 50 megawatt hours (MWh) per year are now contestable.

Despite these reforms, competition in electricity wholesale and retail supply remained limited and was dominated by the government-owned incumbent. The lack of competition, in combination with relatively high generation costs (due to relatively expensive coal sources and the remoteness of major gas fields) led to businesses paying high prices for electricity. In 2003–04 real electricity prices for large businesses were 15 to 60 per cent higher in Western Australia than in south and south-eastern Australia.[4] Similarly, residential electricity prices were higher only in Darwin and Adelaide (table 7.1). The Office of Energy has attributed these high prices to a lack of competition and a lack of independent regulation of access to network infrastructure.[5]

Table 7.1 **Electricity prices—2003-04**

JURISDICTION	MEDIUM SIZED BUSINESS (500 KW) CENTS PER KWH	RESIDENTIAL (REGULATED TARIFFS) CENTS PER KWH
New South Wales	7.49	9.56
Victoria	7.56	12.56
Queensland	7.96	10.46
South Australia	10.57	15.82
Tasmania	9.43	12.21
Australian Capital Territory	9.83	11.59
Western Australia	11.52	13.32
Northern Territory	14.83	16.04

Source: Office of Energy (WA), *Electricity pricing in Australia 2003–04*, derived from ESAA data. The ESAA series was discontinued after 2003–04.

In 2001, the government established the Electricity Reform Task Force to review the structure of the electricity market. The task force recommended 79 reforms. Cabinet endorsed the reforms the following month and implemented them during 2003–06. The key reforms included:

- the disaggregation of Western Power into four separate state-owned entities, which took effect on 1 April 2006
- establishing a wholesale electricity market, which commenced in September 2006
- establishing an electricity networks access code to facilitate access to transmission and distribution networks, which commenced in 2004
- reducing the access threshold for contestability to all customers using more than 50 MWh per annum from January 2005
- implementing regulatory market arrangements and consumer protection measures, including an electricity licensing regime, customer service code, customer transfer code, metering code, network reliability and quality of supply code, Energy Ombudsman scheme, standard form contract regime and obligations to connect and supply
- facilitating the renewable energy sector, distributed generation and demand management.

4 Office of Energy (WA), *Electricity Pricing in Australia 2003-04.*

5 Office of Energy (WA), Electricity Reform Implementation Unit fact sheet, 2006, <http://www.eriu.energy.wa.gov.au/2/3164/3073/what_is_the_sol.pm>.

Transmission lines in Western Australia

7.1.3 Disaggregation of Western Power

On 1 April 2006, Western Power was disaggregated into four government-owned corporations:

- Verve—generation
- Western Power—transmission and distribution networks
- Synergy—retail
- Horizon Power—regional supply.

The government has announced that it will not privatise the corporations.

7.1.4 Wholesale electricity market

Central to Western Australia's electricity reform is the creation of a wholesale electricity market in the SWIS. Energy trading is facilitated through a combination of bilateral contracts (off market), a day-ahead short-term energy market (STEM) and balancing. The market was originally planned to come into operation in July 2006 but was rescheduled for September 2006 to enable the testing of IT systems. It has been designed to meet the objectives and needs of the Western Australian environment and differs considerably from the NEM.

The rule development body and market operator is the Independent Market Operator (IMO), a government entity established in 2004.[6] The IMO has no commercial interest in the market and no connection with any market participant, including Western Power.

Reflecting Western Australia's industry structure, state-owned energy corporations will continue to dominate the market:

- Verve owns about 75 per cent of installed generation capacity in the SWIS.
- Western Power will continue to own the bulk of the transmission and distribution systems.
- Until full retail contestability is introduced, Synergy will serve all customers using less than 50 MWh per year, including small business and residential consumers. At this stage, Western Australia has not determined a date to introduce full retail contestability.

However, the dominance of state-owned energy corporations may reduce over time with new market entry and greater interaction between state-owned corporations and independent power producers. For example:

- Synergy has entered into supply arrangements with the NewGen power station at Kwinana.
- The government has placed a 3 000 MW cap on Verve's ability to invest in the new generation plant to allow for independent power producers to increase their market share over time.
- Synergy is not permitted to own or control the generation plant for a transitional period until the government is satisfied that new market entry has occurred.

Differences between the SWIS wholesale market and the National Energy Market

There are three main differences between the market design for the SWIS and the NEM:

- gross pool versus net pool
- capacity market arrangements
- ancillary services.

Gross pool versus net pool

The NEM is a gross pool in which the sale of all wholesale electricity must occur in a spot market. In contrast, energy trading in the SWIS market primarily occurs through bilateral contracts negotiated entirely outside the pool. These may be entered into years, weeks or days prior to supply. Before the trading day, generators must inform the IMO of the quantity of energy to be sold under bilateral contracts and to whom so the IMO can schedule that supply.

The STEM supports bilateral trades by allowing market participants to trade around their net contract positions a day before energy is delivered. If, for example, a generator does not have sufficient capacity to meet its contracted position, it can purchase energy

6 Information on the market can be found on the IMO website at www.imowa.com.au.

in the STEM. Participation in the STEM is optional. Each morning, market participants may submit bids to the IMO to purchase energy and/or offers to supply. The IMO will then run an auction, in which it takes a neutral position, and will determine a single price for each trading interval of the day.

In the lead-up to dispatch, the system operator (System Management, a ring-fenced entity within Western Power), will issue instructions to ensure that supply equals demand in real-time. Rather than being dispatched on a least-cost basis, dispatch will mainly reflect the contract positions of participants. Generators submit daily resource plans that inform the IMO of how their facilities will be used to meet their contract positions. Generators are obliged to follow these plans, unless superseded by dispatch instructions. Verve's facilities are scheduled around the resource plans of other generators. If it appears that supply will not equal demand, the operator will schedule Verve generation first, and then issue dispatch instructions to other market participants as necessary.

Capacity market arrangements

The SWIS market includes both an energy market (the STEM) and a capacity market. The capacity market is intended to provide incentives for investment in generation to meet peak demand. In particular, it is intended that the capacity market will provide sufficient revenue for investment without the market experiencing high and volatile energy prices.

The IMO determines how much capacity is required to meet peak demand each year and allocates the costs of obtaining the necessary capacity to buyers—mostly retailers. Payments through the capacity market are expected to return about $10 to $15 a MW to generators every hour of the year, regardless of whether their energy is used in the market. This is expected to fund the capital costs of peaking facilities and partially cover the costs of base load units.

In the NEM there is no capacity market. Instead, generators are paid only for energy sent out, and a high price cap provides incentives to invest in generation and establish demand side responses. The provision of capacity payments means that wholesale energy prices in Western Australia will not need to rise as high as NEM prices to stimulate investment. Accordingly, the price cap in the energy market is $150 a MWh compared to the $10 000 a MWh cap in the NEM.[7]

The IMO determines annual reserve capacity requirements and will release an annual statement of opportunities report that covers a period of ten years. Western Australia's Economic Regulation Authority (ERA) approves the maximum capacity price and the price cap in the short-term market proposed by the IMO.

Ancillary services

There are eight frequency control ancillary services spot markets in the NEM in which participants may bid to provide ancillary services. Network control ancillary services are procured through long-term contracts. In the SWIS, there are no spot markets for ancillary services. System Management determines ancillary services requirements and procures them from Western Power or participants that have an ancillary services contract with System Management.

7.1.5 Network access

In 2004, Western Australia implemented an Electricity Networks Access Code for access to transmission and distribution network services. At present, the code only covers Western Power's networks within the SWIS, but other networks may be covered in the future if they meet the access regime's coverage tests.

In July 2006 the Australian Government Parliamentary Secretary to the Treasurer, on the advice of the National Competition Council, decided that the Western Australian access code was an effective access regime under Part IIIA of the Trade Practices Act and certified it for a period of 15 years.

7 There is an alternative maximum energy price for a facility run on liquid fuel. This was set at $385 in June 2004 and is varied in accord with an adjustment formula related to the Singapore crude oil price.

The code is independently administered by the ERA and prescribes commercial arrangements including access charges that electricity generators and retailers must pay to use Western Power's networks. The regulatory framework sets out criteria for the regulator's acceptance or rejection of an access arrangement proposed by the service provider. An access arrangement must include:

- specification of one or more reference services
- a standard access contract
- service standard benchmarks
- price control and pricing methods
- a current price list
- an applications and queuing policy.[8]

The regulator released a decision in May 2007 on Western Power's access arrangement under the code. Western Power's access tariffs under the decision are available on the ERA website.

7.1.6 Retail arrangements

In January 2005, Western Australia extended retail contestability to customers using at least 50 MWh per annum. Customers below this threshold who are connected to the SWIS are serviced by Synergy, the state-owned energy retailer. Customers outside the SWIS are predominantly serviced by Horizon Power.

The Western Australian Government has indicated its intent to consider full retail contestability in electricity, but has not set an implementation date. The *Electricity Corporations Act 2005* requires the Minister for Energy to undertake a review in 2009 with the objective of further extending contestability.

Companies that currently offer retail electricity products in the SWIS, other than Synergy, include Alinta, Griffin Energy, Landfill Gas & Power, Perth Energy, Premier Power Sales, TransAlta Energy (Australia) and Worsley Alumina. The ERA website publishes a list of licensed retailers.

It is government policy that all Synergy and Horizon Power customers are entitled to a uniform tariff, irrespective of their geographic location. The government approves the tariff and implements the scheme through a combination of statutory requirements. Regional electricity tariffs are subsidised by the Tariff Equalisation Fund, which is administered by the Office of Energy and funded by SWIS network users.

In addition to the uniform tariff, Western Australia has other consumer protection measures, including:

- an independent Energy Ombudsman to provide a means for residential and small business customers to resolve disputes with network operators and electricity retailers
- a code of conduct for the supply of electricity to small-use customers that regulates the behaviour of network operators and retailers and specifies levels of service in marketing, disconnection, payment difficulties and financial hardship, information provision and the supply of prepayment meters
- regulations to ensure that residential and small business customers can be connected to a distribution network at the least cost to the customer if the customer is located within a specified distance to the network
- standard form contracts for small customers that specify price and other terms of supply by licensed retailers
- supplier of last resort arrangements
- an electricity licensing regime, which provides for the monitoring and enforcement of the various consumer initiatives
- retention of existing government energy concessions.

8 Section 5.1 of the Electricity Networks Access Code 2004.


Verve Energy

7.2 The Northern Territory

The Northern Territory's electricity industry is small, reflecting its population of around 200 000. There are three relatively small regulated systems, of which the largest is the Darwin–Katherine system with a capacity of around 340 MW. In 2005–06 the Territory consumed around 1660 GWh of electricity.

The Territory uses gas-fired plants to generate public electricity, using gas sourced from the Amadeus Basin in Central Australia. Given the scale of the market, it was not considered feasible to establish a wholesale electricity spot market. Rather, the Territory uses a 'bilateral contracting' system in which generators are responsible for dispatching into the system the power their customers require.

The industry is dominated by a government-owned corporation, Power and Water, which owns the transmission and distribution networks. Currently, it is the monopoly retail provider and generates all electricity sold in the retail market. Power and Water is also responsible for power system control. There are six independent power producers in the resource and processing sector that generate their own requirements. Some also generate electricity for the market under contract with Power and Water.

From around 2000, the government introduced measures to open the electricity market to competition. It:

- commenced a phased introduction of retail contestability, originally scheduled for completion by April 2005
- corporatised the vertically integrated electricity supplier (Power and Water) and ring-fenced its generation, power system control, network and retail activities
- allowed new suppliers to enter the market
- established an independent regulator, the Utilities Commission, to regulate monopoly services and monitor the market
- introduced a regulated access regime for transmission and distribution services. In 2002, the Australian Government certified the regime as effective under the Trade Practices Act. The Northern Territory Government amended the regime in 2003 to clarify pricing issues, but it has not responded to a review of non-price issues. The Utilities Commission made its second five-year determination on network access arrangements (for 2004–05 to 2008–09) in 2004.

There has been one new entrant in generation and retail since the reforms—NT Power, which acquired some market share. However, NT Power withdrew from the market in September 2002 citing its inability to source ongoing gas supplies for electricity generation. In light of this, the government suspended the contestability timetable in January 2003. This effectively halted contestability at the 750 MW per year threshold until prospects for competition re-emerge. A single subsequent applicant was not granted an electricity retail licence due to their 'inability to meet reasonably foreseeable obligations for the sale of electricity'.[9] The introduction of full retail contestability is currently scheduled for April 2010.

With Power and Water reverting to a retail monopoly, the government approved in principle a process of prices oversight of Power and Water's generation business by the Utilities Commission for as long as that business is not subject to competition or the tangible threat of competition. The government regulates tariffs for non-contestable customers via electricity pricing orders. The Utilities Commission regulates service standards, including standards for reliability and customer service.

9 Department of Business, Economic and Regional Development (NT Government), *The NT electricity, water and gas supply sector*, fact sheet, 2005, http://www.nt.gov.au/business/documents/general/ELECTRICITY_SNAPSHOT.pdf.