Regulatory Proposal to the Australian Energy Regulator 2009 to 2014

Delivering efficient and sustainable network services

2 June 2008

INTEGRAL energy

The power is in your hands

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Front Cover:

Parramatta by night, supported by
Integral Energy's Parramatta Field Service Centre.

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Overview

Integral Energy Australia (Integral Energy) is a New South Wales state-owned energy corporation with a proud 50-year history serving some of Australia's largest and fastest growing regional economies. Integral Energy provides distribution network services to almost 850,000 customers, or 2.1 million people, in households and businesses across a network franchise spanning 24,500 square kilometres in Greater Western Sydney, the Blue Mountains, the Illawarra and the Southern Highlands. Integral Energy's focus is on providing a safe, reliable and affordable electricity supply to its customers.

Integral Energy is submitting this *regulatory proposal* to the Australian Energy Regulator (AER) in accordance with the requirements of the National Electricity Rules (the *Rules*), particularly clause 11.15.2 of the Rules and Appendix 1 of Chapter 11, an amended form of Chapter 6 of the Rules applicable to the NSW and ACT distribution businesses, for the purposes of the 2009-2014 regulatory control period (the *Transitional Rules*). The *regulatory proposal* is also submitted in accordance with other relevant regulatory instruments, including the AER's Regulatory Information Notice (RIN) and the AER's transitional guidelines, models and schemes for NSW and the ACT which are published on the AER's website.

The *regulatory proposal* applies to the regulatory control period from 1 July 2009 to 30 June 2014 (the *2009 regulatory control period*). Integral Energy is confident that the *regulatory proposal* fully satisfies relevant regulatory requirements and therefore requests that the AER make a distribution determination applying to Integral Energy for the *2009 regulatory control period* which is consistent with this *regulatory proposal*.

The *regulatory proposal* provides details of the external and internal drivers and obligations that impact on Integral Energy's business and delivery of *direct control services* and *negotiated distribution services*. It also explains how Integral Energy's network and demand management strategies are addressing these drivers and obligations and how they are delivered efficiently and prudently. Integral Energy's proposed investment programs and the consequent revenue requirement for the *2009 regulatory control period* are also provided.

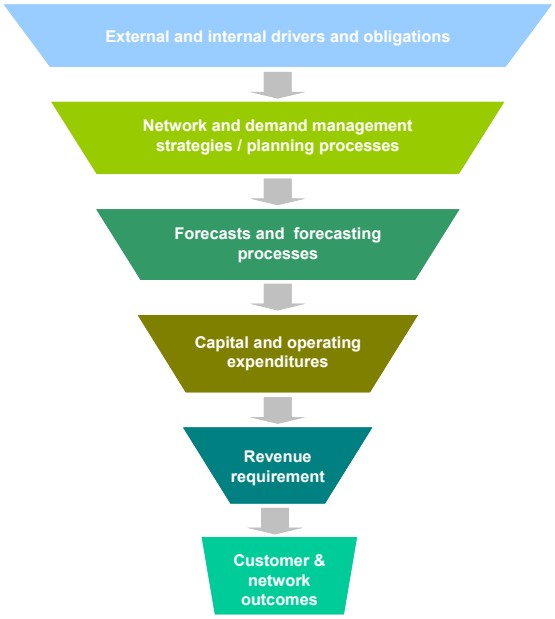
This overview summarises:

- Key network challenges facing Integral Energy's network business;
- Strategies to meet the challenges;
- Current and forecast performance;
- Building block revenues; and
- Reliability and pricing outcomes for customers.

The structure of the *regulatory proposal* is summarised in Figure 1.1.

1
Overview

Figure 1.1: Structure of Integral Energy's *Regulatory Proposal*

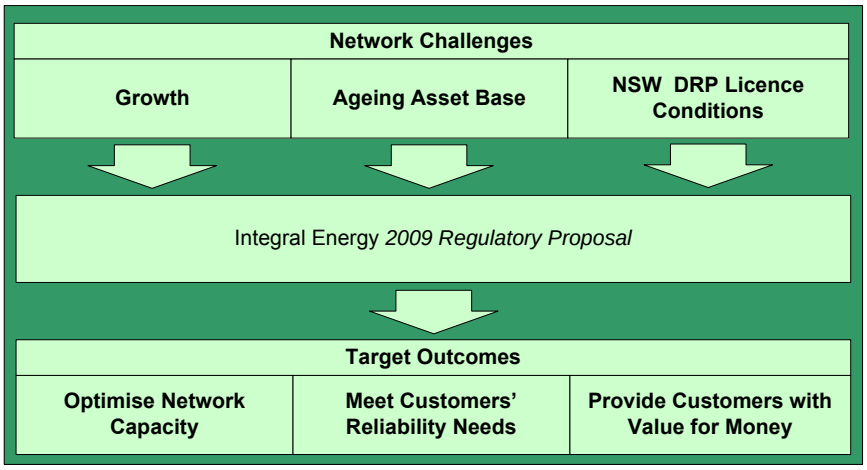


1.1 Key network challenges

Over the 2004/05 to 2008/09 regulatory control period (the *current regulatory control period*), Integral Energy has improved the reliability of its network despite some significant challenges. These challenges required Integral Energy to meet customer demand in some of the fastest growing corridors in Australia, to address customers' increasing use of air conditioning and to renew a rapidly-ageing asset base. Integral Energy has been successful in its quest to improve outcomes for customers and, in doing so, continues to deliver the NSW Government's initiative to achieve higher levels of security and reliability of electricity supply for NSW residents.

Over the *2009 regulatory control period*, the need to meet many of the challenges that Integral Energy has faced during the *current regulatory control period* will continue, while new challenges will also emerge. In developing this *regulatory proposal*, Integral Energy has focussed on meeting the three key network challenges as outlined in Figure 1.2.

Figure 1.2: Key Network Challenges



1.1.1 Servicing growth in demand in Integral Energy's network area

The high growth in peak demand in Integral Energy's network area has been driven primarily by two factors: the number of new connections and the increased penetration of air conditioning units. Integral Energy's network supply area includes some of the fastest growing corridors in Australia, leading to an increase in the number of connections to the network.

Peak temperatures within the Integral Energy network supply region are typically higher and more sustained than those of coastal areas, resulting in a significant probability of extreme weather events in a given year.

The increased uptake of air conditioning in new residential developments and the increasing penetration of air conditioning units into existing dwellings, coupled with an increasing air conditioning (kW) loading as customers become accustomed to using refrigerated air in their homes, are all causing overall demand to increase at a faster rate than that of energy growth.

These effects have contributed to a worsening load factor and have driven the need for increased capital investment to satisfy peak demand. This trend is expected to continue through the *2009 regulatory control period* before it ultimately plateaus with appliance saturation.

The changes taking place in electricity use by customers within Integral Energy's area, driven by climatic and other distribution and growth considerations, reflect a significant and concerning change in customer behaviour. Although demand management practices have had some effect in curtailing the impact of customers' demands on the network, a significant supply side response is required for the *2009 regulatory control period* to meet the projected growth in peak demand.

1.1.2 Replacing an ageing network in an efficient manner

Many elements of the Integral Energy network were built during the construction booms from the 1960s through to the 1980s and are now reaching the end of their useful lives. Integral Energy

now faces the challenge of replacing large numbers of these assets in an economically efficient manner.

Integral Energy's approach to asset renewal planning is becoming increasingly sophisticated as more assets need to be replaced. A range of approaches has been adopted for identifying assets that are candidates for renewal, ranging from simple inspection and condition-based maintenance regimes through to detailed technical analysis of key asset indicators. Network assets will generally be renewed before the point where they fail or are unable to fulfil their performance requirements. Integral Energy's replacement program effectively balances the need to replace assets before they fail with the requirement to ensure the costs of doing so are efficient.

1.1.3 Meeting the NSW Government's initiative for increased security and reliability of electricity supply

The 2005 NSW Government Design, Reliability and Performance licence conditions, designed to improve the security and reliability of electricity supply across the State, and the 2007 amendments to those conditions (collectively, the NSW DRP Licence Conditions), include both requirements that come into effect progressively over the *2009 regulatory control period* and targets that must be reached by 2014. Integral Energy has planned a number of projects and programs for the *2009 regulatory control period* to meet these requirements and targets.

1.2 Strategies to meet the challenges

Integral Energy has developed strategies to respond to external challenges and obligations, while taking account of the business needs and status of assets. The following sections outline Integral Energy's network and demand management strategies for the *2009 regulatory control period*, as discussed in Chapters 7 and 8 respectively.

1.2.1 Network Strategy

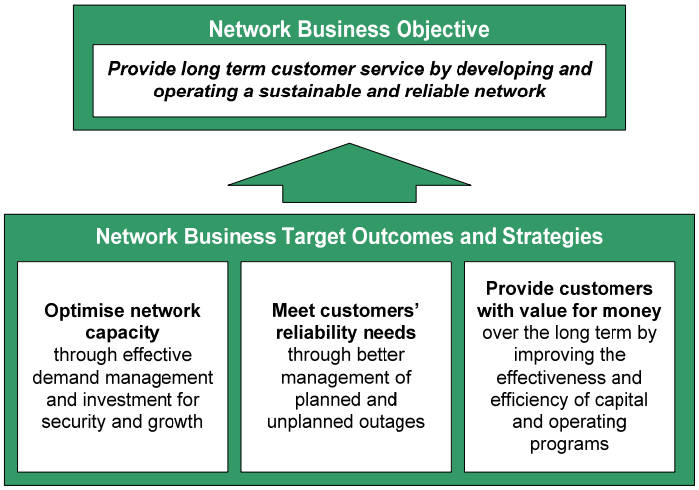
Integral Energy's network strategy articulates the future priorities for the network business and is the touchstone for making network business decisions over the *2009 regulatory control period*. The network planning framework is used to translate the network strategy into, firstly, specific programs and projects and secondly, expenditure forecasts.

The network strategy responds to the key challenges facing the network business by:

- Servicing growth in demand in Integral Energy's network area;
- Ensuring that ageing network assets do not adversely affect network reliability and security of supply; and
- Meeting the NSW DRP Licence Conditions for design planning standards.

Integral Energy's network strategy is summarised in Figure 1.3.

Figure 1.3: Integral Energy's Network Strategy



The network strategy reflects the business' response to external challenges and obligations, while taking account of the business needs and the status of assets. The network strategy also addresses the environmental factors and obligations faced by Integral Energy and takes account of the demand for distribution network services, while building on the cost and service performance in the *current regulatory control period*.

1.2.2 Demand Management Strategy

Integral Energy pursues the efficient management of electricity supply by using demand side responses and energy efficiency as well as supply side solutions. The importance of the demand management strategy is that it ensures sufficient electricity is available for supply at appropriate reliability and price, while it protects the environment for future generations.

Integral Energy's Network Demand Management strategy covers three broad areas:

- Network demand management – aims to reduce peak demand and defer or avoid future capital expenditure;
- Better customer information – aims to develop optimal pricing strategies that promote the efficient use of energy and provide appropriate incentives for customers to use the network outside the times of critical network congestion; and
- A sustainable future – aims to contribute to the development of public policy relating to energy efficiency and network demand management.

Integral Energy is conducting three trials to gain a better understanding of customers' electricity usage patterns and give customers options to help reduce peak demand and improve energy efficiency. The trials include the Western Sydney Pricing trial, Blacktown Solar Cities trials, and an Advanced Metering Infrastructure trial. The trials are discussed in detail in Chapter 8 of this *regulatory proposal*.

Additional trials are proposed for the *2009 regulatory control period* and these aim to reduce the impact of peak demand growth in the longer term. By gaining valuable insights into customers' electricity usage patterns, Integral Energy can develop efficient tariff offerings and demand management initiatives to help reduce the capital expenditure needed to meet peak demand.

1.3 Current and forecast performance

The following sections summarise Integral Energy's current performance and that forecast for the *2009 regulatory control period.*

1.3.1 Performance over the current regulatory control period

In the *current regulatory control period*, improvements in customer outcomes and the delivery of significantly enhanced capital and operating investment programs in an efficient manner demonstrate Integral Energy's effectiveness as an asset manager. The following sections show where Integral Energy has met or outperformed the targets set for the *current regulatory control period*, even when faced with increasing cost pressures.

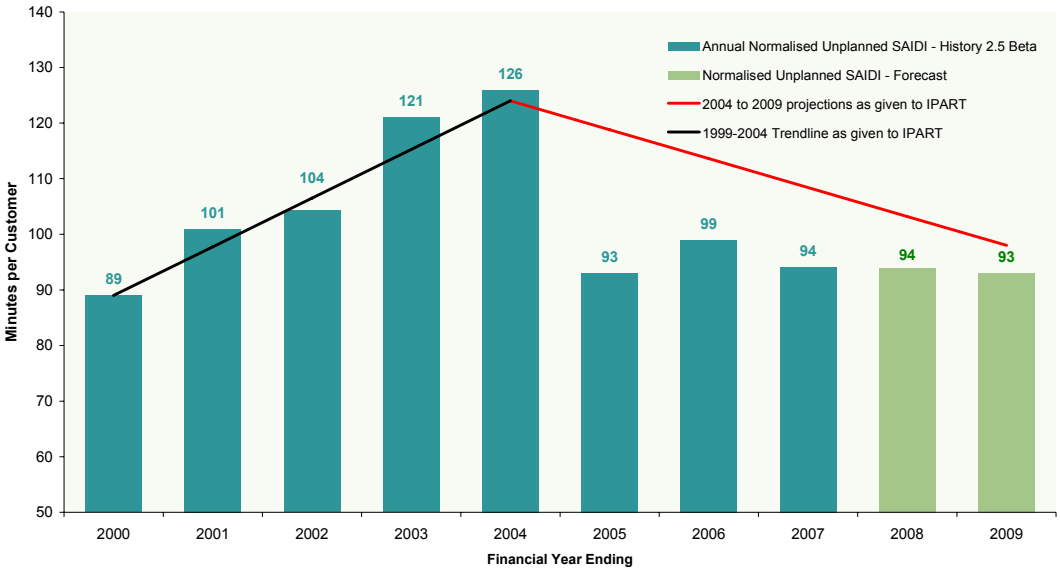
1.3.1.1 Network reliability

Improving reliability performance has been a key driver of expenditure in the *current regulatory control period* when Integral Energy improved customer reliability outcomes after successfully arresting the deterioration in the reliability of its network.

The total system average interruption duration index (SAIDI) measures the time, in minutes, that an average customer is without power in a given year thereby giving an important measure of an electricity distribution network's performance. Over the period 1999/00 to 2003/04 (the *previous regulatory control period*), Integral Energy customers had experienced declining performance, reaching a SAIDI of 126 minutes in 2003/04 (using the 2.5 Beta methodology), after which reliability improved by approximately 25% to today's levels.

The improvement in reliability has been achieved through a combination of targeted maintenance, improved response and capital initiatives. Integral Energy's submission in relation to the 2004 IPART determination for the *current regulatory control period* set out plans to continue to focus on improving performance in its worst performing areas (continuing a strategy that commenced in 2002), by managing load at risk and planning for and replacing aged network assets. These plans were implemented and network reliability improved as shown in Figure 1.4, which also illustrates that Integral Energy achieved better than forecast predictions.

Figure 1.4: Network reliability performance



Note: SAIDI outcomes are normalised using the 2.5 Beta method. Note that the targets and trendline submitted to IPART for the 2004 Determination have been adjusted from the SCNRRR method, to the 2.5 Beta method

1.3.1.2 Growth in peak demand, energy consumption and customer numbers

Average annual growth in system peak demand has been 3.4% over the *current regulatory control period,* similar to the level allowed by the Independent Pricing and Regulatory Tribunal of NSW (IPART) in its distribution determination for the *current regulatory control period* (2004 Determination). This growth in peak demand has arisen from a combination of new customer connections and the increasing penetration of air conditioning units. Residential air conditioning unit penetration has risen to approximately 62% across the Integral Energy network and approximately 74% in Western Sydney.

Contrary, however, to the forecasts contained in the 2004 Determination, energy consumption increased by 1.6% per annum over the *current regulatory control period*, which is 30% lower than the annual growth rate forecast allowed by IPART of approximately 2.3%. Everything else being equal, the lower actual volumes, approximately 3,000 GWh over the period, result in revenues considerably below the efficient revenue requirements set by IPART. The lower volumes were largely as a result of lower than forecast volumes for residential controlled load and lower consumption in the large commercial and industrial sector, driven by lower economic activity than that assumed in the 2004 Determination.

The net effect of the growth in peak demand and the lower growth in energy consumption is a declining load factor, which has been a prevalent feature in the *current regulatory control period* and a trend that is expected to continue for the *2009 regulatory control period*.

Customer number growth has been approximately 50% of that allowed by IPART in its 2004 Determination.

1.3.1.3 Capital expenditure program

Total capital expenditure, which comprises system and non-system assets, is forecast to be $1,868 million over the *current regulatory control period*, representing expenditure of $77 million, or approximately 4%, above the $1,791 million allowed by IPART in its 2004 Determination.[1,2]

System capital expenditure is focused on network infrastructure such as power transformers, lines and cables and switchgear and is 7% lower than the level allowed by IPART. Despite this, growth in peak demand has been met and reliability has improved.

The lower than forecast system capital expenditure has been offset by higher than forecast investment in non-system assets. Non-system capital expenditure, mainly on land and buildings, vehicles, furniture and information and communications technology, was higher than the IPART allowed levels. This was due, for example, to the development of regional depots as part of a strategy to have field staff positioned within one hour of most Field Service Centres for more timely response to outages.

Integral Energy has ramped up its network program over the *current regulatory control period* to meet the challenges of peak demand growth, an ageing network and compliance with security and reliability requirements.

1.3.1.4 Operating expenditure program

Total operating expenditure over the *current regulatory control* period is forecast to be $1,069 million, or $44 million (4%), less than IPART's allowance of $1,113 million in the 2004 Determination.

This result was achieved despite significant cost increases caused by the following factors:

- An increase in input costs, including labour cost increases above that allowed by IPART in its 2004 Determination;
- An increase in the volume of assets required to be maintained; and
- An increase in activity in response to mandatory obligations and requirements in areas such as safety, environmental management and network performance, as specified in relevant national, state and industry specific legislation and regulations. This activity has included inspection of private poles and overhead wires as a public safety and risk mitigation strategy.

While lower in total over the *current regulatory control period*, the annual operating expenditure profile differs from that allowed by IPART in its 2004 Determination, primarily due to the tight labour market and the lead time required for Integral Energy to ramp up its maintenance program.

[1] All historic expenditures are presented in nominal terms (i.e. dollars of the day), whereas forecast dollars are presented in real terms (i.e. $2008/09) unless otherwise specified.

[2] The IPART capital expenditure reflects the IPART approved pass through amounts for the NSW Design Planning and Reliability licence conditions.

1.3.2 Forecasts for the 2009 regulatory control period

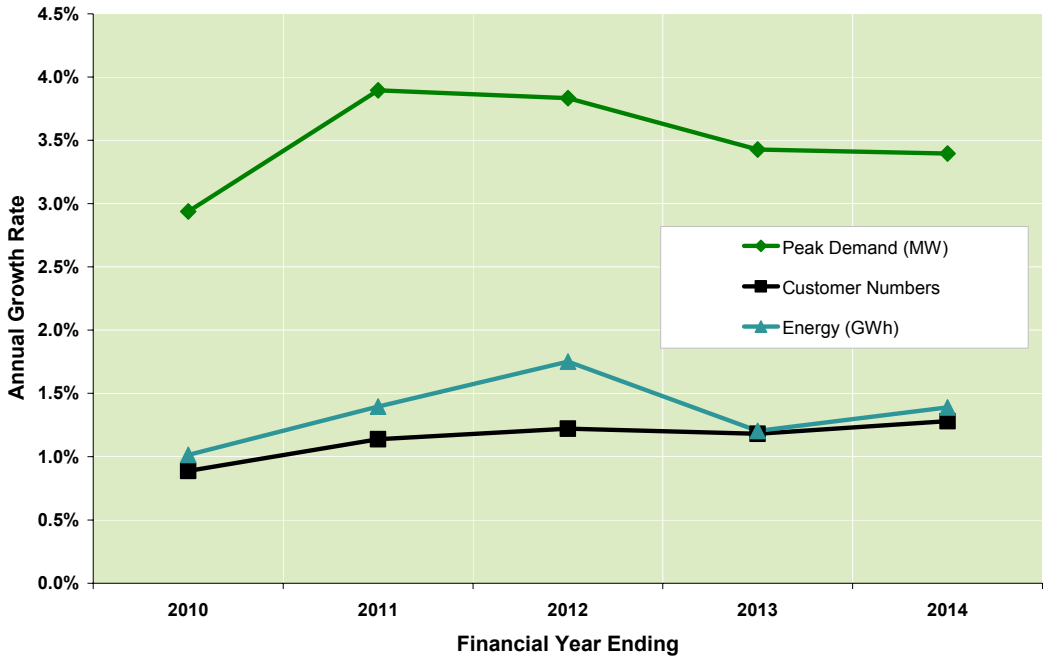
In order to provide a safe, reliable and affordable electricity supply, Integral Energy proposes the following forecasts for the *2009 regulatory control period*.

1.3.2.1 Demand, energy and customer number forecasts

Integral Energy's forecasts for maximum system (peak) demand, energy consumption and customer numbers underpinning this *regulatory proposal* are based on a detailed analysis of the main factors affecting the use of the electricity network. The analysis undertaken considers actual results, weather conditions and relevant demographic and socio-economic factors and trends.

The forecast annual growth rates for demand, energy and customer numbers for the *2009 regulatory control period* are discussed in Chapter 6 and summarised in Figure 1.5.

Figure 1.5: Forecast annual growth rates



The rate of growth in peak demand (3.6% per annum) is forecast to be three times higher than for customer numbers (1.2% per annum) and nearly three times higher than for energy consumption (1.3% per annum) over the *2009 regulatory control period*.

The differing growth rates for peak demand, which affects capital expenditure, and the growth rates for energy consumption and customer numbers, which represent a large portion of the base on which tariffs are recovered, is forecast to contribute to upward pressure on tariffs.

1.3.2.2 Forecast capital expenditure

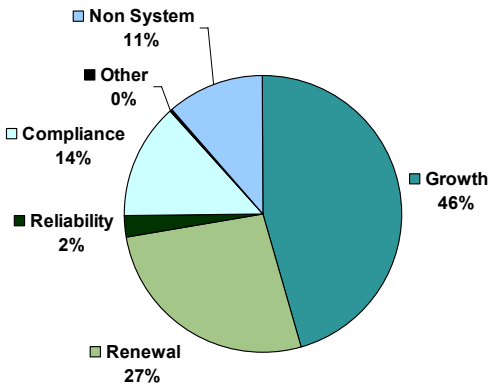
Integral Energy's proposed capital expenditure program of $2,953 million for the *2009 regulatory control period*, summarised in Table 1.1, has been developed to meet the key network challenges of growth, an ageing network and the NSW DRP Licence Conditions. It has been prepared in accordance with a rigorous network planning and governance process that has been established to ensure all proposed expenditures are thoroughly tested for prudence and efficiency.

Table 1.1: Proposed capital expenditure *2009 regulatory control period*

$ million 2008/09	Forecast year ending 30 June					
Expenditure category	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Growth	215.2	288.3	288.1	294.9	259.8	1,346.2
Asset renewal/replacement	138.8	152.8	151.0	155.4	186.5	784.4
Reliability and quality of service enhancement	14.3	14.2	14.4	14.7	14.9	72.6
Compliance obligations	131.1	112.2	83.3	52.5	23.9	402.9
Other (emergency spares)	1.8	1.8	1.8	2.5	2.5	10.5
Total System	**501.1**	**569.4**	**538.6**	**519.9**	**487.6**	**2,616.6**
Non-system assets	72.8	72.1	71.8	62.6	56.7	336.1
Total	**573.9**	**641.5**	**610.4**	**582.5**	**544.3**	**2,952.7**
Table may not add due to rounding. Capital expenditure forecasts are net of capital contributions						

The main components of the proposed capital program for the *2009 regulatory control period* are illustrated in Figure 1.6. They are focused on growth (46% of the total program), replacing an ageing asset base (27% of the total program) and complying with regulatory obligations (14% of the total program). These three components add up to approximately 87% of the total capital program.

Figure 1.6: Components of the proposed capital program



Major projects represent approximately $1,260 million (or just over one-third) of the total proposed capital program. The following are examples of major capital projects that in combination total over $250 million:

- **Parramatta CBD West zone substation and Camellia 132 kV busbar** – capacity constraints are emerging in the electrical network in the Parramatta CBD, one of western Sydney's most important commercial centres. Parramatta CBD West zone substation is to be established, along with a second substation in the Parramatta CBD in a future regulatory period. The establishment of a 132 kV busbar at Camellia is necessary to enable the connection of the various zone substations.

- **Liverpool sub-transmission substation establishment and associated works** – the Liverpool CBD and surrounding areas are experiencing increasing demand for electricity. As part of the planning process to develop long term solutions for the area, a sub-transmission substation in the vicinity of the CBD and a new zone substation at North Liverpool are to be constructed.

- **Guildford sub-transmission substation renewal** – At 48 years old, the substation is the key sub-transmission supply point to Parramatta and surrounding areas. Despite elevated maintenance, it suffers from extensive corrosion of the switchyard support structures, inadequate safety clearances, leaking and noisy power transformers, and inadequate switchgear ratings. It is proposed to renew the installation with a modern equivalent indoor substation on land adjacent to the existing site. The project is in its final planning stages and has an estimated completion date of 2011/12.

- **Cheriton Avenue zone substation** – this project will establish a new zone substation, driven by continuing development in the Castle Hill residential and commercial area. In particular, proposed development of the Castle Towers shopping centre and the Castle Hill RSL club will add significant new demand on the Castle Hill zone substation. The North West Sector is a development area which includes up to 65,000 new residential dwellings, as well as associated new commercial town centres, employment lands and transport infrastructure in an area that has historically been under-developed, or experienced sparse rural development only.

All major capital projects are subject to rigorous internal processes for design, planning, governance and project management to ensure that they are prudent and delivered efficiently.

The following sections address two important considerations underpinning the proposed capital program – the NSW DRP Licence Conditions and capital program delivery.

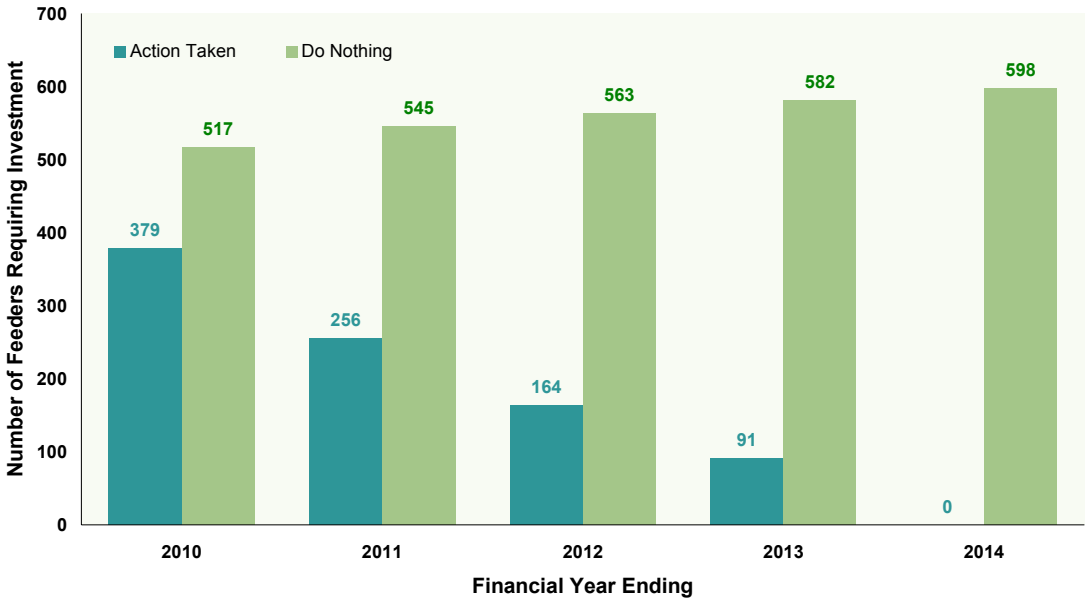
1.3.2.2.1 NSW DRP Licence Conditions for design, reliability and performance

The NSW DRP Licence Conditions for the security and reliability of electricity supply require Integral Energy to ramp up its already significant investment program, which began during the *current regulatory control period*, to meet the specified compliance dates.

Although the NSW DRP Licence Conditions define acceptable levels of risk in the management of load at risk, they have not materially changed the planning standards that Integral Energy applies. However, in order to meet the specified targets, significant investment has been added to the capital works program over the *2009 regulatory control period*, and elements of the program have been reprioritised.

Figure 1.7 provides an example of how investment will enable Integral Energy to meet the NSW DRP Licence Conditions for design planning standard compliance by 2013/14.

Figure 1.7: Distribution feeders needing investment to meet NSW DRP licence conditions



As illustrated above, significant investment will be required above current levels over the *2009 regulatory control period* to meet the requirements of the NSW DRP Licence Conditions by 2013/14.

1.3.2.2.2 Deliverability of the capital program

Integral Energy has a workforce plan in place to ensure the resources are available to deliver the proposed capital program. Although ability to deliver is not one of the factors that the *Transitional Rules* explicitly require the AER to consider in its assessment of the capital expenditure program, Integral Energy nevertheless understands that the AER and stakeholders may be concerned about the deliverability of the forecast capital program.

During the *current regulatory control period*, Integral Energy has delivered (and will continue to deliver) a capital expenditure program approximately 270% higher than that of the *previous regulatory control period.* In meeting the capital delivery contemplated by the 2004 Determination, Integral Energy has implemented or commenced implementing a range of initiatives to ensure that the proposed capital program can be delivered in an efficient and sustainable manner.

Therefore, based on its workforce plan, including ramping up the intake of apprentices, and its history of successfully delivering an increased capital program, Integral Energy is confident it has the capability to deliver the proposed capital program for the *2009 regulatory control period*.

1.3.2.3 Forecast operating expenditure

Integral Energy's proposed operating expenditure program is $1,477 million for the *2009 regulatory control period*, including $1,431 million for "core" network operating expenditures. It has been prepared in a responsible manner to efficiently meet the obligations and challenges facing the business. Aggressive productivity improvements have been built into the operating expenditure program to ensure customers only pay for the efficient costs of delivering essential network services.

In line with the AER's approach to revenue regulation, the proposed operating expenditures also include self-insurance premiums and debt and equity raising costs associated with the proposed capital program. These matters are discussed in detail in Chapter 10.

The breakdown of the proposed operating expenditure program is provided in Table 1.2.

Table 1.2: Proposed operating expenditure over the *2009 regulatory control period*

$ million 2008/09	Forecast year ending 30 June					
	2010	2011	2012	2013	2014	Total
Core network operating expenditure[3]	**281.3**	**279.6**	**283.6**	**290.2**	**296.6**	**1,431.2**
Self insurance	3.2	3.3	3.3	3.3	3.3	16.3
Debt raising allowance	3.5	3.8	4.2	4.6	5.0	21.1
Equity raising	-	-	-	4.1	4.0	8.2
Forecast total operating expenditure	**287.9**	**286.7**	**291.1**	**302.2**	**308.9**	**1,476.8**
Table may not add due to rounding						

The core network operating expenditure forecasts have been derived by:

- Establishing an efficient base year (2007/08);
- Applying aggressive productivity savings;
- Incorporating a growing asset base; and
- Incorporating forecast cost increases over the *2009 regulatory control period*.

1.3.2.3.1 Efficient base year

Integral Energy's 2007/08 projected operating expenditures have been subjected to independent verification and form the basis of the efficient base year.

[3] This includes network operating and maintenance expenditure and corporate support costs.

1.3.2.3.2 Productivity savings

To ensure the ongoing efficiency incorporated in the efficient base year, the following productivity savings and efficiencies have been applied over the *2009 regulatory control period*:

- 2% reductions in labour costs across all business units each year;
- Increases in costs above inflation for non-labour components of operating expenditure have been offset by productivity improvements;
- Expected savings arising from the continued rollout of the Risk and Condition Based Maintenance approach to asset management; and
- Reductions in combined capital and operating expenditure programs due to the "trade offs" arising from effective asset management.

The proposed operating expenditure program for the *2009 regulatory control period* incorporates over $76 million of productivity savings and efficiencies resulting from these initiatives.

1.3.2.3.3 Forecast cost increases

Added to the productivity-adjusted efficient base year are additional operating expenditures needed to accommodate:

- **A growing asset base** – as the number of assets increases, additional maintenance expenditures are required;
- **Additional activities to meet new obligations** – additional activities to ensure ongoing compliance with OH&S and environmental legislation;
- **Community requirements** – specific activities required to improve service and meet the requirements of the community;
- **Increases in unit costs –** forecast increases in labour costs above inflation; and
- **Improved customer information –** trials and market research into customers' usage of electricity aimed at reducing capital expenditure over the longer term.

The proposed operating expenditure program for the *2009 regulatory control period* has been prepared responsibly to meet regulatory and legislative obligations in an efficient manner. It factors in aggressive productivity savings to ensure costs are efficient and provides for meeting community requirements by funding trials that may ultimately lead to reductions in capital expenditure to meet peak demand.

1.4 Building block revenues

This section summarises the key building block parameters, revenue requirements and indicative pricing outcomes contained in this *regulatory proposal.*

1.4.1 Return on capital

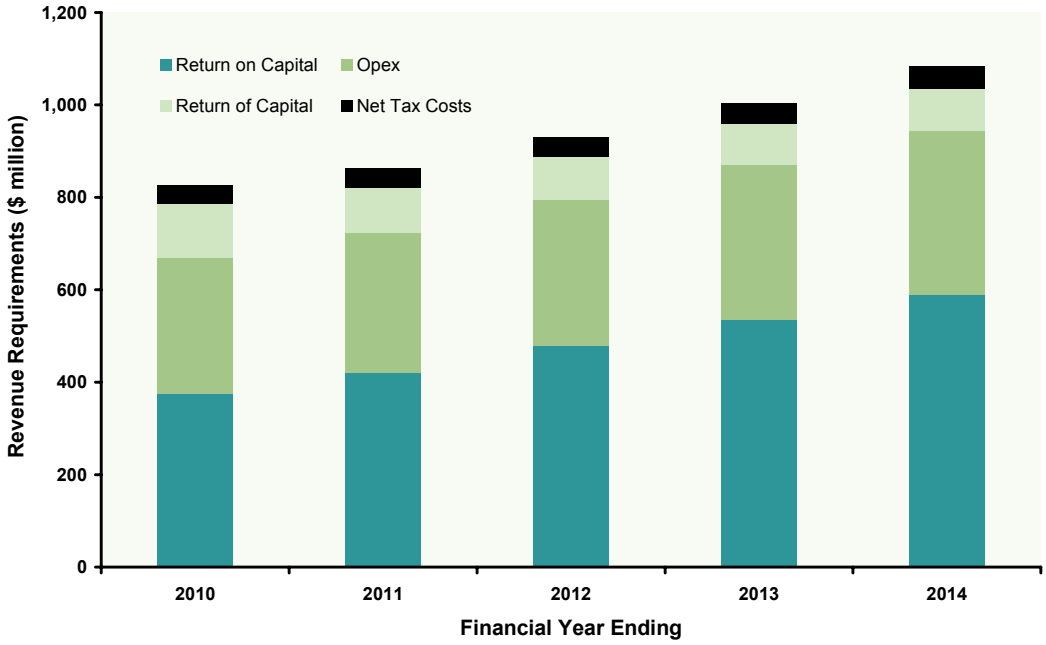
Integral Energy's proposed return on capital, as measured by the weighted average cost of capital for the *2009 regulatory control period,* is 9.76% and represents the return required by investors in a commercial enterprise with a similar degree of non-diversifiable risk to that faced by Integral Energy. It also reflects the return required to continue to commit capital on a commercial basis.

Recognising that the applicable market data for two variables required to calculate the return on capital – the nominal risk free rate and the debt risk premium – will not be available until closer to the date of the final determination, the *regulatory proposal* incorporates the values set out by the AER in the January 2008 SP AusNet final transmission determination for these variables.

1.4.2 Revenue requirements

The revenue required to underpin Integral Energy's investment programs has been calculated according to the requirements in the *Transitional Rules* and includes the individual building block components of the return on capital, return of capital (depreciation), operating expenditure and net tax costs. The accumulation of the building block components into a forecast revenue stream for the *2009 regulatory control period* is summarised in Figure 1.8.

Figure 1.8: Proposed revenue requirements for *2009 regulatory control period*



As Figure 1.8 illustrates, and as detailed in Chapter 14, in order to fund its investment programs and to provide its shareholder with a commercial return on investment over the *2009 regulatory control period*, Integral Energy needs to increase its revenue from $826 million in 2009/10 to $1,080 million in 2013/14.

1.4.3 X factors

Applying the forecast volumes for the *2009 regulatory control period* to the building block revenues gives an average price path that is adjusted (along with CPI) by the "X factors" as provided in Table 1.3. To meet the requirements of the *Transitional Rules*, Integral Energy has provided X factors based on a scenario with a higher initial year pricing increase (P_o) and constant real increases for the remaining four years of the *regulatory control period*. A negative X factor indicates an increase to average network prices.

Table 1.3: Proposed X factors over the *2009 regulatory control period*

	Forecast year ending 30 June				
Details	**2010**	**2011**	**2012**	**2013**	**2014**
X factor	-18.2	-3.5	-3.5	-3.5	-3.5

For Integral Energy to deliver the service standards set out in the *regulatory proposal* for the expenditures, programs and projects required in an efficient and sustainable manner, an increase in expenditures is required over the *2009 regulatory control period*, resulting in an increase in average network prices.

1.5 Outcomes for customers

The following sections outline the outcomes associated with the *regulatory proposal*, in terms of customer reliability that could be achieved subject to the AER's approval of the revenue and pricing outcomes in this *regulatory proposal*, as well as the financial implications for Integral Energy and customer pricing impacts.

1.5.1 Reliability outcomes

Integral Energy's *regulatory proposal* aims to comply with the NSW DRP Licence Conditions both for reliability performance, including individual feeder and feeder average performance standards, and for design standards, as well as to meet the requirements of other statutory and industry based obligations, including vegetation management.

Integral Energy is aiming for a reliability improvement, as measured by unplanned SAIDI, of approximately 15 per cent over the current year forecast of 94 minutes, to approximately 80 minutes by the end of the *2009 regulatory control period*. Integral Energy has also set a "stretch" reliability target of 75 minutes for the same period, which would result in a 20% improvement over current levels.

Based on the reliability improvement performance achieved over the *current regulatory control period*, and subject to the AER making a determination which accommodates the expenditure levels contained in this *regulatory proposal*, Integral Energy is well placed to achieve this ambitious target.

1.5.2 Financial implications of this regulatory proposal

Integral Energy has analysed the implications of the revenues contained in this *regulatory proposal* on the financial viability and sustainability of its network business. The analysis establishes that:

- The stated revenue level is sufficient to achieve the minimum BBB+ investment credit grade rating required by Integral Energy; and
- A lower revenue requirement would impact on Integral Energy's financial viability and its ability to meet its regulatory obligations, including the NSW DRP Licence Conditions.

1.5.3 Customer pricing impacts

Implementation of this *regulatory proposal* with the proposed building blocks and resulting indicative price path would increase the prices that Integral Energy charges its customers:

- The average residential customer would pay an additional $89 (or 24 cents per day) on the distribution component of their annual bill in the first year of the *2009 regulatory control period*; and
- The average business customer would pay an additional $301 (or 82 cents per day) on the distribution component of their annual bill in the first year of the *2009 regulatory control period*.

Integral Energy is concerned about the affordability of electricity distribution for its customers. However, it is also concerned about providing a safe and reliable network for its customers and the community. In order to ensure that a safe and reliable network is delivered in an affordable manner, Integral Energy has developed its expenditure programs using robust planning and governance processes and incorporating aggressive productivity savings.

In this way, Integral Energy can meet the challenges of customer-driven growth, replacement of an ageing network and compliance with regulatory obligations in a manner that ensures a safe, reliable and affordable electricity supply for its customers.

1
Overview

2

Introduction

Under recent changes to the National Electricity Law (NEL) and *Rules*, the AER must make a distribution determination to impose controls over the prices relating to the *direct control services* offered by Integral Energy for the five years commencing 1 July 2009 (*2009 regulatory control period*).

In accordance with clause 6.8.2(b) of the *Transitional Rules*, Integral Energy is required to lodge a *regulatory proposal* with the AER on or before 2 June 2008.

This chapter sets out the scope of Integral Energy's *regulatory proposal* and how it is structured to meet the requirements of the *Transitional Rules*.

2.1 Scope of Integral Energy's *regulatory proposal*

In meeting the requirements of the *Transitional Rules*, Integral Energy's *regulatory proposal* sets out the funding requirements for the capital and operating investment programs that must be undertaken to ensure a safe and reliable network over the *2009 regulatory control period*.

This *regulatory proposal* outlines the *direct control services* and *negotiated distribution services*[4] provided by Integral Energy by means of, or in connection with, use of Integral Energy's regulated distribution system for the *2009 regulatory control period* in accordance with clause 6.2.3A of the Transitional Rules.

This *regulatory proposal* is submitted in accordance with, and complies with, the requirements of:

1. The National Electricity Law;
2. The National Electricity Rules including the Transitional Rules;
3. Relevant AER guidelines (including the post tax revenue model (PTRM), roll forward model (RFM), efficiency benefit sharing scheme (EBSS), control mechanism for direct control services, demand management incentive scheme and control mechanisms for alternative control services;
4. Preliminary positions paper regarding the AER's approach to determining materiality thresholds for possible pass through events;

[4] Integral Energy currently does not provide any negotiated distribution services.

5. The Accounting Separation Code for Electricity Distributors in NSW prepared by IPART (deemed by clause 6.15.5 of the *Transitional Rules* to be Cost Allocation Guidelines made by the AER);

6. The NSW Licence Conditions;

7. Relevant Acts and regulations as listed in pro forma 2.3.4 included in Attachment 1; and

8. The AER's regulatory information notice (RIN) issued to Integral Energy on 24 April 2008. The RIN sets out the information that must be contained in a *regulatory proposal*. Integral Energy has met the requirements of the RIN by including the required information in the main body of, and attachments to, this regulatory proposal. Appendix C provides a high level overview as to how this *regulatory proposal* complies with the RIN (and other *Transitional Rules*) requirements.

Integral Energy's *regulatory proposal* has been subject to close and robust scrutiny by management and independent experts. Key aspects have been subject to further stakeholder scrutiny through Integral Energy's established network planning processes.

2.2 Required elements of a *regulatory proposal*

In accordance with clause 6.8.2 of the *Transitional Rules*, Integral Energy's *regulatory proposal* must include (but need not be limited to) the elements summarised in the following Box 2.1.

Box 2.1: Content of regulatory proposal
Clause 6.8.2(c) of the *Transitional Rules* sets out a number of elements that a regulatory proposal is to contain, including the following elements: • Clause 6.8.2(c)(2) - for direct control services classified as standard control services – *a building block proposal*; • Clause 6.8.2(c)(3) - for direct control services classified as *alternative control services*: o the proposed control mechanism, a demonstration of the application of the proposed control mechanism and necessary supporting information; o a justification of any departure from the AER's likely approach to the relevant control mechanism (as indicated in a statement published by the AER under clause 6.2.5(e) of the Transitional Rules);

Box 2.1: Content of regulatory proposal
• Clause 6.8.2(c)(4) - for direct control services – indicative prices for each year of the regulatory control period; • Clause 6.8.2(c)(6) - an indication of the parts of the proposal (if any) that Integral Energy claims to be confidential and wants suppressed from publication on that ground; • Clause 6.8.2(c)(7) - for direct control services – the identification of any components that should be negotiable components, and, in accordance with clause 6.8.2(c)(8), the proposed negotiating framework for these components; and In accordance with clause 6.8.2(d) of the Transitional Rules, the *regulatory proposal* must comply with the requirements of, and must contain or be accompanied by, the information required by any relevant regulatory information instrument. The AER's RIN issued on 24 April 2008 is the only such notice issued in relation to this *regulatory proposal.* The *building block proposal* must be prepared in accordance with the AER's PTRM, other relevant requirements of Part C of the *Transitional Rules* and Schedule 6.1 of the *Transitional Rules*, and is to comply with any relevant regulatory information instrument. The *Transitional Rules* also list the minimum content of a *building block proposal* in relation to capital expenditure, operating expenditure and additional information and matters.

Integral Energy has prepared its *regulatory proposal* in accordance with the requirements of the *Transitional Rules*, as summarised above. The components of Integral Energy's regulatory proposal are illustrated in the following Figure 2.1:

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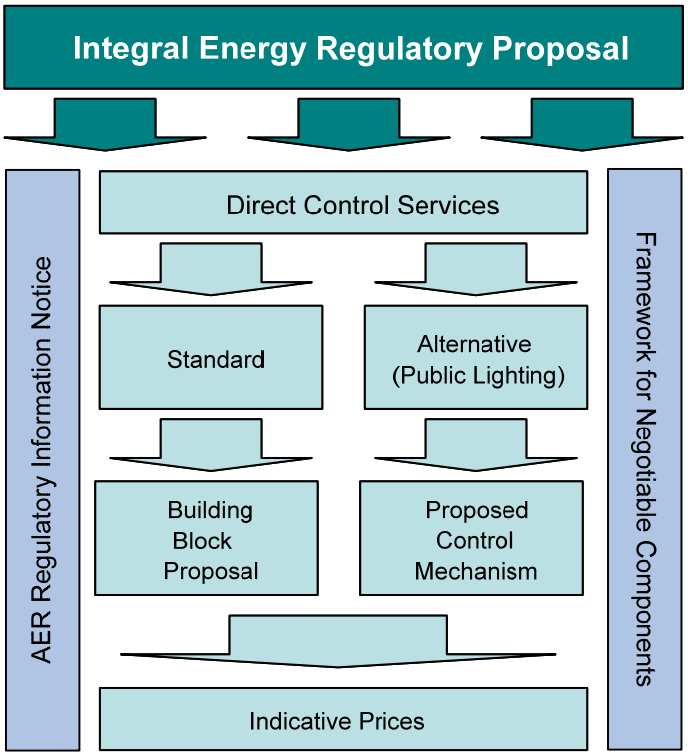
Introduction

Figure 2.1 – Components of Integral Energy's *regulatory proposal*



In accordance with clause 6.18.2 of the *Transitional Rules*, Integral Energy must submit to the AER as soon as practicable and in any case within 15 business days after publication of the distribution determination, a pricing proposal for the first year of the *2009 regulatory control period* (the initial pricing proposal). In addition, Integral Energy must submit to the AER at least two months before the start of the second and each subsequent year of the *2009 regulatory control period,* a further pricing proposal (annual pricing proposal) for the relevant year.

The indicative prices referred to in clause 6.8.2(c)(4) of the *Transitional Rules* and as illustrated in Figure 2.1 above are estimates only and do not represent Integral Energy's initial *pricing proposal* or any annual *pricing proposal* as contemplated in the *Transitional Rules*.

2.3 Regulatory Information Notice (RIN)

In accordance with the requirements of the *Transitional Rules*, as summarised in Box 2.1, Integral Energy's *regulatory proposal* must also comply with the requirements of, and must contain or be accompanied by the information required by, any relevant RIN.

Pursuant to section 28F of the NEL, the AER served a RIN on Integral Energy on 24 April 2008. The NEL provides that the AER may serve a RIN if it considers it reasonably necessary for the performance or exercise of its functions or powers under the NEL or the *Rules*. Integral Energy is required by the RIN to provide the information and documentation as outlined in the RIN to the AER by 5pm EST on 2 June 2008.

The RIN is the only regulatory information notice relevant for the purposes of Integral Energy's *regulatory proposal*. The requirements of the RIN are summarised in the following Box 2.2.

Box 2.2: Summary of RIN requirements

In accordance with section 28F(1)(a) of the National Electricity Law, the AER notified Integral Energy on 24 April 2008 of service of a Regulatory Information Notice (RIN). The RIN required information relating to a number of matters, including the following:

- Business details (trading name, ABN, address and contact person details);
- Capital and operating expenditure information for the previous, current and *2009 regulatory control periods*;
- Information on material projects and programs (those that have a cumulative cost of more than 2% of the annual revenue in the last year of the *current regulatory control period*).
- Significant variations (more than 10%) between forecast and actual costs must be identified and explained;
- Services and indicative prices for each year of the current and next regulatory periods;
- Details relating to capital and operating expenditures, including organisational overview; relationship with other entities; key assumptions; regulatory obligations; service standard obligations or requirements; plans, policies, procedures and strategies; network planning information; demand forecasts; consideration of non-network alternatives; expenditure estimation process; self insurance; expenditures with other persons; and capital contributions
- Details on other information including transitional issues; X factors; financial parameters for the post tax revenue model; review of procedures; the tax asset base and alternative control services;
- A Directors' certification of the reasonableness of key assumptions for capital and operating assumptions and an Officer's statutory declaration by Integral Energy's Chief Executive Officer to verify that the information and documentation provided is complete and accurate in all material respects and can be relied on by the AER.

The AER has developed a number of pro forma information templates for some of the above information requirements which must be completed and submitted with the *regulatory proposal*.

The RIN also specifies the information that Integral Energy must maintain at its premise and that the information is to be made available for inspection or provided to the AER and its consultants on request.

The *regulatory proposal* provides the information to address the RIN requirements.

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2.4 Claim for confidentiality

Clause 6.8.2(c)(6) of Appendix 1 of the *National Electricity Rules*, requires Integral Energy to include in this regulatory proposal an indication of the parts of the proposal Integral Energy claims to be confidential and wants suppressed from publication on the grounds that the information is confidential. Integral Energy claims confidentiality over the following attachments, appendices and pro formas and requests that AER does not disclose the information contained in these attachments, appendices and pro formas to any person outside of the AER:

- Appendices I, J.1, J.2, J.3, J.4, J.5, J.6, J.7, J.8, N, O, R, S.1, S.2, S.3, S.4, W, X and Y.2;
- Pro formas 2.2.3, 2.2.5, 2.3.6, 2.3.11, and 2.3.12;
- Attachment 2 comprising the completed PTRM.

2.5 Structure of the document

This *regulatory proposal* is structured in a format consistent with the AER's RIN as follows:

Chapter	Title	Purpose
3	Business characteristics	Chapter 3 provides an overview of the key characteristics of Integral Energy's business and the regional environment that affects the development of this *regulatory proposal*.
Building block proposal for Direct Control Services classified as Standard Control Services		
4	Current performance	Chapter 4 describes Integral Energy's cost and service performance during the *current regulatory control period*. It discusses Integral Energy's actual and projected results compared with the IPART allowances and/or IPART's forecasts over the *current regulatory control period*. It provides an explanation for significant variations between actual and forecast results for energy and demand, capital and operating expenditure and network performance and utilisation.
5	Service standard obligations	Chapter 5 summarises the regulatory and service standard obligations that materially affect the forecast capital and operating expenditures. It specifically addresses the service performance and reliability obligations related to Integral Energy's provision of direct control services.
6	Demand and energy forecasts	Chapter 6 details the basis of Integral Energy's approach to developing its demand and energy forecasts and provides forecasts for customer numbers, peak demand and energy over the *2009 regulatory control period*.
7	Network strategy	Chapter 7 describes Integral Energy's network strategy for the *2009 regulatory control period* and its approach to network planning and management as background to the expenditure forecasts in Chapters 9 and 10.
8	Demand management strategy	Chapter 8 provides an overview of Integral Energy's demand management strategy and initiatives.

Chapter	Title	Purpose
9	Forecast capital expenditure	Chapter 9 provides Integral Energy's forecast capital expenditure and explains how Integral Energy's *regulatory proposal* complies with the capital expenditure objectives, criteria and factors specified in the *Transitional Rules*. It also sets out the key assumptions that support Integral Energy's forecast capital expenditure for the *2009 regulatory control period*.
10	Forecast operating expenditure	Chapter 10 provides Integral Energy's forecast operating expenditure and explains how Integral Energy's *regulatory proposal* complies with the operating expenditure objectives, criteria and factors specified in the *Transitional Rules*. It also sets out the key assumptions that support Integral Energy's forecast operating expenditure for the *2009 regulatory control period*.
11	Regulatory asset base (RAB)	Chapter 11 sets outs the methodology used to roll forward Integral Energy's RAB, its forecast capital contributions and disposals, and a summary of the resultant RAB outcomes over the *2009 regulatory control period*.
12	Depreciation	Chapter 12 sets out the methodology used to calculate the proposed depreciation allowance in Integral Energy's building block revenue proposal for the *2009 regulatory control period* and outlines the standard and remaining lives of Integral Energy's network system and non-system assets.
13	Return on capital, inflation and taxation	Chapter 13 sets out how Integral Energy has calculated its proposed return on capital, its estimated cost of corporate tax and its proposed method that is likely to result in the best estimates of inflation used in the derivation of the building block revenue for the *2009 regulatory control period*.
14	Revenue requirements	Chapter 14 sets out an overview of the completed post tax revenue model and Integral Energy's total revenue requirements. It includes the building block components of Integral Energy's proposed revenue requirements over the *2009 regulatory control period*.
15	Customer and service outcomes	Chapter 15 sets out the resulting X factors to achieve Integral Energy's revenue requirements, the indicative prices and the resulting customer and service outcomes for each year of the *2009 regulatory control period* for its direct control services.
16	Cost pass through	Chapter 16 provides details of Integral Energy's nominated cost pass through events to form part of the AER's cost pass through mechanism.
17	AER's guidelines and transitional issues	Chapter 17 sets out Integral Energy's response and relevant considerations relating to the AER's guidelines on the efficiency benefit sharing scheme and the service target performance incentive scheme. It also provides details of the transitional matters arising from the move to a national regulatory framework.

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Introduction

Chapter	Title	Purpose
18	Assurances and certifications	Chapter 18 sets out Integral Energy's compliance with the AER's audit and certification requirements for this *regulatory proposal*.
Direct Control Services classified as Alternative Control Services		
19	Alternative direct control services - public lighting	Chapter 19 sets out Integral Energy's *regulatory proposal* for its public lighting services. It includes operating and capital expenditure forecasts, estimated RAB value, depreciation, cost of capital and taxation allowances over the *2009 regulatory control period*. It also discusses the resulting revenue requirements, X factors and indicative prices over the *2009 regulatory control period*.
Appendices and Attachments		Separately provided.

3

Business characteristics

The projected demand for Integral Energy's services, and the forecast costs of providing these services, are affected by the underlying characteristics of its business as well as the external environment. Some of these factors are unique to Integral Energy, or affect its business more dramatically than for other network service providers.

This chapter describes Integral Energy's business and the regional environment in which it operates. It highlights the specific, and in some cases unique, regional features which have a significant impact on the way Integral Energy operates its business and the resultant costs it faces.

This chapter and the accompanying Appendices (including Appendix E) provide information to address the relevant RIN requirements and in particular clause 2.3.1 of the RIN.

3.1 Summary

Integral Energy is the second largest state owned energy corporation in NSW, serving some of Australia's largest and fastest growing regional economies. It provides distribution network services to almost 850,000 customers, or 2.1 million people, in households and businesses across a network franchise spanning 24,500 square kilometres in Greater Western Sydney, the Blue Mountains, the Illawarra and the Southern Highlands.

In terms of customer segments, Integral Energy currently provides distribution network services to around 770,000 residential customers and 76,000 small business customers. There are also 3,700 large customers, with annual electricity consumption in excess of 160 MWh per annum, located within the Integral Energy network supply area.

In effectively managing distribution network services to these customers, Integral Energy must take account of a range of regional, climatic, customer, asset and licence requirement issues. Some of the key issues affecting Integral Energy's business include:

- The region in which Integral Energy operates includes some of Australia's fastest growing communities, in terms of population and growth. Population in the region is forecast to grow by 6% by 2013/14, while maximum demand for electricity is forecast to increase by 33% by 2013/14;

- Land use within the Integral Energy network supply region has also been steadily shifting from rural and semi-rural to urban and light commercial. As a result, customers now expect improved reliability performance in these areas;

- Peak temperatures within the Integral Energy network supply region are typically higher and more sustained than those of central Sydney and other coastal areas and, crucially,

are more consistently experienced on an annual basis, meaning extreme weather events are more likely;

- Combined with these factors, the way Integral Energy's customers are using electricity has shifted rapidly over the last ten years. 74%[5] of households in the Greater Western Sydney region are now fitted with air conditioning units, compared with 37% in the Illawarra and 28% in the Blue Mountains. This use has resulted in a peakier load pattern for Integral Energy in hot weather requiring more assets to service demand that only exists for a very small time frame each year;

- In addition to the increase in the penetration of air conditioning units, the uptake of other appliances such as in-home computers and entertainment systems has also increased. This trend is also changing consumption patterns, resulting in heightened customer expectations and awareness about reliability and security of supply;

- The impact of the continuing high growth rates and changing electricity patterns has meant deterioration in the overall system load factor; and

- From an asset perspective, in addition to operating in more extreme conditions, many of Integral Energy's assets are now nearing the end of their effective lives. This situation is illustrated in the age profile of power transformer assets, which indicates that 45% of these key assets have now been in service for 36 years or more. As a result, more assets are at risk of failing more often.

These and other key issues are discussed in further detail in the remainder of this chapter. Importantly, these issues serve to highlight some of the key factors that Integral Energy has considered in developing its Network Strategy. Integral Energy's Network Strategy is underpinned by its network planning and expenditure forecasting processes and articulates the future priorities for the network business. The process for developing the Network Strategy and ensuring that Integral Energy is appropriately prepared to respond to these issues is discussed further in Chapter 7.

[5] Based on customer survey analysis - iView Telephone Survey, May 2006 and October 2006.

3.2 Integral Energy's business

Integral Energy is the second largest state owned energy corporation in NSW, incorporated under the Energy Services Corporations Act 1995 and currently operates as a licensed distribution network service provider and retailer under the terms of the Electricity Supply Act 1995.

Integral Energy's network is one of the largest in Australia and serves almost 850,000 customers, or 2.1 million people, across 24,500 square kilometres.

The network currently comprises over 28,400 transmission, zone and distribution substations and 312,650 power poles connected by 33,000 kilometres of underground and overhead lines.

Figure 3.1: Integral Energy's network

3.3 Characteristics of the region

Integral Energy's network covers the Greater Western Sydney, Blue Mountains, Illawarra and Southern Highlands areas. It includes the major cities of Parramatta, Penrith, Wollongong, Campbelltown, Blacktown and Liverpool and spans 18 local government areas.[6]

[6] Lithgow, Hawkesbury, Blue Mountains, Penrith, Baulkham Hills, Blacktown, Parramatta, Fairfield, Holroyd, Liverpool, Camden, Campbelltown, Wollondilly, Wingecarribee, Wollongong, Shellharbour, Kiama, Shoalhaven

3
Business characteristics

3.3.1 Regional growth and changing land use

Integral Energy supplies power to some of Australia's fastest growing communities, in terms of both population and load. Land use has been steadily moving from rural and semi-rural to generally urban and light commercial (but importantly not heavy industrial).

This trend is continuing with new release areas in the north-west, including North Kellyville and Second Ponds Creek and new releases at the ADI site, Employment Lands at Eastern Creek and the south-west sector, such as Oran Park and Turner Road. The following aerial photos of Kellyville in Sydney's north-west between 1996 and 2005 are representative of the significant effect on Integral Energy's network required to service this change in land use.

Figure 3.2: Increasing urbanisation of region

Kellyville 1996

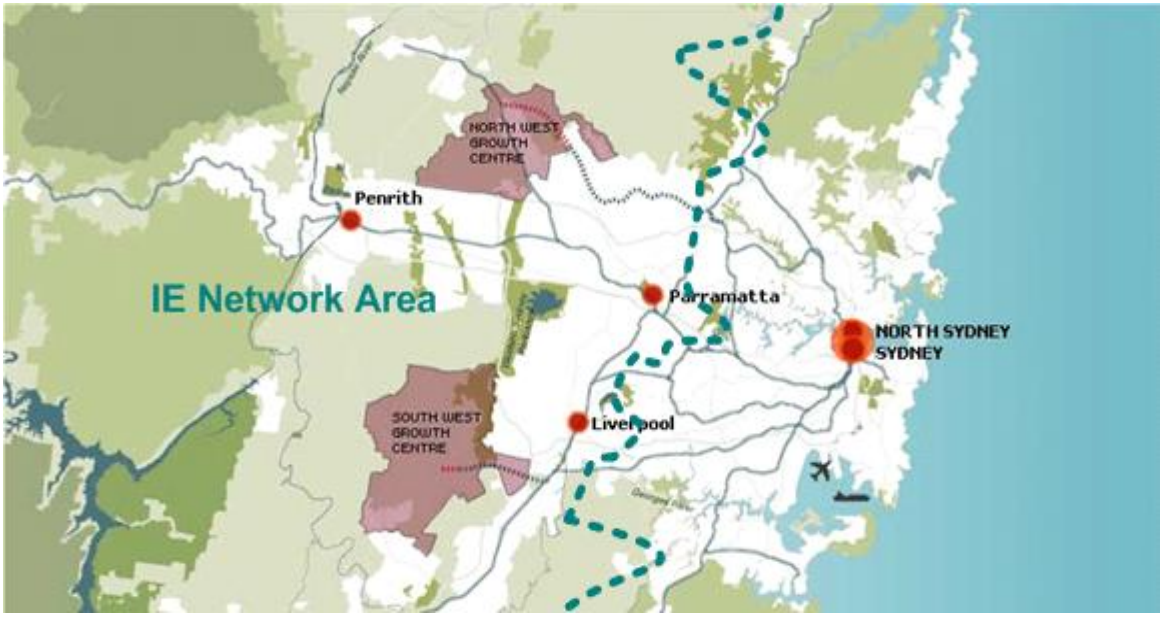
Kellyville 2005

Major land releases are also occurring at Dapto and Shellcove in the Illawarra region. Combined with ongoing urban consolidation, these trends create pressure to raise network reliability performance from levels previously accepted as appropriate for rural areas, to levels now expected by customers in more densely populated urban areas.

In December 2004, the NSW Government announced the new land release plan for the South West and North West Growth Centres as a key plank of its Metropolitan Strategy for Sydney. The Growth Centres will accommodate 30% to 40% of Sydney's long term housing growth and will eventually accommodate 181,000 new dwellings. Both the South West and North West Growth Centres are encompassed wholly within Integral Energy's network franchise. Figure 3.3 highlights the scale and location of a number of the major land releases that fall within Integral Energy's franchise area.

These changes will have a significant impact on Integral Energy's network over the longer term. It is anticipated that the population serviced will grow 6% by 2013/14, increasing maximum demand by 33% by 2013/14 and requiring sustained investment in the network.

Figure 3.3: Major developments in Integral Energy's network



3.3.2 Regional climatic considerations

The Integral Energy distribution area, particularly the growth corridors to the west of Sydney, experience peak temperatures that are typically higher and more sustained than those of central Sydney and other coastal areas, and crucially are more consistently experienced on an annual basis by the network. There is a particularly high probability of experiencing extreme temperature events (in excess of 40^{o} C) in each year in the west of Sydney.

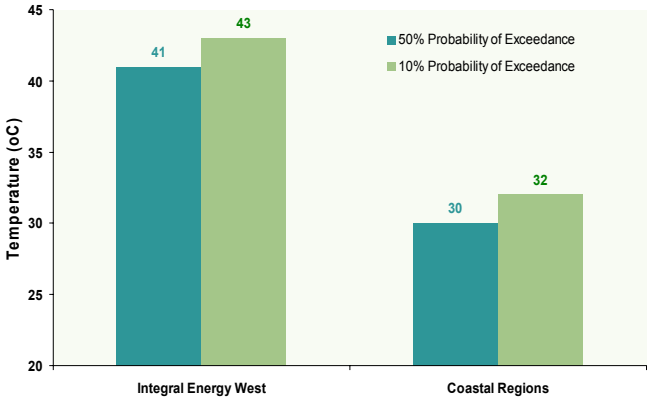
The design temperature[7] for meeting peak demand on the network in a standard summer is 41^{o}C for the western regions in Integral Energy's network, compared to only 30^{o}C for Integral Energy's coastal regions.

Moreover, in Integral Energy's distribution area, the extreme rating temperature for the system[8] (similar to a 1 in 10 year type event) is only marginally higher at 43^{o}C, so that there is relatively very little difference (just 2^{o}C) between a standard summer peak temperature and an extreme summer peak temperature. This means there is a very high probability (almost certainty given design constraints) that there will be an extreme temperature experienced in any given year in the Integral Energy network. Integral Energy needs to invest in its network to ensure acceptable service standards under these extremes of load and temperature.

[7] 50% Probability of Exceedance (PoE) – one in two year event.

[8] Effectively the 10% probability of exceedance temperature.

Figure 3.4: Design temperature ranges for western regions and coastal regions of Integral Energy's network



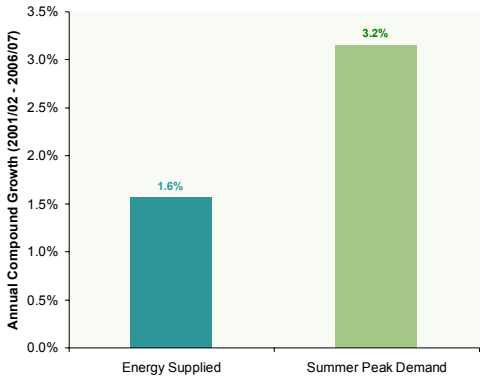
3.4 Integral Energy's customers and demand profile

Integral Energy serves around 770,000 residential customers, 76,000 small business customers and 3,700 large customers with annual electricity consumption in excess of 160 MWh pa.

3.4.1 Customer usage trends and the predominance of air conditioning

The way customers use electricity significantly affects the development of the electricity network. The higher and more sustained temperatures experienced in the west of Sydney primarily impact the peak demand growth rates for Integral Energy relative to the modest energy growth in household electricity consumption as highlighted in Figure 3.5.

Figure 3.5: Historical energy and demand growth rates

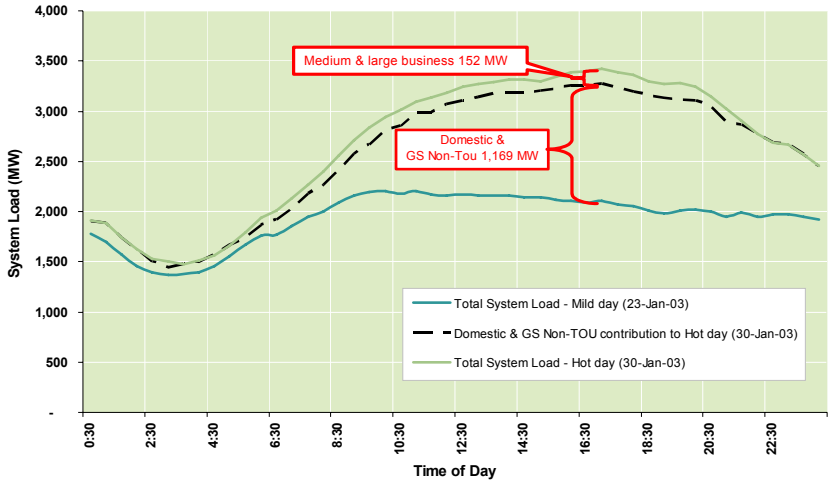


The increased uptake of air conditioning in new residential developments and the increasing penetration of air conditioning units into existing dwellings, coupled with an increasing air conditioning (kW) loading as customers become more accustomed to using refrigerated air in their homes, are all causing demand to increase at a faster rate than energy growth. This trend is

expected to continue through the *2009 regulatory control period* before it ultimately plateaus with appliance saturation.

Figure 3.6 shows the effect of the air conditioning load on peak demand on an extreme temperature day relative to a mild summer day. As shown, the increase in load on an extreme temperature day is largely due to domestic and general supply non-time-of-use customers.

Figure 3.6: Contribution to summer peak by residential and commercial general supply customers



Even though these peak demands occur relatively infrequently, Integral Energy is still required to ensure that the network is capable of meeting this demand when it does occur. This means that many of the network assets are used only to service the air conditioning demand of households during the extreme weather events and only for very short periods e.g. typically less than 85 hours per year. The impact on system load factors is demonstrated in Figure 3.7.

Figure 3.7: Integral Energy System & NSW System Load Factors

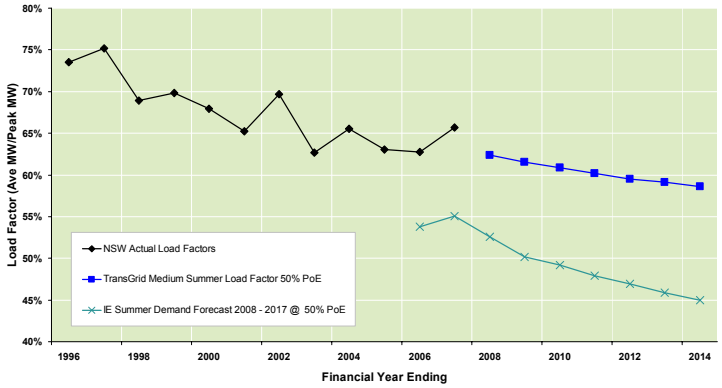


Figure 3.7 shows that the Integral Energy system load factor is already well below (i.e. worse than) that of the NSW system and is forecast to further decline at a similar rate to the NSW system (based on TransGrid data).

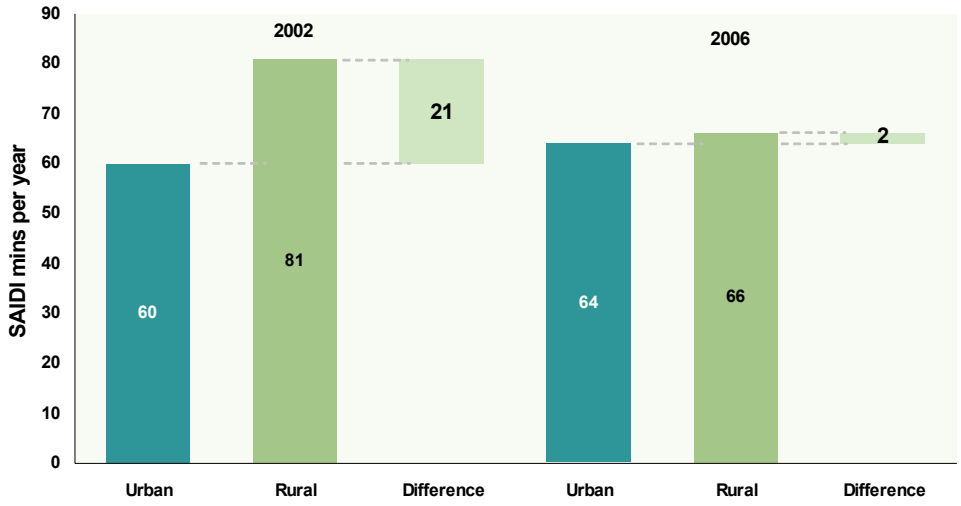
3.4.2 Customer service expectations

Customer expectations about network reliability are increasing. Integral Energy commissioned research studies into customer expectations of reliability in 2002 and again in 2006. This study involved choice modelling to understand the level of electricity reliability that customers were willing to trade off against other offerings.

The research shows that while urban customers' expectations have remained steady, rural customers' expectations about the number and duration of outages have changed significantly to a point where they are now very similar to those of urban customers. This trend in customer expectations is shown in Figure 3.8 and is consistent with the increasing use of home computers and other technology.

Integral Energy recognises the increased expectations of rural customers. The NSW DRP Licence Conditions establish interruption duration and frequency standards that apply to Integral Energy feeders and customers. Integral Energy has established a program to ensure that rural feeders are operated to comply with these conditions. These programs are detailed in Appendix J.5 and will improve the overall reliability experience of rural customers.

Figure 3.8: Urban and rural customer expectations – SAIDI[9] minutes per year without supply (average)



3.5 Integral Energy's system and network assets

Integral Energy distributes electricity taken from the NSW transmission network at either 132,000 or 66,000 volts. It is then reduced to 33,000, 22,000, or 11,000 volts through a network of sub-transmission and zone substations. Street based distribution substations reduce voltage to 415/240 volts to meet customers' home or business requirements.

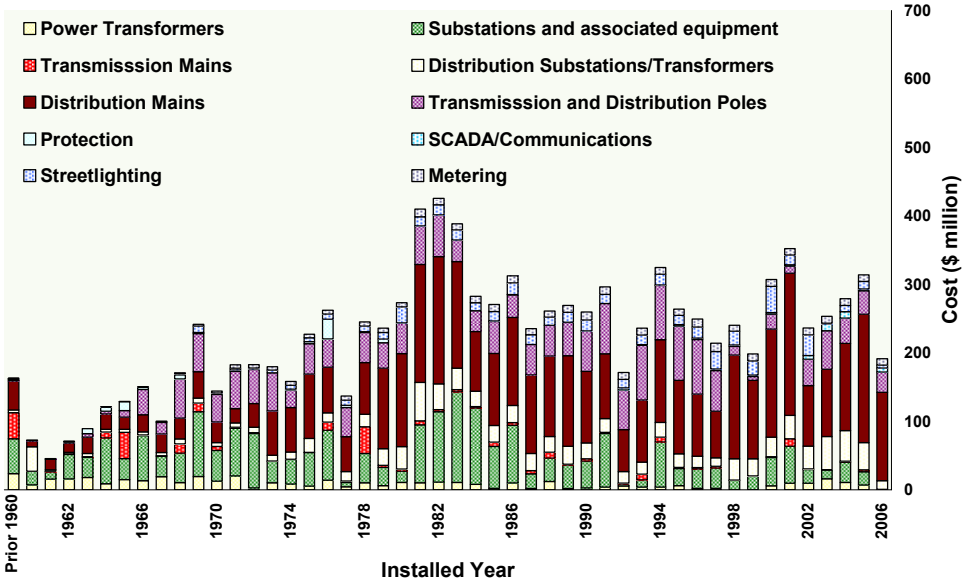
[9] System Average Interruption Duration Index

The network is made up of 168 transmission and zone substations, 28,310 distribution substations, 312,650 power poles, and 185,000 streetlights connected by 33,000 kilometres of underground and overhead lines. A set of network maps showing the relationship between the various parts of the network are provided as a series of map files at Appendix J.2. The cost to replace the existing asset base is estimated at $7.4 billion (compared with the regulatory value of $3.8 billion at 30 June 2009).

3.5.1 Asset age and remaining life

The rate of growth of the Integral Energy network dramatically increased from the 1960s as shown in Figure 3.9. Many of these assets are now near the end of their effective lives.

Figure 3.9: Network assets – installed cost profile (2006/07 $)

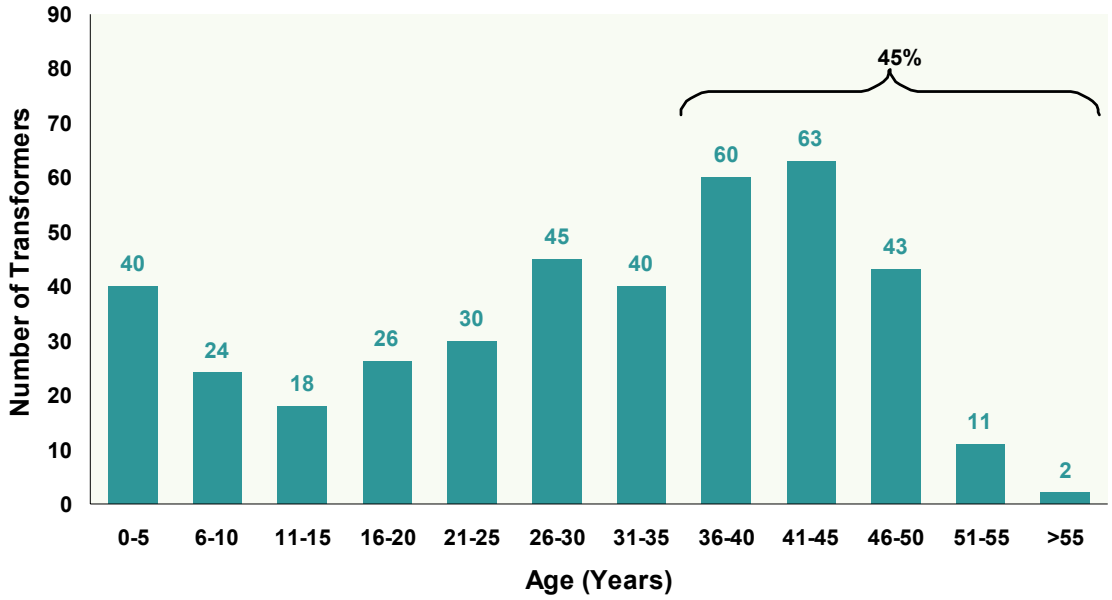


In the period 1992 to 2006, the average age of Integral Energy network assets continued to increase. If the average age of the network assets is allowed to increase excessively, a significant volume of network assets will be operating beyond their useful lives, with a resultant decline in reliability performance. Integral Energy aims to ensure that the average age of the network is maintained within an acceptable range that is consistent with reliability and safety obligations. Expenditure programs, discussed in Chapter 9, have been developed to achieve this outcome.

As an example, a significant number of Integral Energy power transformers were installed before the 1970s. During the 1990s many of these critical network assets reached an age at which they would require replacement in the following decade. This is illustrated by the power transformer age profile shown in Figure 3.10, which indicates that almost half of power transformers are greater than 36 years old.

Even with the advances in operations, maintenance and strategic replacement, Integral Energy will still be required to replace a significant and increasing number of these assets over the *2009 regulatory control period*.

Figure 3.10: Power Transformer Age Profile in 2007



4

Current performance

To assist the AER in assessing Integral Energy's *regulatory proposal*, the RIN, seeks information on past performance. This chapter examines Integral Energy's performance during the *current regulatory control period* in the following areas:

- Network reliability and system security;
- Peak demand, energy consumption and customer numbers; and
- Capital and operating expenditure.

4.1 Summary

In the *current regulatory control period*, Integral Energy continues to be an effective network manager as demonstrated by sound network performance outcomes for customers and the delivery of significantly enhanced capital and operating investment programs.

Over the *current regulatory control period*, Integral Energy has:

- Successfully arrested the deterioration in the performance of its network and has improved customer reliability outcomes;
- Experienced an annual average growth in system peak demand of 3.4% over the past five years, which is similar to the level set by IPART in its 2004 Determination;
- Faced much lower growth in energy consumption of 1.6% per annum over the *current regulatory control period*, 30% below the annual growth forecasts of 2.3% per annum allowed by IPART;
- Met its regulatory obligations, while spending:
    - marginally more than (4%) the IPART allowed levels for capital expenditure. By the end of the *current regulatory control period*, $753 million will have been invested to meet growth and $523 million will have been expended to replace ageing network assets; and
    - marginally less than (4%) the IPART allowed levels for operating expenditure.

Strong network performance was achieved through consistently targeted and timely delivered capital and operating programs and projects.

4
Current performance

4.2 Regulatory information requirements

The *Transitional Rules* and AER's information requirements relating to historical performance as specified in the RIN are summarised in Box 4.1.

Box 4.1: Historical performance regulatory information requirements

The *Transitional Rules* and the RIN require Integral Energy to provide information on a number of matters, including the following:

Clauses 6.5.6(e)(5) and 6.5.7(e)(5) of the *Transitional Rules* require the AER, when assessing forecast capital and operating expenditures, to have regard to actual and expected operating expenditure and capital expenditure during the preceding regulatory control periods.

Clauses 6.1.1(6) and 6.1.2(7) of Schedule 6.1 of the *Transitional Rules* require a DNSP to identify for proposed material assets capital/operating expenditure for each of the pas regulatory years of the previous and *current regulatory control periods*, and the expected capital/operating expenditure for each of the last two regulatory years of the current regulatory control period, categorised in the same way as for the capital/operating expenditure forecast.

In addition to these *Transitional Rules* requirements, the AER requires through its RIN the following information:

- An explanation of historic network capacity or performance levels and their impact on service levels at key points in the network (clause 2.3.7(a)(5) of the RIN);
- An explanation of how network capacity in the *current regulatory control period* met actual demand relative to the demand forecasted for each period (clause 2.3.7(a)(7) of the RIN);
- The total amounts of capital and operating expenditure requested and approved for each year of the *current regulatory control period* (including any pass through amounts) (clauses 2.2.1(3) and 2.2.2(a)(2) of the RIN).

This *regulatory proposal* provides the information to address these *Transitional Rules* and RIN requirements.

4.3 Network reliability and system security performance

The following sections outline Integral Energy's performance in the current regulatory control period in the areas of:

- Network reliability; and
- System security.

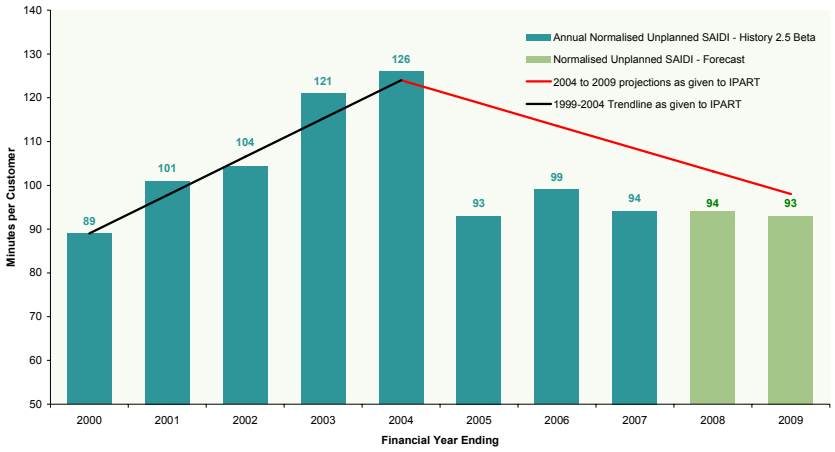
Integral Energy's network performance report for 2006/07 is included in Appendix F.

4.3.1 Network reliability over the current regulatory control period

Improving reliability performance has been one of the key drivers of expenditure in the *current regulatory control period* as Integral Energy has improved customer reliability outcomes after successfully arresting the deterioration in the reliability of its network. The total system average interruption duration index (SAIDI) measures the time, in minutes, that an average customer is without power in a given year. This is an important measure of an electricity distribution network's performance.

Over the period 1999/00 to 2003/04, Integral Energy customers had experienced declining performance, reaching a SAIDI of 126 minutes in 2003/04, after which reliability improved by more than 20%. The improvement in reliability has been achieved through a combination of targeted maintenance and capital initiatives. Integral Energy's 2004 regulatory submission set out plans to continue to focus on improving performance in its worst performing areas (continuing a strategy that commenced in 2002), by managing load at risk and planning for and replacing aged network assets. These plans were implemented and network reliability improved as shown in Figure 4.1.

Figure 4.1: Network reliability performance



Note: SAIDI outcomes are normalised using the 2.5 Beta method. Note that the targets and trendline submitted to IPART for the 2004 Determination have been adjusted from the SCNRRR method, to the 2.5 Beta method

4.3.2 System security over the current regulatory control period

The NSW DRP Licence Conditions include requirements that must be attained by 2014. In order to meet the Government's initiative for improved security and reliability of supply, a number of new programs and projects will need to be undertaken during the *2009 regulatory control period*.

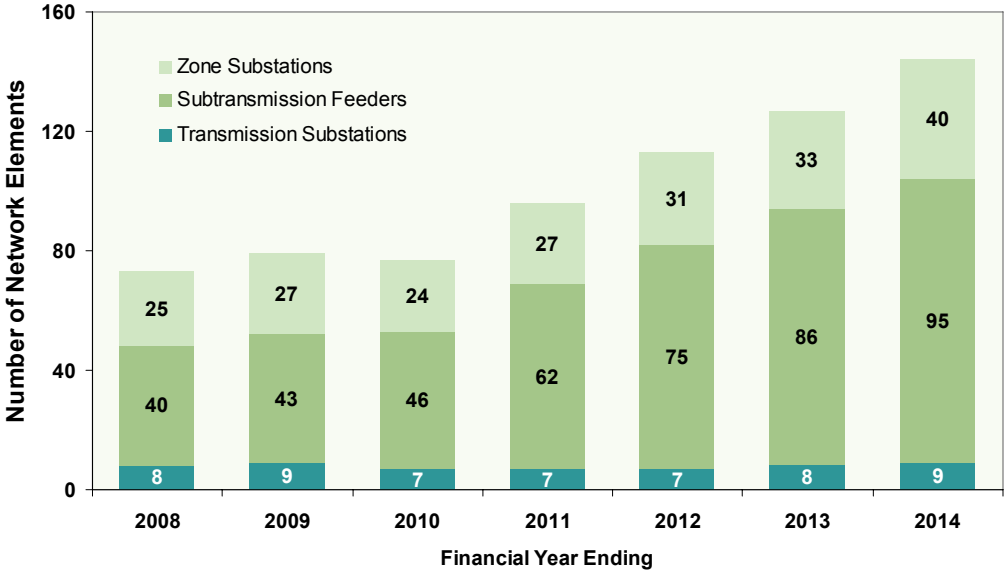
4.3.2.1 Design Standards

Figure 4.2 shows the existing and forecast number of known network elements that will require investment to comply with the NSW DRP Licence Conditions, under a "do nothing" scenario.

4
Current performance

Figure 4.2 illustrates that there are a number of network elements that currently require investment to meet the licence condition design standards required in 2013/14, and that this number will increase unless additional expenditure occurs over the *2009 regulatory control period*.

Figure 4.2: Forecast number of transmission substation, zone substation and sub-transmission feeder network elements that need investment to meet the design planning standards



Similarly, Figure 4.3 shows existing and forecast volumes of the known distribution feeders that require investment to comply with the NSW DRP Licence Conditions design planning standards.

Figure 4.3: Number of distribution feeders needing investment to meet the design planning standards

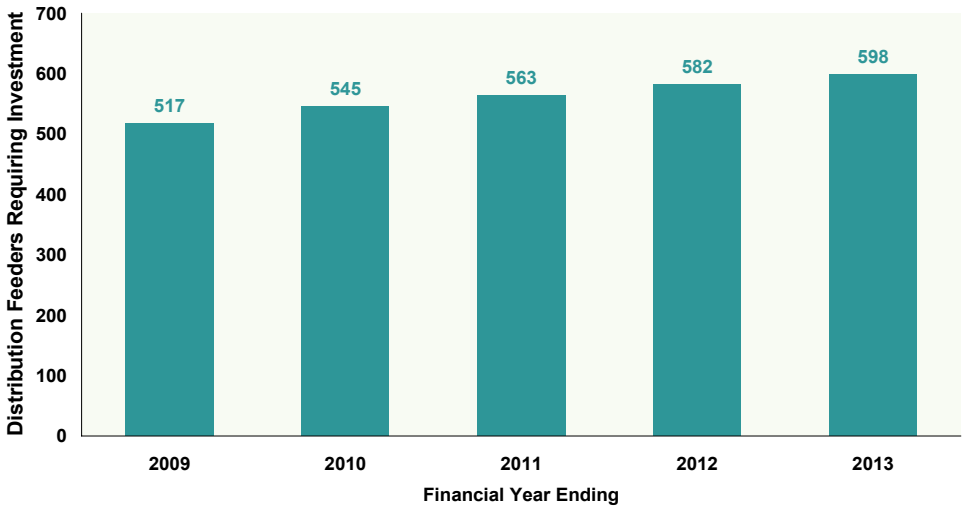
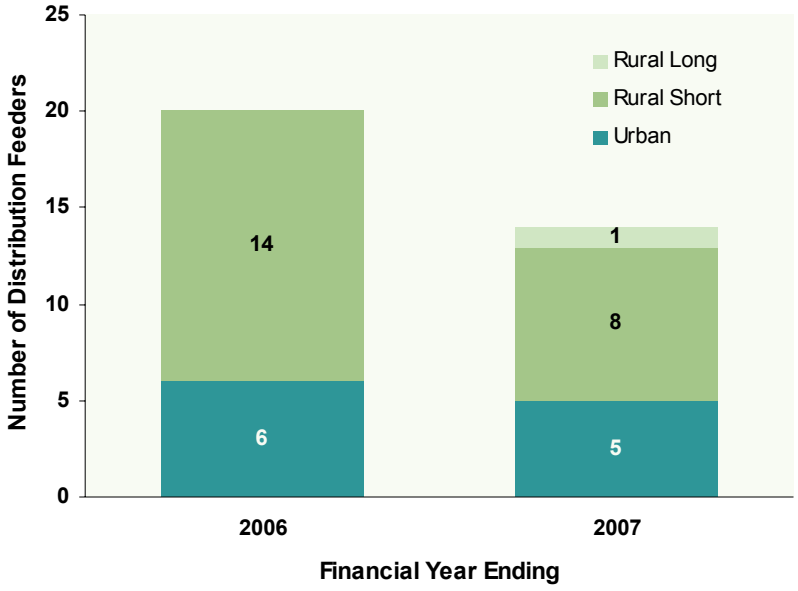


Figure 4.3 illustrates that, while there are number of network elements that currently do not meet the licence condition design standards required in 2013/14, a growing number of these feeders will not meet the required targets unless additional expenditure occurs over the *2009 regulatory control period*.

4.3.2.2 Reliability

The number of individual feeders that currently require investment to meet the NSW DRP Licence Condition reliability targets is shown in Figure 4.4.

Figure 4.4: Number of feeders requiring investment to meet individual feeder standards



The reliability performance of all distribution feeders has been assessed based on five years of data. The forward reliability driven capital expenditure projections are based on addressing the known areas of non-compliance identified above as well as addressing those network elements that are forecast not to meet the NSW DRP Licence Conditions during the *2009 regulatory control period* if Integral Energy were to "do nothing".

As discussed in Chapter 9, significant investment will be required over the *2009 regulatory control period* to ensure compliance with the reliability standards contained in the NSW DRP Licence Conditions.

4

Current performance

4.4 Growth in peak demand and energy consumption over the *current regulatory control period*

Over the *current regulatory control period*:

- System peak demand has continued to increase at an annual average rate of 3.4% over the past five years, which is similar to the level set by IPART in its 2004 Determination;
- Energy consumption is expected to increase by approximately 1.6% per annum over the *current regulatory control period*, 30% below the forecast annual growth of approximately 2.3% allowed by IPART in the 2004 Determination. The actual and projected growth rates for the *current regulatory control period* are below the lowest estimates put forward by Integral Energy at the time of the 2004 Determination; and
- Customer numbers growth has been approximately 50% of that allowed by IPART in its 2004 Determination.

4.4.1 System peak demand during the current *regulatory control period*

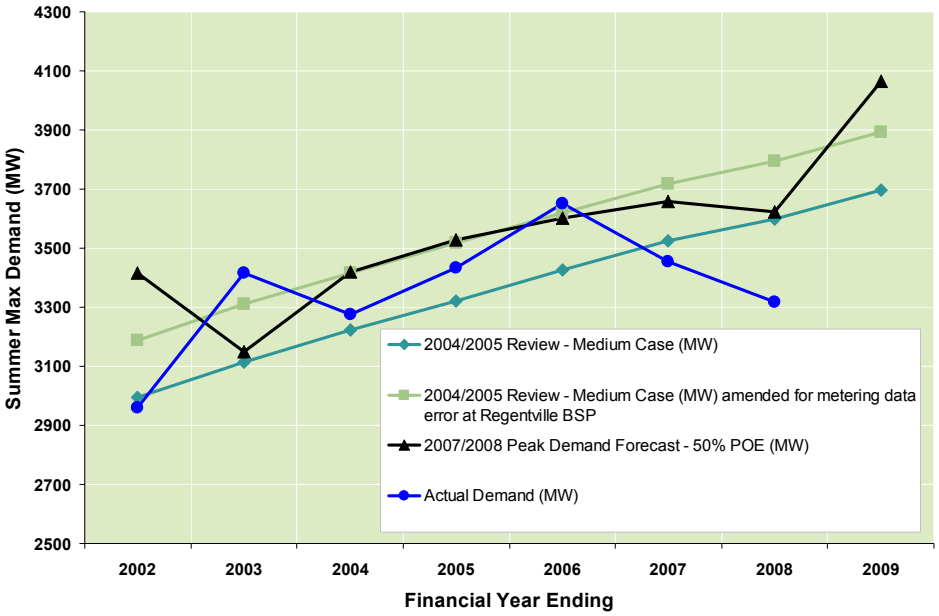
As indicated above, average annual growth in system peak demand has been 3.4% over the *current regulatory control period*, similar to the level forecast by IPART in its 2004 Determination.

The growth in peak demand has occurred despite the lower than forecast economic performance and customer connections over the current regulatory control period. Drivers of peak demand growth include the following:

- New customer connections;
- The increased penetration of air conditioning units - residential air conditioning penetration has risen to approximately 62% across the Integral Energy network and approximately 74% in Western Sydney; and
- The increased use of energy intensive appliances such as air conditioning and entertainment units. The increasing average ratings of these appliances have also affected growth in peak demand during the *current regulatory control period*.

Figure 4.5 compares the forecast and actual peak demand over the *current regulatory control period*.

Figure 4.5: Summer maximum demand forecast and actual comparison



This figure shows that the actual peak demand growth was only slightly less than the forecast growth rates set by IPART, and when weather corrected for the 50% PoE it was reasonably closely aligned.

4.4.2 Energy consumption during the current *regulatory control period*

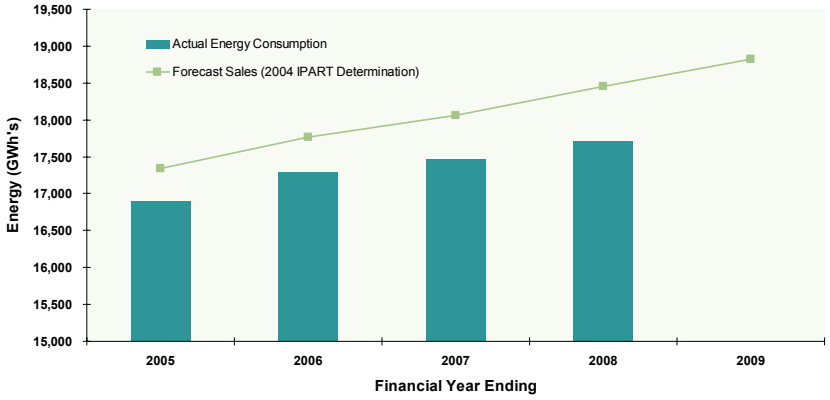
Energy consumption is expected to increase by approximately 1.6% per annum over the *current regulatory control period*, 30% below the forecast annual growth of approximately 2.3% allowed by IPART in the 2004 Determination. The actual and projected growth rates are also below the lowest estimates put forward by Integral Energy at the time of the 2004 Determination.

The lower actual volumes, approximately 3,000 GWh over the period were largely as a result of reduced controlled load and lower than forecast connections in the non-residential sector, driven by lower economic activity than that assumed in the 2004 Determination.

The growth in peak demand and lower growth in energy consumption results in a declining load factor, which has been a prevalent feature in the *current regulatory control period* and is part of a trend expected to continue for the *2009 regulatory control period*.

Figure 4.6 compares the actual energy consumption with the forecasts submitted to IPART.

Figure 4.6: Energy actual versus forecast

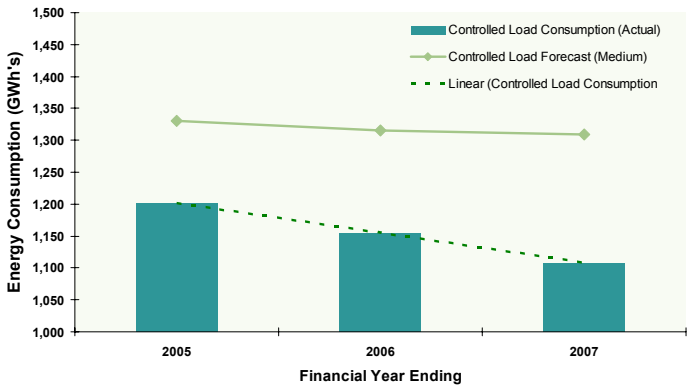


The lower actual energy consumption has largely been a result of:

- For residential customers, lower than forecast consumption in domestic controlled load;
- For non-residential customers, a decline in Large Commercial and Industrial (C&I) customer energy consumption driven by a combination of lower economic activity than that assumed in the 2004 Determination and ongoing customer changes taking place in both the economy and in the Integral Energy network region; and
- Lower than forecast energy transfers at the Bulk and Inter Distributor Transfer points.

In relation to residential customers, a key source of the lower energy consumption has been a major decline in controlled load consumption as customers opt out of electric storage hot water, for other fuel sources. This change is not surprising given the major policy and environmental thrust to eliminate electric hot water heating to reduce greenhouse gas emissions. The rate of decline in controlled load consumption, however, has occurred at a faster rate than that expected at the 2004 Determination. Figure 4.7 highlights the divergence between the controlled load forecast in the 2004 Determination and actual consumption.

Figure 4.7: Forecast variance in controlled load energy consumption



In relation to non-residential customers, a key source of the variance between forecast and actual consumption (Figure 4.8) is the variance between the Gross Regional Product (GRP) parameters on which the forecast was based and the GRP outcomes. Since Integral Energy made its 2004 regulatory submission, it has revised the initial forecasts for non-residential customers by using the actual GRP parameters and National Institute of Economic and Industry Research's (NIEIR's) updated forecasts of these parameters.

In addition, as illustrated in Figure 4.9, energy was significantly lower than forecast in the large customer (C&I) tariff segments. This significant decline has resulted in overall lower than expected energy consumption in the non-residential segment.

Figure 4.8: Actual versus forecast energy – non-residential segment

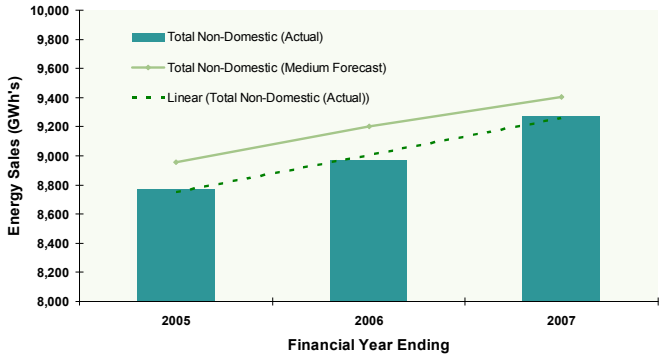
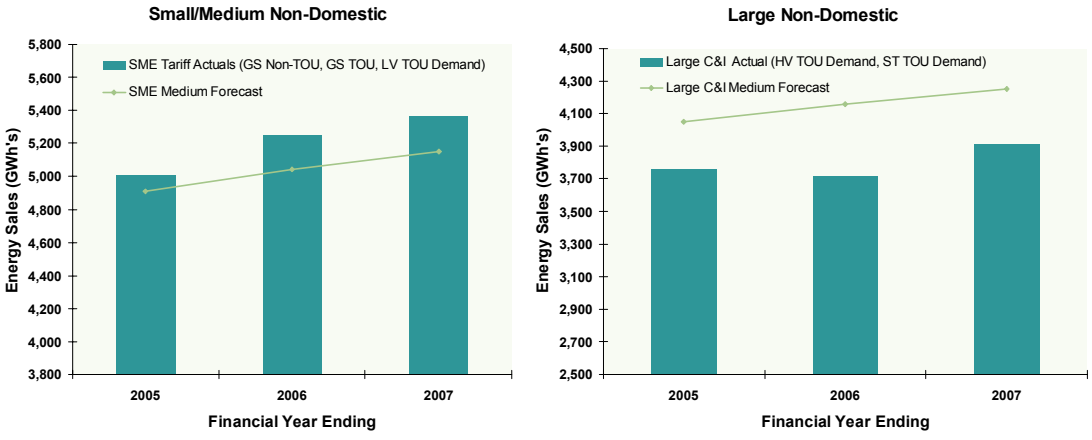


Figure 4.9: Forecast variance in small/medium and large non-domestic energy consumption



4.4.3 Customer numbers during the current *regulatory control period*

Residential customer numbers are well below the forecast levels adopted by IPART at the 2004 Determination for the *current regulatory control period*.

Integral Energy engaged CRA International (CRA) to review all material underlying assumptions and methodologies used in Integral Energy's peak demand and energy consumption forecasting.

4
Current performance

As discussed in the CRA Report (Appendix I), there are a range of exogenous factors that are impacting customer number growth, including the following:

- Housing affordability;
- House and land stocks available;
- Local planning and environment issues;
- Lags in infrastructure development; and
- Population growth and interstate migration.

Integral Energy's analysis has identified that customer number growth has correlated very strongly with NSW housing starts, as the Integral Energy network is in one of the key residential development zones in NSW. Data on NSW housing starts is now given more weighting in the development of Integral Energy's residential customer growth forecasts.

4.5 Capital expenditure over the *current regulatory control period*

Table 4.1 shows that total capital expenditure for Integral Energy is projected to be $1,868 million over the *current regulatory control period*, representing a total expenditure that is $77 million,[10] or approximately 4%, above the level allowed by IPART in its 2004 Determination.[11]

Table 4.1: Actual/projected capital expenditure over the *current regulatory control period*

	Actual year ended			Projected year ending		
Nominal $m	2005	2006	2007	2008	2009	Total
System						
IPART allowance	199.8	276.8	350.5	366.1	445.6	1,638.9
Actual/projected	198.6	243.1	312.7	324.2	444.3	1,523.0
Non-system						
IPART allowance	44.8	30.5	25.1	24.3	27.5	152.3
Actual/projected	48.0	81.7	54.2	71.0	90.5	345.2
Total						
IPART allowance	**244.7**	**307.3**	**375.7**	**390.5**	**473.1**	**1,791.2**
Actual/projected	**246.6**	**324.8**	**366.9**	**395.1**	**534.8**	**1,868.2**

[10] The IPART capital expenditure has been adjusted to include the IPART approved pass through amounts for the NSW Design Planning and Reliability licence conditions.

[11] *NSW Electricity Distribution Pricing 2004/05 to 2008/09 - Final Report*, June 2004, IPART.

Total capital expenditure comprises expenditure on system and non-system assets. System capital expenditure, relating primarily to network infrastructure such as power transformers, lines and cables and switchgear, is expected to be 7% below the IPART allowed levels.

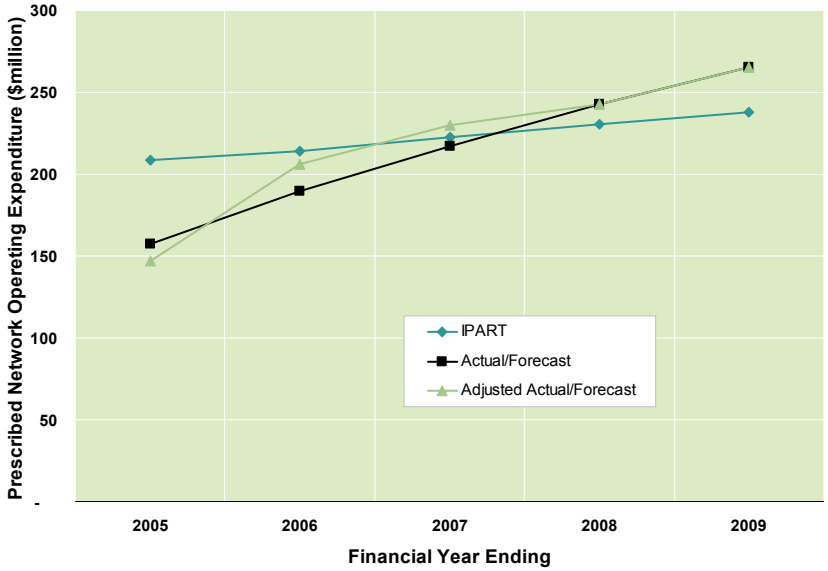
The lower than forecast system capital expenditure relative to the IPART allowances is expected to be offset by higher than forecast investment in non-system assets. Non-system capital expenditure relates primarily to land and buildings, vehicles, furniture and information and communications technology (ICT). Non-system capital expenditure is above the IPART allowed levels primarily due to the development of regional depots as part of a strategy to have field staff positioned within one hour of most Field Service Centres to respond to outages in a timely manner. An increased requirement for motor vehicles, resulting from a change in policy to acquire rather than hire motor vehicles during the *current regulatory control period,* has also contributed to the increase in non-system expenditures relative to the level allowed by IPART. Expenditure over the *current regulatory control period* to meet growth and to replace an ageing network is projected to be $753 million and $523 million, respectively.

Integral Energy engaged Parsons Brinckerhoff Australia (PB) to review its actual and forecast capital expenditure. PB reviewed a number of sample projects in Integral Energy's current capital expenditure and in each case determined that the "costs are reasonable and efficient when compared with similar projects" and that the "unit rates appear reasonable and efficient" (Appendix K).

4.6 Operating expenditure over the *current regulatory control period*

Figure 4.10 shows that operating expenditure for Integral Energy is projected to be $1,069 million over the *current regulatory control* period, representing a total expenditure that is $44 million, or 4%, below the level allowed by IPART in its 2004 Determination.

Figure 4.10: Actual versus IPART allowed operating expenditure over the *current regulatory control period* (including cost pass through amounts)



To make a like-for-like comparison of actual results to those allowed by IPART, Integral Energy made adjustments in 2005/06 and 2006/07 to normalise its actual results to reflect the underlying cost levels. The adjustments related to a credit for surplus superannuation funds (total $6.5 million, prescribed portion $4.6 million) and a write back of provisions (total $19.4 million, prescribed portion $13.8 million). These adjustments do not affect the 2007/08 or 2008/09 projections.

The difference between the IPART allowed levels of expenditure and the actual/projected underlying levels during the *current regulatory control period* is due to:

- An increase in input costs, including labour cost increases above inflation over the *current regulatory control period*;
- An increase over the *current regulatory control period* in the volume of assets required to be maintained; and
- Increases in activity levels over the *current regulatory control period* in response to mandatory obligations and requirements in areas such as safety, environmental management and network performance, as specified in relevant national, state and industry specific legislation and regulations. This activity has included inspection of private poles and overhead wires as a public safety and risk mitigation strategy.

Figure 4.10 also shows that the annual operating expenditure profile over the *current regulatory control period* differs from that assumed by IPART primarily due to the tight labour market and the longer than expected period required to ramp up the maintenance program.

As stated above, Integral Energy engaged PB to review its actual and forecast operating expenditure. PB concluded that "actual opex costs for the current regulatory period and the 2007/08 opex projections are reasonable and reflect the costs associated with delivering inspection and maintenance services in line with IE's current Asset Maintenance Plans" (Appendix K).

5

Service standard obligations

Regulatory obligations spanning areas such as safety, environment, network design, the service performance and reliability requirements of the NSW DRP Licence Conditions, as well as the requirements for provision of direct control services, all have an effect on Integral Energy's costs.

This chapter sets out the services provided by Integral Energy and specifically addresses those service standard obligations that have a material impact on forecast capital and operating expenditures.

5.1 Summary

The service standard obligations which have the greatest effect on Integral Energy's expenditure forecasts for the *2009 regulatory control period* include:

- The NSW Licence Conditions;
- Power system performance and quality of supply standards stated in chapter 5 and schedule 5 of the *Rules*; and
- Those obligations imposed by amendments dated 3 May 2005 to the Electricity Supply (General) Regulation 2001 (NSW).

This chapter and the AER's pro formas 2.3.4 and 2.3.5 (Attachment 1) together provide the information required by the *Transitional Rules* and RIN requirements of relevant service standard obligations.

Chapters 7 and 8 of the *regulatory proposal* describe how these obligations have been taken into account in developing Integral Energy's network strategy, planning and management.

The programs and projects required to satisfy Integral Energy's service standard obligations for the *2009 regulatory control period* are provided in Chapters 9 and 10. Many of the regulatory obligations and requirements, including those relating to existing Occupational Health and Safety (OH&S) and environmental requirements, are embedded in the fabric of Integral Energy systems, processes and policies. The requirements are also evident in current expenditures and are incorporated into the capital and operating costs for the *2009 regulatory control period* in Chapters 9 and 10 respectively.

Integral Energy's capital and operating expenditure forecasts have been developed to comply with all applicable regulatory obligations and requirements. Accordingly, any reduction in the AER's network determination on Integral Energy's forecast capital or operating expenditure set out in this *regulatory proposal* has the potential to compromise compliance by Integral Energy.

5.2 Regulatory information requirements

The *Transitional Rules* and AER's information requirements relating to regulatory and service standard obligations (as specified in the RIN) are summarised in Box 5.1.

Box 5.1: Key regulatory and service standard obligation information requirements
The *Transitional Rules* and the RIN require Integral Energy to provide information on a number of matters, including the following. Clauses 6.5.6(a)(2) and 6.5.7(a)(2) of the *Transitional Rules* require a building block proposal to include total forecast operating and capital expenditure that a DNSP considers is required in order to comply with all applicable regulatory obligations or requirements associated with the provision of standard control services. To assist in assessing compliance of this *regulatory proposal* with clauses 6.5.6(a)(2) and 6.5.7(a)(2) of the *Transitional Rules* requirements, the AER requires, through its RIN, information on existing, new, anticipated or incremental regulatory obligations or requirements which have a material impact on expenditure forecasts (pro forma 2.3.4). Clause 2.2.5 of the AER's RIN requires the name and description of each individual standard control service, alternative control service and negotiated distribution service provided by Integral Energy that is the subject of this regulatory proposal. The estimated impact of satisfying the internally imposed obligations on Integral Energy's capital and operating expenditures for the *2009 regulatory control period* is discussed and quantified in Chapters 9 and 10 of this *regulatory proposal*.

This chapter and the AER's pro forma 2.3.5 (Attachment 1) together provide the information required by the *Transitional Rules* and RIN requirements of relevant service standard obligations.

5.3 Services provided by Integral Energy

Integral Energy provides a number of distribution services that are regulated by the AER as *direct control services*. These services are summarised below and listed in Appendix G. Integral Energy's proposed negotiating framework as required under the *Transitional Rules* is included Appendix H.

A *distribution service* that is provided by Integral Energy and that was determined by IPART to be a prescribed distribution service for the purposes of the *current regulatory control period* is classified as a *direct control service* and further classified as a *standard control service* for the *2009 regulatory control period* (clause 6.2.3B(a) of the *Transitional Rules*).

A *distribution service* provided by Integral Energy that was determined by IPART to be an excluded distribution service for the purposes of the *current regulatory control period* is in the case of the excluded distribution service of the construction and maintenance of public lighting

infrastructure, classified as a *direct control service* and further classified as an *alternative control service* for the *2009 regulatory control period* (clause 6.2.3B(b)(1) of the *Transitional Rules*).

Any other *distribution service* provided by Integral Energy and determined by IPART to be an excluded distribution service for the purposes of the *current regulatory control period* is deemed to be classified as an unregulated distribution service, unless the AER has made a determination under 6.2.3B(e) of the *Transitional Rules*. The AER has not yet made such a determination; therefore the following services are unclassified and not regulated under the *Transitional Rules*:

- Customer funded connections (see Chapter 11 for the treatment of customer funded connections in the roll forward of the regulatory asset base);
- Customer specific services; and
- Type 1 to 4 metering services.

Therefore, these services are not dealt with as part of this *regulatory proposal*.

A summary of the classification of services under the *Transitional Rules* that are subject to this *regulatory proposal* follows.

Direct control service – standard control services:

- Distribution use of system services;
- Private power line inspections and customer installation inspections;
- Certain monopoly services (see Appendix G for detail on services provided);
- Certain miscellaneous services (see Appendix G for detail on services provided); and
- Certain emergency recoverable works.

Direct control service – alternative control services:

- The construction and maintenance of public lighting infrastructure.

Negotiated distribution services:

- Integral Energy currently does not provide any negotiated distribution services.

5.3.1 Application of *Transitional Rules* to certain transmission assets

In accordance with clause 6.1.5 of the *Transitional Rules*, for the purposes of the *2009 regulatory control period* each part of Integral Energy's network that would, but for clause 6.1.5, be part of Integral Energy's transmission network is deemed to be part of Integral Energy's distribution network for the purposes of Chapter 6 of the *Transitional Rules* and Chapter 6A of the *Rules*.

5.4 Existing regulatory obligations

This *regulatory proposal* for the *2009 regulatory control period* is based on existing legislative and regulatory obligations and requirements, including provisions in legislation and regulatory instruments which are deemed to take effect and apply to Integral Energy at a specific future time (such as the reliability standards contained within the NSW DRP Licence Conditions).

Integral Energy has identified more than 100 pieces of legislation and regulatory instruments associated with providing *direct control services* with which it must comply[12]. Integral Energy must also comply with its obligations under the Electricity Supply Act, and its distribution licence, as well as plan and operate its distribution system in accordance with the mandated reliability and security standards in the *Rules* and the NSW Licence Conditions. Further obligations in relation to non-network solutions are set out in the Electricity Supply Act and NSW Demand Management Code.

Sections 5.6 and 5.7 discuss the demand management and service performance and reliability obligations.

5.5 New and anticipated regulatory obligations

Other than the pass through events set out in Chapter 16, Appendix T and the AER pro forma 2.3.4, Integral Energy is not aware of any new or anticipated obligations including:

- New legislation, regulation and other requirements related to the provision of standard control services;
- Future amendments to existing legislation, regulation and other requirements related to the provision of standard control services; or
- Future amendments to guidelines under existing legislative and regulatory instruments.

Given that the extent of any costs associated with the identified new or anticipated obligations is unknown at the date of this *regulatory proposal*, Integral Energy has not included such costs in its capital and operating expenditure forecast for the *2009 regulatory control period*. Instead Integral Energy has prepared this *regulatory proposal* on the basis that any changes resulting from a new regulatory obligation or requirement (including the proposed sale of Integral Energy's retail operations) occurring during the *2009 regulatory control period* and which, individually or cumulatively, materially affect Integral Energy's network operations, are deemed to be a *pass through event* (see Chapter 16).

[12] Within the definition of a "required obligation or requirement" under section 2D of the NEL and clauses 6.5.6(a)(2) and 6.5.7(a)(2) in the *Transitional Rules*.

5
Service standard obligations

5.6 Demand management obligations

Under the Electricity Supply Act 1995 (NSW), Integral Energy is obliged to consider non-network solutions to network constraints. The NSW Demand Management Code of Practice and the *Rules* also require Integral Energy to investigate (and implement when cost effective) non-network solutions before investing in new network assets.

These requirements affect both Integral Energy's internal planning processes and how it engages and consults with stakeholders.

Integral Energy is an industry leader in seeking out and applying demand management initiatives. Integral Energy's network planning processes investigate both supply side and demand side solutions. The Annual Network Planning Statement is used to engage the community on the network investment plans. The engagement and consultation process actively seeks submissions from external parties on viable non-network alternatives that may defer network capital investment (see Chapter 8 for more detail).

5.7 Service performance and reliability obligations

Integral Energy is subject to specific obligations for service performance and reliability when providing standard control services, and is committed to providing secure and reliable network services.

The service standard obligations include:

- The NSW Licence Conditions;
- Power system performance and quality of supply standards in chapter 5 and schedule 5 of the *Rules*; and
- The amendments of 3 May 2005 to the Electricity Supply (General) Regulation 2001 (NSW).

Service standard obligations are a key driver of network investment and performance against service standard targets is a principal internal indicator of network business performance. New obligations or changes to existing obligations are monitored and appropriately reflected in business processes and policy documents. As an example, the NSW DRP Licence Conditions are incorporated into Integral Energy's planning policy and standards.

The obligations relating to service performance and reliability which are sourced from the NSW DRP Licence Conditions fall into four main areas: design and planning, system reliability, power quality and customer service, as outlined in Table 5.1.

Table 5.1: The four key areas of service performance and reliability obligations

Area	Description
Design and planning	The way in which the electricity network is planned and designed has a direct impact on the security the network will deliver. Design and planning standards define the requirements for an alternate or backup supply of electricity in the case of an unplanned outage.
System reliability	Electricity outages occur when the supply of electricity is discontinued. The reporting of unplanned outages, as experienced by the average network customer, is the most commonly used measure of overall network reliability. Reliability performance measures are typically represented in terms of the impact that the average network customer would experience and include: • the cumulative duration of unplanned outages over a period of time (SAIDI); • the cumulative frequency of unplanned outages over a period of time (SAIFI).
Power quality	In certain instances, the quality of the electricity supply may exceed or fall below acceptable standards even though the physical supply is not interrupted. Power quality deviations may affect the performance of certain appliances or plant to a level similar to a supply interruption. They may also impact on the efficient operation of some appliances or items of plant. There are many ways in which power quality can deviate from acceptable levels and a range of performance measures and the associated targets are reflected in regulatory obligations to protect the customer, the public, employees and property.
Customer service	Average measures of reliability performance do not adequately capture the reliability levels experienced by individual customers or small groups of customers. To remedy this, measures have been developed that capture the duration and frequency of unplanned outages experienced by individual customers and customers on the same feeder. Customer service is also assessed through measures that gauge the experience of the customer when they have a personal interaction with the Integral Energy. These include measures relating to telephone services, notification of planned outages and meeting appointments.

The primary source of the obligations in each of these four areas is shown in Table 5.2, together with examples of the performance measures, with targets in the relevant regulatory instrument. The following sections discuss key targets in each respective service standard area.

5
Service standard obligations

Table 5.2: Integral Energy service standard obligations

Service Standard area	Obligation source	Example of performance measures
Design and planning	NSW DRP Licence Conditions amended 1 December 2007, schedule 1 Design Planning Criteria (Standards)	• Sub-transmission line design • Sub-transmission substation design • Zone substation design • Distribution feeder design • Distribution substation design
System reliability	NSW DRP Licence Conditions amended 1 December 2007, Schedules 2 and 3.	• Unplanned interruptions - average duration - average frequency
Power quality	*Rules* – Chapter 5 and Schedule 5	• Voltage levels • Voltage unbalance • Harmonics
Customer service	1. Electricity Supply (General) Regulation 2001, as amended 3 May 2005. 2. NSW DRP Licence Conditions amended 1 December 2007, schedule 5 – Customer Service Standards.	• Individual customer unplanned interruptions - duration - frequency • Planned outage communication • Telephone service • Meeting appointments

The following sections discuss key targets in each respective service standard area.

5.7.1 Design planning and service standard obligations

The design and planning of an electricity network has a direct and significant impact on how reliable that network will be and may also affect public and employee safety. In December 2007, the Minister for Energy amended the NSW DRP Licence Conditions to accommodate new design planning criteria.

The NSW DRP Licence Conditions include the requirements for design planning criteria. The following table highlights the standard relevant to Integral Energy and describes the network design planning criteria as they apply to the different network elements.

Table 5.3: Design planning criteria

Network Element	Load Type	Forecast Demand or Expected Demand	Security standard	Customer interruption time
Sub transmission line	CBD	Any	N-2	Nil for 1st credible contingency <1 hour for 2nd credible contingency
	Urban & non-urban	>= 10 MVA	N-1	<1 minute
	Urban & Non-urban	< 10 MVA	N	Best practice repair time
Sub transmission substation	CBD	Any	N-2	Nil for 1st credible contingency <1 hour for 2nd credible contingency
	Urban and non-urban	Any	N-1	<1 minute
Zone substation	CBD	Any	N-2	Nil for 1st credible contingency <1 hour for 2nd credible contingency
	Urban & non-urban	>= 10 MVA	N-1	<1 minute
	Urban & Non-urban	< 10 MVA	N	Best practice repair time
Distribution feeder	CBD	Any	N-1	Nil
	Urban	Any	N-1	<4 hours
	Non-urban	Any	N	Best practice repair time
Distribution substation	CBD	Any	N-1	Nil
	Urban & non-urban	Any	N	Best practice repair time

The capital expenditure forecasts described in Chapter 9 include the expenditure required during the *2009 regulatory control period* to meet these design planning requirements by 2014 in accordance with the NSW DRP Licence Conditions.

5.7.2 System reliability service standard obligations

Electricity networks consist of many thousands of assets, spread over a large geographical area and customers will experience differing levels of reliability. These variations may be due to many factors such as the initial design of the network, the location of the customer and/or vagaries of the weather.

The NSW DRP Licence Conditions established minimum system security standards, average thresholds for reliability, and defined targets for the duration of the outages experienced by the average customer in a year (SAIDI) and the number of outages experienced by the average customer in a year (SAIFI) as shown in Tables 5.4 and 5.5. These targets differentiate between customers serviced by urban feeders and those serviced by rural feeders. Integral Energy's planned targets will lower (i.e. improve) SAIDI over the *2009 regulatory control period*.

Table 5.4: NSW DRP Licence Conditions targets for average SAIDI[13] over the *2009 regulatory control period*

Duration (minutes)	Year ending 30 June				
Feeder type	**2010**	**2011**	**2012**	**2013**	**2014**
Urban	82	80	80	80	80
Short rural	300	300	300	300	300

Table 5.5: NSW DRP Licence Conditions targets for average SAIFI[14] over the *2009 regulatory control period*

Frequency	Year ending 30 June				
Feeder type	**2010**	**2011**	**2012**	**2013**	**2014**
Urban	1.2	1.2	1.2	1.2	1.2
Short rural	2.8	2.8	2.8	2.8	2.8

The capital expenditure described in Chapter 9 includes the expenditure required during the *2009 regulatory control period* to meet the above feeder reliability standards.

5.7.3 Power quality

Power quality is an important component in the provision of electricity services, an importance recognised in the *Rules*, which establishes performance measures and thresholds for network performance. Poor power quality can contribute to a degradation of performance of electrical components, damage equipment and affect safety.

The *Rules* apply a large number of power quality and security obligations on all network service providers that are part of the national electricity market.

The power quality measures that materially affect Integral Energy's operations are described in Table 5.6. The capital expenditure described in Chapter 9 includes the expenditure required during the *2009 regulatory control period* to deliver the power quality standards.

[13] Annual unplanned system average interruption duration index (SAIDI).

[14] System average interruption frequency index (SAIFI).

Table 5.6: Integral Energy's power quality standards

Obligation	Measure	NER clause
Voltage levels	Voltage of supply at a connection point	As required by *Rules* Chapter 5
Voltage unbalance	Maximum negative sequence voltage (% of nominal voltage) measured as a 30 minute average at a connection point (assuming no contingent event).	As required by *Rules* Chapter 5
Harmonics	Voltage waveform distortion	As required by *Rules* Chapter 5

5.7.4 Customer service standard obligations

The provision of a safe and reliable electricity supply is a core obligation for Integral Energy. If an incident occurs it is important for customers to have access to staff who can respond to their needs and provide information in a timely fashion.

Under the NSW DRP Licence Conditions there are a number of obligations on customer service across a range of activities. The obligations include the maximum interruption duration threshold and the maximum frequency of interruptions for individual customers (see Table 5.7) and individual feeder SAIDI and SAIFI targets (see Table 5.8).

The threshold levels for individual electricity feeders are designed to ensure a minimum standard for the duration of annual outages and the annual frequency of outages experienced by all customers. These thresholds measure both the cumulative duration of outages in a year and the cumulative number of outages in a year.

Before the new NSW DRP Licence Conditions were introduced on 1 August 2005,[15] Integral Energy's risk profile was based on maintaining the number of overloaded distribution feeders at approximately 30% of the total. The NSW DRP Licence Conditions require Integral Energy to reach, by 1 July 2014, the target that all distribution feeders operate with an expected demand of no more than 80% of feeder thermal capacity, and by 1 July 2019, that all distribution feeders operate with an expected demand of no more than 75% of feeder thermal capacity.

Table 5.7: Integral Energy's customer interruption duration and frequency thresholds

Type of area in which customer's premises is located	Interruption duration standard (hours)	Interruption frequency standard (number of interruptions of ≥ hours)
Metropolitan	12	4 interruptions ≥ 4 hours
Non-metropolitan	18	4 interruptions ≥ 5 hours

[15] As revised on 1 December 2007.

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Service standard obligations

Table 5.8: Integral Energy's targets for individual feeder reliability over the *2009 regulatory control period*

Feeder type	Measure	Minutes per feeder
Urban	Cumulative duration of outages	350
Short rural	Cumulative duration of outages	1,000
Urban	Cumulative number (frequency) of outages	4.0
Short rural	Cumulative number (frequency) of outages	8.0

Table 5.9 describes the customer service expectations that apply to personal interactions between Integral Energy and its customers.

Table 5.9: Integral Energy's customer service obligations

Obligation	Measure	Requirements
Planned outages	Exceeding notified outage period Not notifying of a planned outage	Notify affected customer at least 2 business days' notice of planned interruptions to supply, and must specify how long the interruption will last. If Integral Energy fails to give the required notice, or the interruption lasts longer than specified, it is required to pay the affected customers not less than $20 per event. (Electricity Supply (General) Regulation 2001 - Clause 40 and Schedule 3, Part 2)
Calls answered in a timely fashion	% call answered within 30 seconds	Call centre services that provide customers with information concerning faults and difficulties, must provide access for not more than the price of a local telephone call to a human operator.
Meeting appointments	More than 15 minutes late for an appointment	Pay $25 if Integral Energy is more than 15 minutes late for an appointment.

The forecast capital expenditure in Chapter 9 includes the expenditure required during the *2009 regulatory control period* to deliver the customer service standards.

The service standard obligations established by the NSW DRP Licence Conditions represent a significant step change when compared to the previous service standards. The works required for Integral Energy to meet these service standard obligations are also significant and are discussed in greater detail in Chapter 9.

6

Demand and energy forecasts

This chapter sets out Integral Energy's system maximum (peak) demand, energy consumption and customer number forecasts used in this *regulatory proposal* for the *2009 regulatory control period*.

The demand forecasts and customer numbers underpin Integral Energy's forecast capital expenditure (Chapter 9) and operating expenditure (Chapter 10). The energy consumption and customer number forecasts are also a key input to calculating the X factors in the AER's post tax revenue model (Chapter 14).

6.1 Summary of forecast demand, energy and customer numbers

As set out in Chapter 4, Integral Energy has experienced growth in peak demand similar to the levels allowed by IPART in the 2004 Determination but lower growth in energy consumption over the *current regulatory control period*.

Since the 2004 Determination Integral Energy has undertaken detailed analysis of the key factors affecting the use of the electricity network, specifically customer numbers, energy consumption, peak summer demand and peak winter demand. This analysis, which underpins the forecasts in this *regulatory proposal,* considered actual results, weather conditions, and relevant demographic and socio-economic factors and trends. Integral Energy's forecast system maximum (peak) demand, energy consumption and customer numbers for the *2009 regulatory control period* are shown in Table 6.1

Table 6.1: Forecasts for the *2009 regulatory control period*

	Forecast year ending 30 June				
Forecasts	**2010**	**2011**	**2012**	**2013**	**2014**
Customer numbers	857,350	867,100	877,700	888,100	899,500
Customer numbers (% growth p.a.)	0.9%	1.1%	1.2%	1.2%	1.3%
Total energy sales (GWh)	17,927	18,160	18,460	18,664	18,906
Total energy sales (% growth p.a.)	0.9%	1.3%	1.7%	1.1%	1.3%
Peak demand (MW)	4,179	4,342	4,509	4,663	4,822
Peak demand (% growth p.a.)	2.9%	3.9%	3.8%	3.4%	3.4%

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Demand and energy forecasts

As shown, energy sales are expected to grow very slowly compared to peak demand, which manifests in a declining system load factor.

Integral Energy engaged CRA International (CRA) to review all material underlying assumptions and methodologies used in Integral Energy's peak demand, energy consumption and customer number forecasting and verify whether the assumptions and techniques are appropriate for the purposes of this *regulatory proposal*, and to assist Integral Energy in revising these assumptions and techniques where appropriate. Based on its review, CRA formed the view that the forecasts as set out in its report (which are summarised in Table 6.1) are based on sound evidence and are reasonable for the purposes of this *regulatory proposal*. CRA's report is provided as Appendix I.

6.2 Regulatory requirements

The *Transitional Rules* requirements and the AER's information requirements relating to demand forecasts as specified in the RIN are summarised in Box 6.1.

Box 6.1: Forecasts - regulatory requirements

Clauses 6.5.6(a)(1) and 6.5.7(a)(1) of the *Transitional Rules* require that the building block proposal include the total forecast operating and capital expenditure objectives for the *2009 regulatory control period* which Integral Energy considers is required to achieve meeting or managing the expected demand for standard control services over the *2009 regulatory control period*.

Clause S6.1.1(3) of the *Transitional Rules* require a *building block proposal* to include the forecasts of load growth relied upon to derive the capital expenditure forecasts and the method used for developing the load growth forecasts.

Clause S6.1.2(3) of the *Transitional Rules* requires a *building block proposal* to include the forecasts of key variables relied upon to derive the operating expenditure forecast and the method used for developing those forecasts of key variables.

The AER's RIN (section 2.3.8 and pro forma 2.3.8) outlines the information that Integral Energy must provide as part of its *regulatory proposal* relating to demand forecasts, including the following:

- The demand forecasts that Integral Energy has used to develop its operating and capital expenditures forecasts (where applicable) for the *2009 regulatory control period*, including forecasts relating to total energy consumption, coincident peak (maximum) demand and customer numbers; and
- An explanation of the key drivers, the method and methodology that has been used to prepare the demand forecasts, whether there has been any independent verification of the demand forecasts and an explanation of how the demand forecast has been used to develop Integral Energy's capital expenditure and operating expenditure forecasts.

This *regulatory proposal* provides the information to address the *Transitional Rules* and RIN requirements.

6.3 Integral Energy's customer usage characteristics and implications

As noted in Chapter 3, several key factors that are unique to the Integral Energy network have a significant effect on forecasting demand, energy consumption and customer numbers. These factors are grouped into the following categories and have been considered in the development of Integral Energy's demand and energy forecasts:

- Climatic considerations;
- Customer distribution and growth patterns;
- The impact of the demand for air conditioning on the Integral Energy network; and
- The declining load factor in the Integral Energy network.

6.3.1 Climatic considerations

The Integral Energy distribution area, particularly the growth corridors in Western Sydney, experiences peak temperatures that are typically higher and more sustained than those of central Sydney and other coastal areas. Extreme peak temperature events (in excess of 40 ^{o}C) are now experienced more frequently on an annual basis by the Integral Energy network than in the past.

The significant impact of these peak temperature events on the network is a key consideration incorporated in the development of Integral Energy's forecasts for the *2009 regulatory control period*. For example, in the development of its non-residential energy consumption growth rates, Integral Energy has taken account of the price elasticity of the demand effect. For its residential energy consumption, Integral Energy has considered those factors that reduce the impact of the peak temperatures such as energy efficiency brought about by changes in prices, housing affordability issues and greenhouse reduction trends.

6.3.2 Customer distribution and growth patterns

The energy carried by the Integral Energy network is dominated by the supply to the residential and commercial customer base. For example, around 65% of the energy transported in 2006/07 was for residential and Small Medium Enterprises (SMEs)/commercial general supply tariff customers. This trend is most prominent in Western Sydney. By contrast, the greater proportion of the energy transported on the coastal strip of Southern Sydney and Wollongong was to supply industrial load.

Access to accurate growth predictions for population centres is critically important in forecasting energy and peak demand. Because a very high proportion of new houses in NSW are in the Integral Energy network area, the ability to provide accurate forecasts of growth in these sectors is also vital. Customer distribution and growth patterns have therefore been a key consideration in Integral Energy's development of forecasts for the *2009 regulatory control period*.

6.3.3 Impact of air conditioning

The higher and more sustained temperatures experienced in the west of Sydney are having a greater impact on the growth rate for peak demand compared with the modest growth in household electricity consumption.

The penetration rate for residential air conditioning units is approximately 62% across the Integral Energy network, but the rate in Western Sydney has reached 74% for residential customers, which is consistent with the trend suggested by the data on peak temperature patterns. By contrast the rate in the Illawarra is 37%, and 28% in the Blue Mountains.

Average growth in peak demand, as measured by average kW rating, is also growing rapidly. New homes in the Integral Energy area are predominantly built with large ducted air conditioning systems, and it is commonplace for existing dwellings to install multiple smaller systems (such as split air conditioning systems) in each major cooling zone.

At extreme temperatures (>40 ^{o}C) the diversity in peak demand for air conditioning is minimal, as air conditioners effectively operate to their rated capacity continuously if switched on at these temperatures.

The impact of the demand for air conditioning on the network has been a key consideration in the development of the Integral Energy's forecasts for the *2009 regulatory control period*.

6.3.4 Declining load factor

The divergence in growth rates between peak demand and energy consumption on the Integral Energy network caused by the extreme, but consistent temperature sensitivity of the residential air conditioning load means that Integral Energy's load factor is well below that of the NSW system as indicated by Figure 6.1.

The increased uptake of air conditioning in new residential developments and the increasing penetration of air conditioning units into existing dwellings, coupled with an increasing air conditioning (kW) loading as customers demand refrigerated air in their homes, are causing overall peak demand to increase at a faster rate than for energy growth. This trend is likely to continue through the *2009 regulatory control period* before reaching appliance saturation.

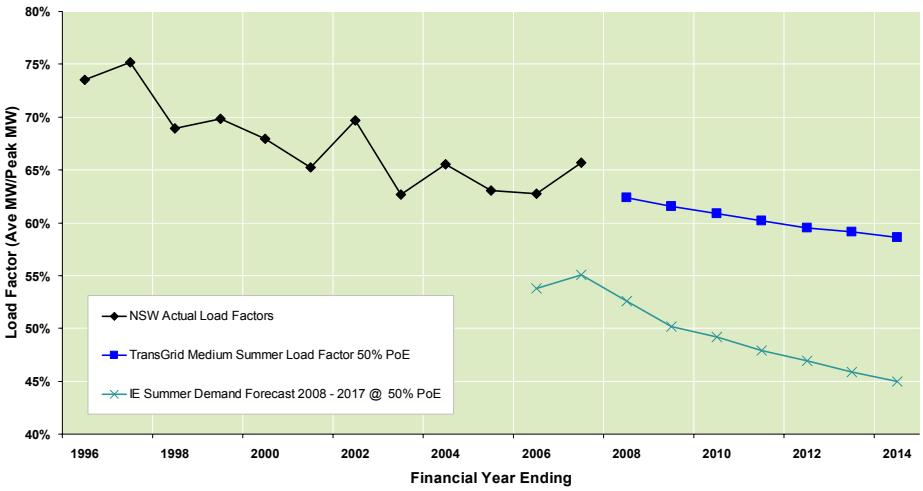
The trend towards a declining load factor has also necessitated major changes in the design of network development in new estates where maximum demand can be much higher due to larger houses and central fully ducted central air conditioning systems.

The changes in electricity use by customers in the Integral Energy network, driven by climatic and other distribution and growth considerations, are significant changes in behaviour. Customers' use of electricity is changing rapidly as air conditioning affordability increases, and demand increases for other new appliances such as in-home computers and entertainment systems. Concurrently, the use of electricity for major appliances such as hot water and heating is coming

under sustained pressure from policy directions aimed at reducing greenhouse gas emissions in NSW.[16]

The net effect is a decrease in the load factors[17] on the Integral Energy network, showing a declining level of asset utilisation as peak demand grows much faster than energy consumption. Figure 6.1 illustrates the declining load factor in NSW and within the Integral Energy network.

Figure 6.1: Load factors for NSW and Integral Energy



As the load factor declines, a significant portion of the Integral Energy network must be constructed to service peak demand for very short periods (i.e. typically less than 85 hours per year even though it will have relatively low utilisation). This investment is necessary to ensure customers receive acceptable levels of reliability even when temperatures are at their extremes in Western Sydney.

6.4 Forecasts for the *2009 regulatory control period*

The forecasts developed by Integral Energy for the *2009 regulatory control period*, as verified by CRA, are detailed in Appendix I and summarised in the following sections.

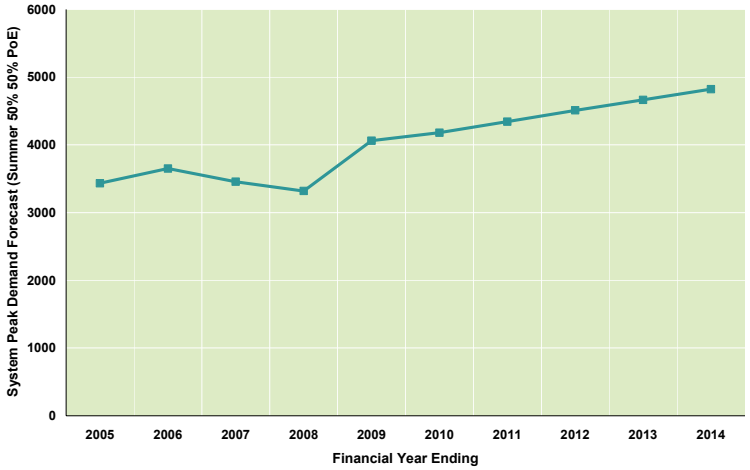
[16] Currently in NSW the BASIX Certification Scheme effectively results in few, in any, customers installing direct electrically heated hot water services in new homes. The associated use of NatHERS is placing similar pressures on the use of electrical resistance heating in new homes.

[17] The load factor is the average peak demand (calculated by dividing energy sold by the total hours in a year) divided by the actual peak demand recorded for that year. Load factors can range from 0 to 1, with a higher number resulting in better utilisation of assets. Load factor provides a useful snapshot of the variable movement in peak demand growth and energy growth.

6.4.1 Peak demand forecast

Integral Energy's maximum system (peak) demand is forecast to grow from 4,179 MW in 2009/10 to 4,822 MW in 2013/14, representing an annual growth rate of 3.6% over the *2009 regulatory control period* as illustrated in Figure 6.2. Integral Energy is (predominantly) a summer peaking network, as it is affected by an increasing number of high temperature events and lower equipment ratings during summer periods.

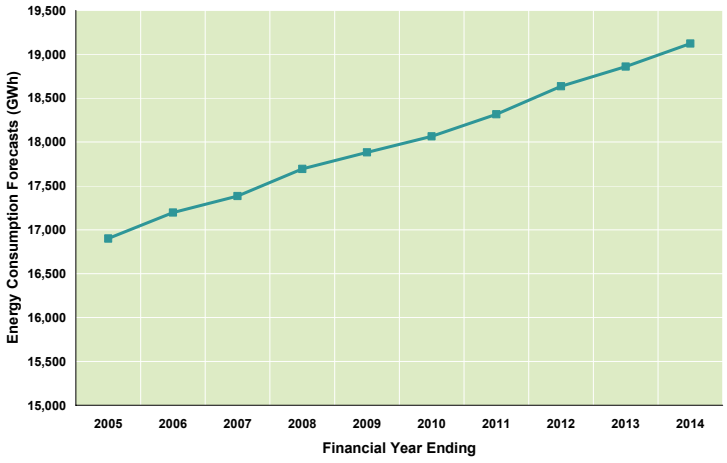
Figure 6.2: System peak demand forecast (Summer Maximum Demand 50% PoE)



6.4.2 Energy consumption forecast

Energy consumption on the Integral Energy network is forecast to grow from 17,927 GWh in 2009/10 to 18,906 GWh in 2013/14, representing an average annual growth rate of 1.3% over the *2009 regulatory control period* as illustrated in Figure 6.3.

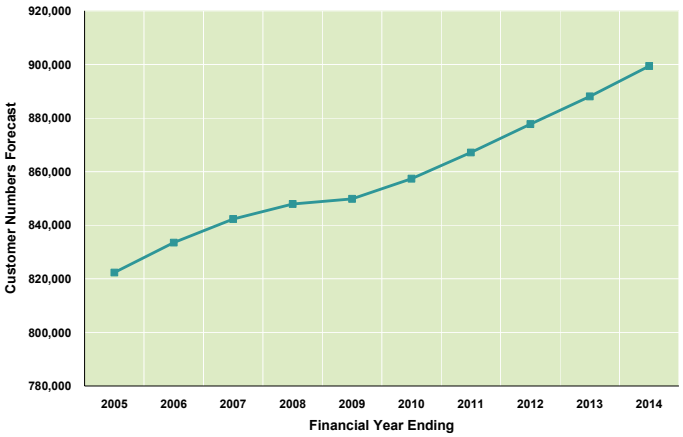
Figure 6.3: Energy consumption forecasts



6.4.3 Customer number forecast

Customer numbers for the Integral Energy network are forecast to grow from 857,350 in 2009/10 to 899,500 in 2013/14, representing an annual growth rate of 1.2% over the *2009 regulatory control period* as illustrated in Figure 6.4.

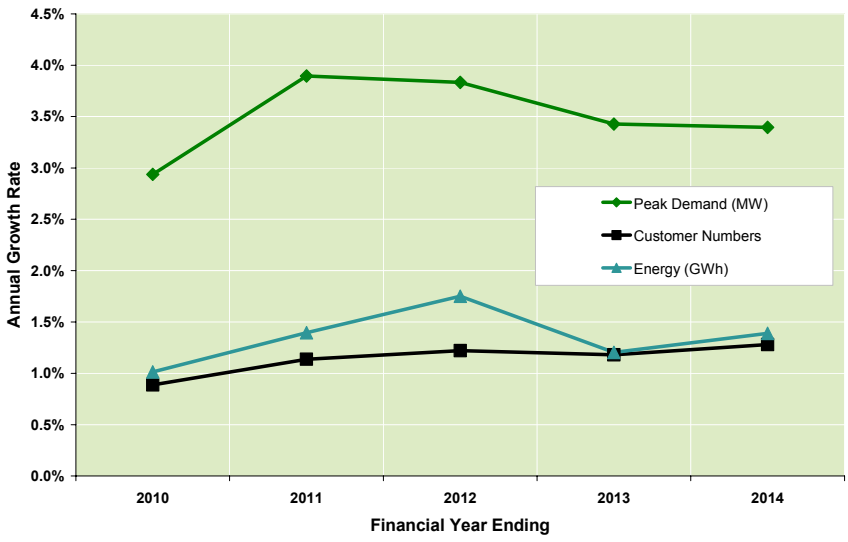
Figure 6.4: Customer number forecasts



6.4.4 Forecast annual growth rates

The forecast annual growth rates for demand, energy and customer numbers for the *2009 regulatory control period* are summarised in Figure 6.5 below.

Figure 6.5: Forecast annual growth rates



6
Demand and energy forecasts

As illustrated in Figure 6.5, the rate of growth in peak demand (3.6% per annum) is forecast to be three times higher than for customer numbers (1.2% per annum) and nearly three times higher than for energy consumption (1.3% per annum) over the *2009 regulatory control period*.

The differing growth rates for peak demand, which affects capital expenditure, and the growth rates for energy consumption and customer numbers, which represent a large portion of the base on which tariffs are recovered, are expected to contribute to upward pressure on tariffs.

7

Network Strategy

Integral Energy's network strategy articulates the future priorities for the network business and is the touchstone for making network business decisions over the *2009 regulatory control period*. It draws on Integral Energy's Corporate Plan (Appendix D.1). The network planning framework is used to translate the network strategy into, firstly, specific programs and projects and, secondly, expenditure forecasts. The expenditure forecasts in this *regulatory proposal* were developed using the network planning framework.

The network strategy in Appendix D.2 reflects the business' response to external challenges and obligations, while taking account of the business needs and status of assets. The network strategy for the *2009 regulatory control period* addresses the environmental factors and obligations discussed in earlier chapters. It takes account of the cost and service performance in the *current regulatory control period*, and responds to the demand for distribution network services set out in Chapter 6.

The network strategy provides the framework for the capital and operating expenditure forecasts in Chapters 9 and 10. This chapter describes Integral Energy's network strategy for the *2009 regulatory control period* and the key elements of that network planning and management framework.

This chapter, and the relevant AER information templates, address the RIN requirements in relation to Network Planning and Management.

7.1 Summary

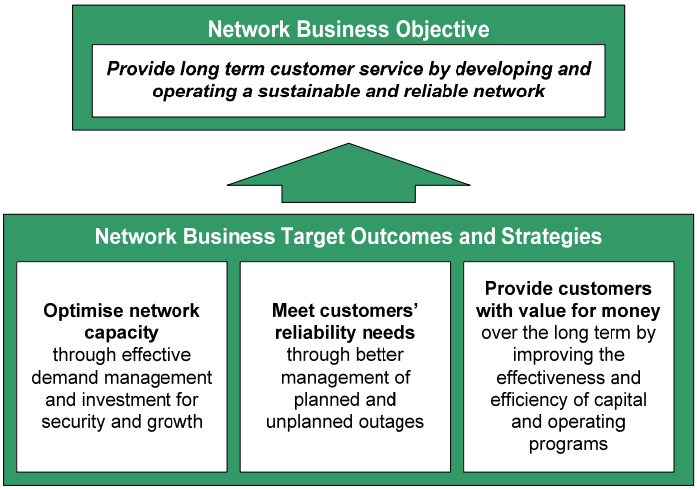
Integral Energy's network strategy shown in Figure 7.1 aims to deliver the network business objective to *"provide long term customer service by developing and operating a sustainable and reliable network"* by focussing on core network outcomes in three areas: network capacity, customers' reliability needs and providing customers with value for money.

The network strategy responds to the key challenges facing the network business:

- Servicing growth in demand and customer connections in Integral Energy's network area;
- Ensuring that ageing network assets do not adversely impact on network reliability and security of supply; and
- Meeting the NSW Government's initiative for increasing the security and reliability of electricity supply as reflected in the NSW DRP Licence Conditions.

7
Network strategy

Figure 7.1: Integral Energy's Network Strategy



The strategy is effected through the plans and programs developed using Integral Energy's network planning and management framework. The framework is embedded in a range of internal procedures, plans, standards and policy documents and managed by the Capital Governance Committee.

Significant resources are devoted to ensuring timely, relevant and thorough data and information to support decisions. For example, Integral Energy maintains detailed asset age, location and condition data across the Geographic Information System, Field Inspection System, Asset Management System and Outage Management System. Integral Energy also monitors the relationship between planned service performance targets and service outcomes.

Integral Energy's Network Planning process is highly consultative and transparent. Formal network plans are developed annually through an extensive process culminating in the Annual Network Planning Statement.[18]

7.2 Regulatory information requirements

The AER's information requirements relating to network planning and management as specified in the RIN are summarised in Box 7.1.

[18] Integral Energy's 2007 Annual Planning Statement, *Network 2017: Building a Sustainable Future,* published in August 2007, available on its website www.integral.com.au .

Box 7.1: Network planning and management RIN requirements
Clause 2.3.7(a) of the RIN requires the following information describing Integral Energy's approach to network planning and management: (1) Details about network performance and/or utilisation and comparison with targeted levels; (2) An explanation of the approach to network planning, investment evaluation and operating and maintenance expenditure decision making; (3) Copies of the key documents used to plan the DNSP's system and develop capital and operating expenditure forecasts; (4) An explanation of how the key documents support the capital and operating expenditure forecasts and relate to each other; (6) An explanation on target capacity levels or performance levels and how these meet external and internal performance standards; (8) An explanation on how the forecast capacity will meet performance standards and forecast demand based on the capital and operating expenditure proposed for the next regulatory control period. Clause 2.3.9(a) of the RIN requires the DNSP to provide the following information on non-network alternatives: (1) The extent to which the DNSP has considered and made provision for efficient non-network alternatives in developing its forecasts; (2) The processes, procedures or policies that the DNSP has in place to identify and select efficient non-network solutions; (3) A description of the types of non-network alternatives normally considered; (4) A list of those non-network projects that have been selected during the current regulatory control period.

This *regulatory proposal* provides information to address the RIN requirements in relation to Network Planning and Management. Chapter 8 and Appendix V provides more detail on clause 2.3.9(a) RIN requirements on non-network alternatives.

7.3 Key challenges addressed by the network strategy

The network strategy addresses the operating environment facing the network business and the three key challenges associated with meeting the NSW DRP Licence Conditions in relation to design planning standards; servicing the continuing strong growth in demand in Integral Energy's network area; and managing performance and renewal of ageing network assets. These challenges are discussed in more detail in the following sections.

The strategy also responds to a number of changes that have occurred over the current *regulatory control period*. These include the following:

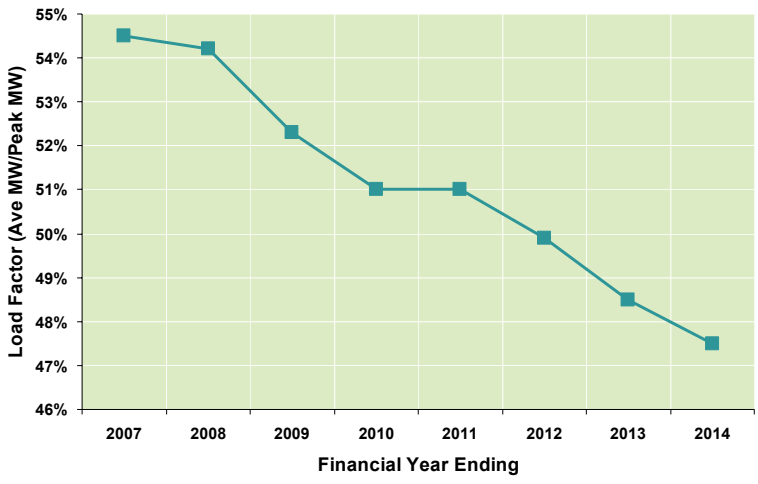
- Slowing economic growth in both Integral Energy's supply area and the broader economy;
- Improving reliability performance of the network;
- Increasing load at risk; and
- Heightened community interest in climate change and the impact of greenhouse gases emissions.

7.3.1 Servicing growth in demand in Integral Energy's network area

Growth in peak demand is a primary driver of network capital investment.

Integral Energy's network supply area includes some of the fastest growing corridors in Australia, which continues to contribute to the increasing number of connections to the network. In addition, the penetration of air conditioning in Integral Energy's network area means that peak demand continues to increase at a faster rate than energy consumption. This trend is illustrated by the deteriorating load factor shown in Figure 7.2.

Figure 7.2: Integral Energy system load factor



The network strategy addresses the demand growth over the *2009 regulatory control period* through a combination of significant supply side programs and projects, and continuing initiatives in demand management.

7.3.2 Ensuring that an ageing network does not impact adversely on network reliability

As discussed earlier in this *regulatory proposal* (see section 3.5), many elements of Integral Energy's network were constructed during the infrastructure boom in the 1960s through to the 1980s and are now reaching the end of their useful lives. An ageing asset base will eventually display declining performance and increased operating expenditure requirements, particularly as individual assets reach the end of their operating life. As a result, Integral Energy needs to replace large numbers of assets in an economically efficient manner to ensure that age-related equipment failures do not adversely impact on network reliability and safety. Therefore, a key assumption underpinning the network strategy is that the age and condition of assets will impact on asset renewal and replacement requirements (see section 9.4).

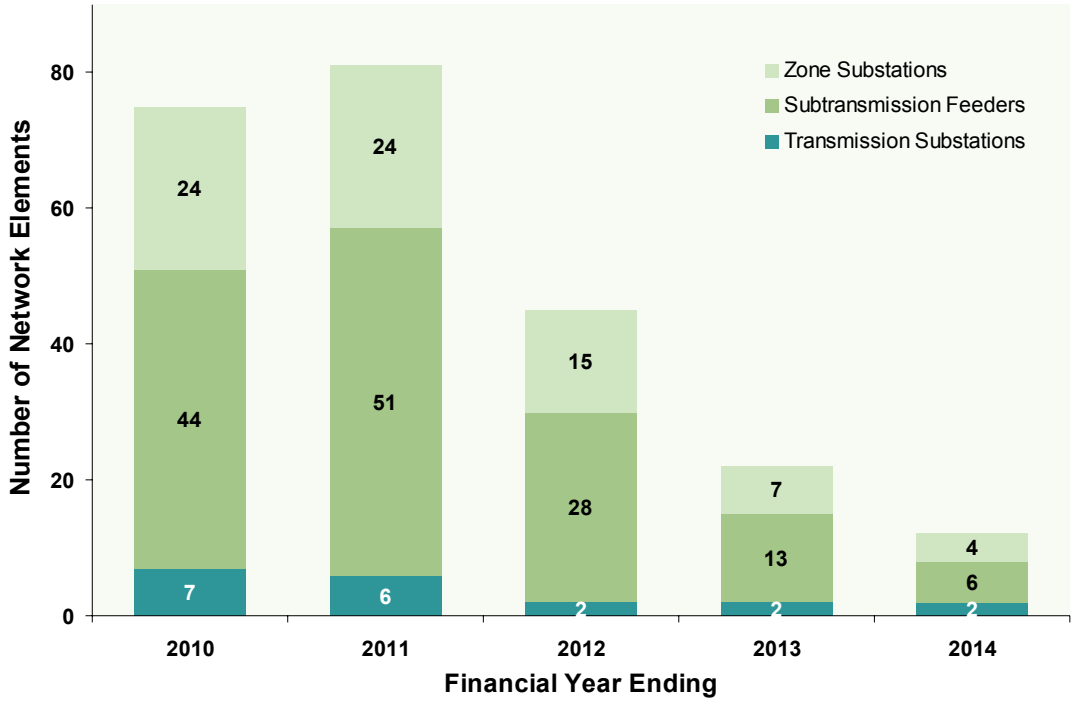
The network strategy addresses this challenge through a targeted reliability and strategic asset renewal program.

7.3.3 Meeting the NSW Government's initiative for increased security and reliability of electricity supply

As discussed earlier in this *regulatory proposal*, the NSW Government amended the NSW DRP Licence Conditions in December 2007 to include requirements to be met by 2014. As a result, Integral Energy needs to undertake a number of new programs and projects during the *2009 regulatory control period*.

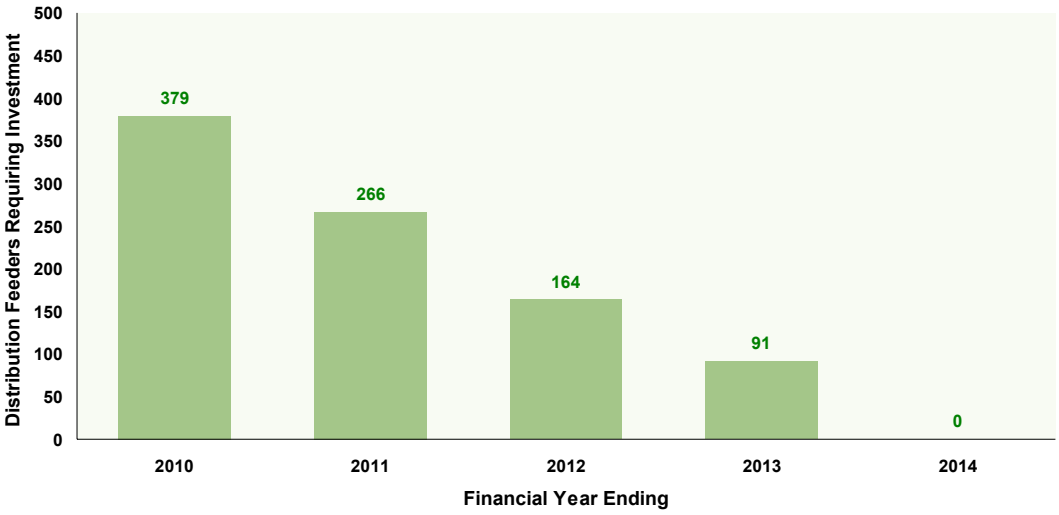
One licence condition defines design planning standards for various network elements (such as feeders and substations) and sets out the standards to be met by 2014. Integral Energy has assessed the extent to which existing network elements comply with these standards and forecast the number of the higher voltage network elements that would require investment to meet the design planning standards contained in the NSW DRP Licence Conditions. Figure 7.3 shows the existing and forecast numbers of network elements that are expected to require investment to meet the design planning standards contained in the NSW DRP Licence Conditions as a result of Integral Energy's targeted compliance program.

Figure 7.3: Forecast number of network elements that require investment to meet the design planning standards - with network strategy implemented



Similarly, Figure 7.4 shows the existing and forecast numbers of distribution feeders that require investment to comply with the NSW DRP Licence Conditions as a result of implementing the proposed compliance program.

Figure 7.4: Distribution feeder design planning standard compliance



Figures 7.3 and 7.4 highlight the significant volume of work required to meet the NSW DRP Licence Conditions.

7.4 Key network strategies and target outcomes

To meet its objective to "*provide long term customer service by developing and operating a sustainable and reliable network*", Integral Energy's network strategy focuses on the following three target outcomes:

- ***Optimise network capacity*** through effective demand management and investment for security and growth;
- ***Meet customers' reliability needs*** through better management of planned and unplanned outages; and
- ***Provide customers*** **with** ***value for money*** over the long term by improving the effectiveness and efficiency of capital and operating programs.

Strategies have been developed in relation to each target outcome, noting that one strategy may ultimately have a wider effect, so that the strategies are not mutually exclusive. These strategies are discussed in the following sections.

7.4.1 Strategy for optimising network capacity

Optimising network capacity means ensuring that there is sufficient capacity available in the network at the correct time to meet load growth and network security requirements in a cost effective manner.

Integral Energy's strategy to achieve this outcome is based on effective demand management and investment for security and growth. Key initiatives include:

- Implementing demand management programs where investigation shows them to be feasible as a means of deferring network augmentation to meet demand growth and network security requirements (refer to Chapter 8 for further information regarding demand management);
- Ensuring network security standards are maintained by carrying out annual reviews of loading and available capacity on the sub-transmission and distribution networks; and
- Meeting with government planning agencies, land developers and major customers to understand future electricity demand requirements to allow efficient plans for network augmentation to be developed.

The details of the strategy and specific works are determined through the network planning processes and framework, specifically the Sub-transmission Network Planning Review, the Distribution Works Program and the Demand Management Plan.

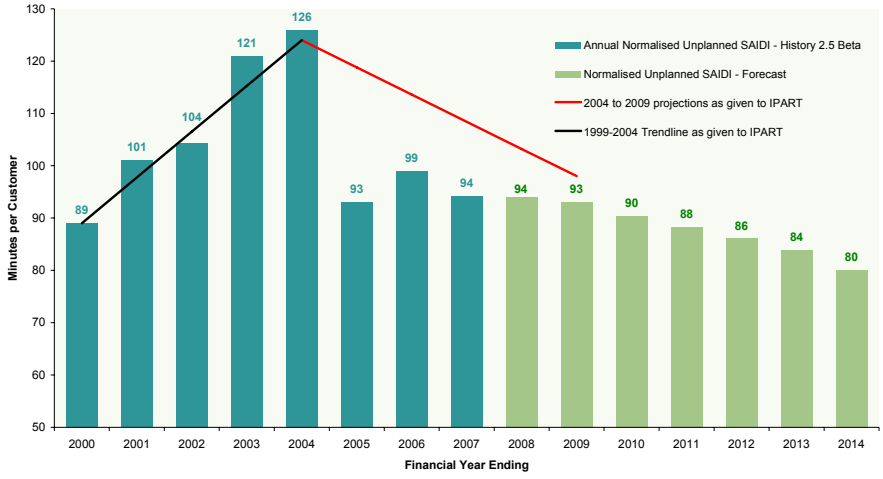
7.4.2 Strategy for meeting customers' reliability needs

The strategy to meet customers' reliability needs is targeted at preventing faults, responding to faults and minimising the effect of planned outages. The strategy involves undertaking specific reliability works, developing and implementing a strategic asset renewal plan and developing a strategic network maintenance plan.

The detailed works and initiatives associated with the strategy are identified in the Reliability Works Program (RWP), the Strategic Asset Renewal Plan (SARP) and the Strategic Network Maintenance Plan (SNMP).

Figure 7.5 shows actual and forecast reliability due to unplanned outages on the Integral Energy network.

Figure 7.5: Network reliability performance



Note: SAIDI outcomes are normalised using the 2.5 Beta method . Note that the targets and trendline submitted to IPART for the 2004 Determination have been adjusted from the SCNRRR method, to the 2.5 Beta method

In addition to the capital investment proposed by these programs, Integral Energy is investigating various efficiency and effectiveness improvements in the delivery of its reliability improvement strategy, aimed particularly at the response to faults.

All capital investment in the network has an impact on the reliability of the network. This investment includes not only the expenditure in the Reliability Works Program, targeted directly at ensuring licence condition compliance, but also investment targeted at other network outcomes such as compliance with network security related DRP Licence Conditions.

Integral Energy is aiming for a reliability improvement, as measured by unplanned SAIDI, of approximately 15 per cent over the current year forecast of 94 minutes, to approximately 80 minutes by the end of the *2009 regulatory control period*. Integral Energy has also set a "stretch" reliability target of 75 minutes for the same period, which would result in a 20% improvement over current levels.

7.4.3 Strategy for providing value for money

The strategy to ensure the network business provides customers with value for money focuses on continually improving the effectiveness and efficiency of capital and operating programs and on diligent application of the network planning framework. The strategy is being implemented through a combination of supplementing existing business processes, and new initiatives.

Integral Energy's planning processes examine proposed projects and expenditures to ensure that:

- Opportunities to leverage technology have been considered;
- The costs of capital investment projects and operating programs/tasks are in line with industry benchmarks and take account of appropriate productivity savings;
- The trade-offs between operating and capital expenditure are considered so that the best network outcome is achieved at least cost; and
- The expenditures are targeted at the right aspects of the network to achieve the required outcomes.

Providing value for money can also be achieved by:

- Ensuring that customers pay for only the services they receive and signalling the costs of services through prices. The implementation of more cost reflective tariff structures that, for example, reward customers for reducing their peak demand and hence the need for investment by Integral Energy, is one potential example of how this may be achieved (see details of Integral Energy's trials in section 8.5).
- Responding to the demand for alternative services, facilitated by the negotiating framework.

7.5 Network planning framework and the Strategic Asset Management Plan (SAMP)

Integral Energy's network planning framework manifests itself in the ten year Strategic Asset Management Plan (SAMP). The SAMP and supporting network plans and reviews are included in Appendix J. The SAMP documents how the individual network capital and maintenance plans and programs (refer Box 7.2) support the network strategy outcomes.

The SAMP is supported by detailed analysis and explicitly takes into account:

- Externally imposed obligations and requirements including service standards, design standards, safety and environmental obligations, and specific asset performance targets;
- Information about the network system including loading, condition of assets, performance variability, current capacity, age and the criticality of key assets; and
- Forecasts of demand growth and connections by location.

7
Network strategy

The SAMP is supported by the more detailed asset management plans and programs listed in Box 7.2, and draws these together into a single coordinated asset management plan. At the highest level, the resultant SAMP sets out the operating and capital expenditure required over the following ten year period to achieve the network strategy outcomes.

The SAMP meets the AER's requirements for a detailed description of the models applied by Integral Energy to forecast capital expenditure including a high level breakdown of the modelling outputs on a year by year basis. It also sets out how the key documents support the capital and operating expenditure forecasts and relate to each other.

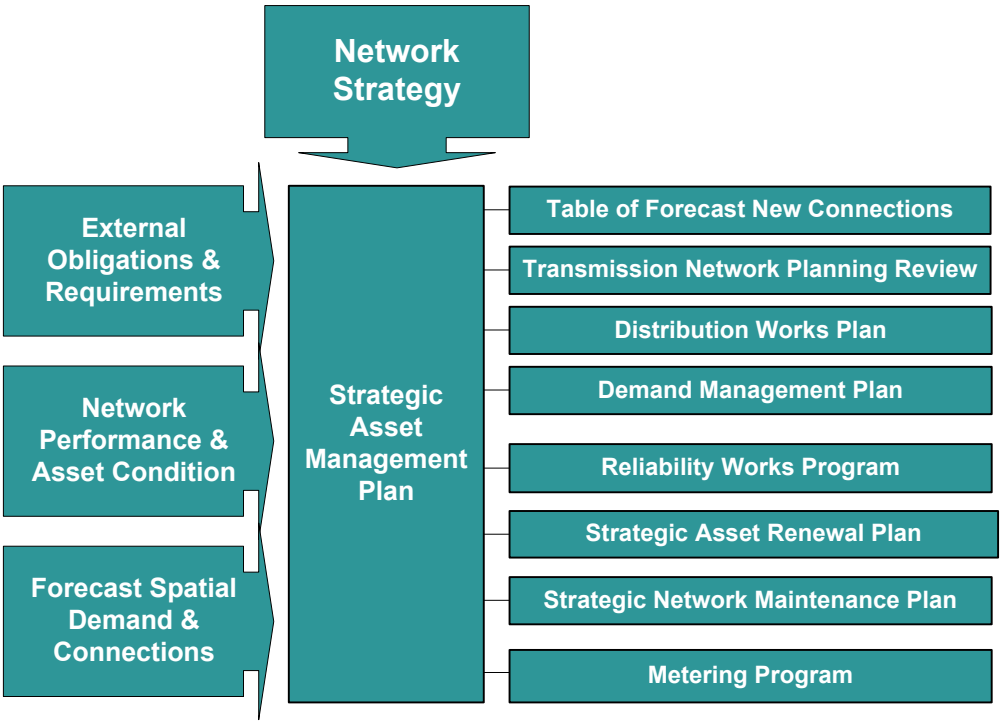
Box 7.2: Strategic Asset Management Plan inputs
• Table of forecast new connections; • Transmission[19] Network Planning Review (TNPR); • Distribution Network Status Report and associated Distribution Works Program (DWP); • Demand Management Plan (DMP); • Reliability Works Program (incorporating the Reliability Strategy) (RWP); • Strategic Asset Renewal Plan (SARP); • Strategic Network Maintenance Plan (SNMP); and • Metering program.

The following sections provide an overview of the respective component plans. Details are provided as Appendix J.

The relationship between the Network Strategy, inputs to the planning process, the Strategic Asset Management Plan (included in Appendix J.1) and the individual network development programs is shown in the strategic network planning framework in Figure 7.6.

[19] Integral Energy's internal policies and related documents have been developed on the basis that the higher voltage (i.e. sub-transmission) elements of the network have traditionally been referred to internally as 'transmission' assets. For the purposes of this *regulatory proposal*, Integral Energy's references to 'transmission' should be read to mean 'sub-transmission', rather than a reference to the definition of 'transmission' as per Chapter 10 of the Rules.

Figure 7.6: Integral Energy's Strategic Network Planning Framework



The SAMP framework is enforced through a range of formal information collection, governance and review processes. These processes are designed to:

- Capture and review information on the network performance and capacity and ensure that planning has access to timely and accurate information on these external and internal factors;
- Test and scrutinise programs and projects; and
- Support stakeholder consultation.

Responsibility for oversight of these processes lies with the Capital Governance Committee, which is explained in section 7.7 below.

7.6 Inputs to the SAMP

7.6.1 Table of forecast new connections

The intention of the table of forecast new connections is to fund the establishment of connection assets which are not required to be funded by the load applicant.

The table is developed annually by considering forecast demand growth along with information from councils, state land bodies and developers on their upcoming land development plans.

Integral Energy's planning standards define, among other things, the technical requirements for connecting different load types and sizes, to ensure appropriate levels of supply security and reliability for new customers and that the new load does not adversely affect the security or reliability of supply to existing customers.

Rules for the funding of connection assets are currently defined in IPART's Capital Contributions Policy, discussed further in section 11.4 of the *regulatory proposal*. The intention of the table of forecast new connections is to fund the establishment of connection assets which are not required to be funded by the load applicant.

7.6.2 Transmission Network Planning Review (TNPR)

The TNPR study is conducted annually and investigates the capability of Integral Energy's 132kV, 66kV and 33kV sub-transmission network to supply the forecast demands over a ten year period. The review identifies emerging capacity constraints.

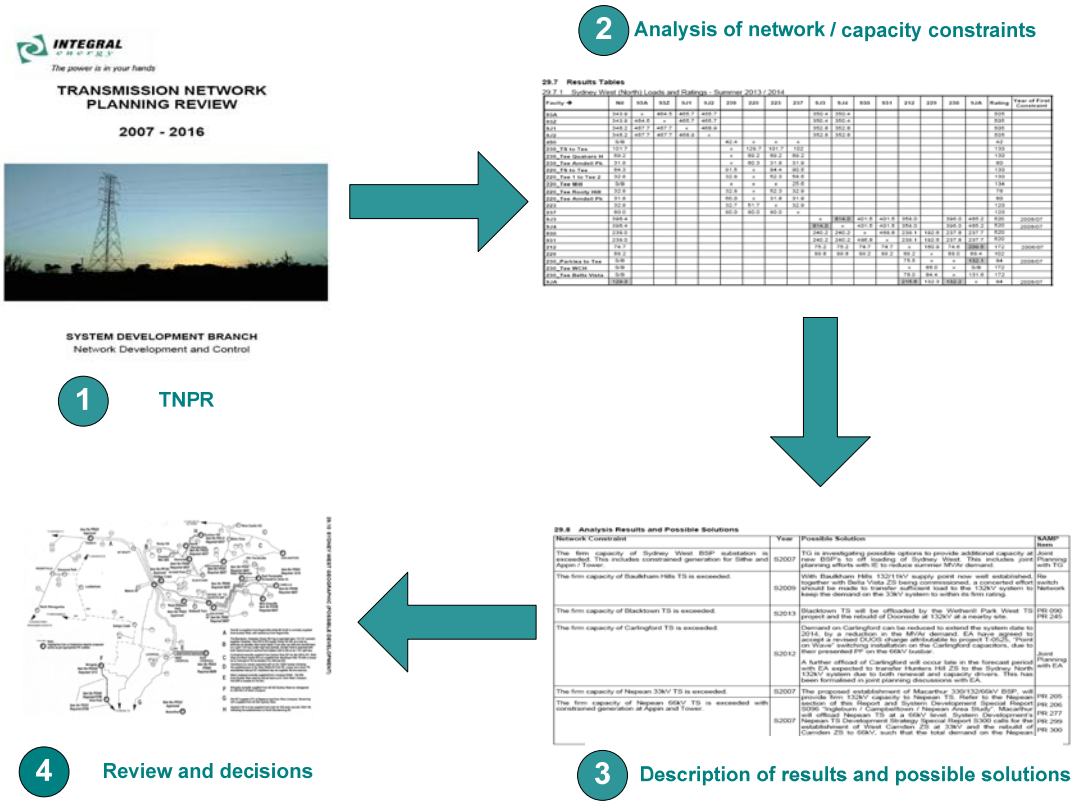
Each identified network capacity constraint is the subject of a Network Investment Options (NIO) study which considers a range of network and non-network options for alleviating the constraint. These studies are carried out by cross functional teams to ensure that the best solution is developed. Financial evaluations on proposed options ensure that preferred options represent sound investment decisions before solutions are finalised for approval.

Major inputs into this review are the demand forecasts produced on a six monthly basis that forecast the load on each zone substation under winter and summer peak demand conditions for ten years. These forecasts take into account both trends in historic base load growth as well as known individual developments.

The outcome from the TNPR is a program of major projects intended to address capacity constraints on the sub-transmission network, including transmission substations, zone substations and sub-transmission lines from 33kV to 132kV and to systematically ensure NSW DRP Licence condition compliance by the required date of 1 July 2014 (see Appendix J.2). The exact timing of individual projects is further influenced by resource levelling. Therefore, the final timing of a major project to address capacity constraints occurs on the date indicated by the TNPR or later, up to a maximum date of 2014, as required by the NSW DRP Licence Conditions.

Figure 7.7 illustrates the TNPR process.

Figure 7.7: Illustration of TNPR Process



7.6.3 Distribution Work Program (DWP)

The DWP (included in Appendix J.3) is the annual program of works identified to overcome identified constraints and achieve NSW DRP Licence Condition compliance. While focussing primarily on feeder loading the program also addresses issues such as supply quality (for example, steady state voltage levels), operational flexibility, electrical losses and safety (principally associated with rating issues).

The DWP is designed to address those feeders with constraints that will not be alleviated through works associated with either major sub-transmission projects or the connection of new and augmented customer loads and to systematically ensure compliance with the NSW DRP Licence Conditions.

Constraints are identified through the Distribution Network Status Review which is conducted on an annual basis to review the load on every distribution feeder to ensure that equipment ratings are not exceeded and to allow the flexibility to switch loads between feeders in the event of a fault. Over time, through natural growth on the network, the actual loading on some feeders can exceed the design rating, which in turn has implications for system performance and compliance.

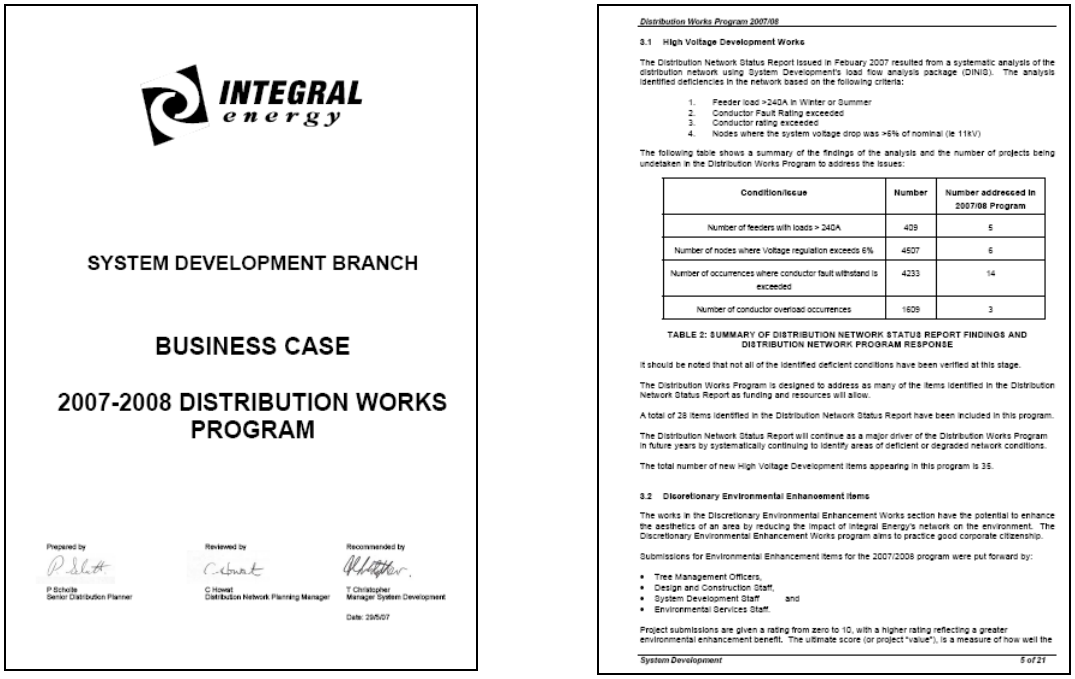
7
Network strategy

Distribution system enhancements are identified and documented in the DWP and reviewed and produced annually. This is a program level collection of many smaller items of work required to rectify specific capacity and performance deficiencies in the distribution network.

Given the dynamic nature of the distribution network topology, the DWP is only developed with a two year forward outlook, although strategic (long term) regional distribution network development plans are regularly updated to provide a solid foundation for the shorter term DWP.

Figure 7.8 provides an example of an actual DWP business case extract.

Figure 7.8 Distribution Works Program extract



INTEGRAL energy

SYSTEM DEVELOPMENT BRANCH

BUSINESS CASE

2007-2008 DISTRIBUTION WORKS PROGRAM

Prepared by
P Schutte
Senior Distribution Planner

Reviewed by
C Howat
Distribution Network Planning Manager

Recommended by
T Christopher
Manager System Development

Date: 29/5/07

Distribution Works Program 2007/08

3.1 High Voltage Development Works

The Distribution Network Status Report issued in Febuary 2007 resulted from a systematic analysis of the distribution network using System Development's load flow analysis package (DINIS). The analysis identified deficiencies in the network based on the following criteria:

1. Feeder load >240A in Winter or Summer
2. Conductor Fault Rating exceeded
3. Conductor rating exceeded
4. Nodes where the system voltage drop was >6% of nominal (ie 11kV)

The following table shows a summary of the findings of the analysis and the number of projects being undetaken in the Distribution Works Program to address the issues:

Condition/Issue	Number	Number addressed in 2007/08 Program
Number of feeders with loads > 240A	409	5
Number of nodes where Voltage regulation exceeds 6%	4607	6
Number of occurrences where conductor fault withstand is exceeded	4233	14
Number of conductor overload occurrences	1609	3

TABLE 2: SUMMARY OF DISTRIBUTION NETWORK STATUS REPORT FINDINGS AND DISTRIBUTION NETWORK PROGRAM RESPONSE

It should be noted that not all of the identified deficient conditions have been verified at this stage.

The Distribution Works Program is designed to address as many of the items identified in the Distribution Network Status Report as funding and resources will allow.

A total of 28 items identified in the Distribution Network Status Report have been included in this program.

The Distribution Network Status Report will continue as a major driver of the Distribution Works Program in future years by systematically continuing to identify areas of deficient or degraded network conditions.

The total number of new High Voltage Development items appearing in this program is 35.

3.2 Discretionary Environmental Enhancement Items

The works in the Discretionary Environmental Enhancement Works section have the potential to enhance the aesthetics of an area by reducing the impact of Integral Energy's network on the environment. The Discretionary Environmental Enhancement Works program aims to practice good corporate citizenship.

Submissions for Environmental Enhancement items for the 2007/2008 program were put forward by:

- Tree Management Officers,
- Design and Construction Staff,
- System Development Staff and
- Environmental Services Staff.

Project submissions are given a rating from zero to 10, with a higher rating reflecting a greater environmental enhancement benefit. The ultimate score (or project "value"), is a measure of how well the

System Development 5 of 21

7.6.4 Demand management and non-network alternatives

Integral Energy is an industry leader in seeking and applying demand management initiatives. Network planning processes investigate both supply side and demand side solutions. The Annual Network Planning Statement (see Appendix J.4 for the Demand Management Plan) is used to engage the community on the network investment plans. The engagement and consultation process actively seeks submissions from external parties on viable non-network alternatives that may defer network capital investment.

This process also ensures that Integral Energy addresses the requirements of the "NSW Code of Practice – Demand Management for Electricity Distributors, September 2004", the Electricity Supply Act 1995 (NSW) and the *Rules* that all require the investigation and where efficient, the implementation of non-network solutions before undertaking investment into new network assets.

Chapter 8 explains Integral Energy's initiatives in relation to demand management and shows how it has been active in encouraging demand side management initiatives to assist with the capacity of the network where constraints exist.

7.6.5 Reliability Works Program (RWP)

Faults on the 11/22kV distribution system have a direct effect on the reliability experienced by customers. The reliability of this part of Integral Energy's network is specifically addressed by a Network Reliability Strategy which is incorporated within the RWP.

The Network Reliability Strategy is designed to ensure compliance with the NSW DRP Licence Conditions and to improve the reliability performance of the worst performing parts of the distribution network. The strategy seeks to:

- Upgrade or replace feeders which do not comply with individual feeder standards in the NSW DRP Licence Conditions, and require immediate action in the short term;
- Minimise planned interruptions in all areas, particularly those with a high number of new connections (new development and redevelopment areas);
- Improve performance of the worst performing areas to comply with the NSW DRP Licence Conditions feeder average targets;
- Improve response times to faults; and
- Develop and introduce new cost effective methods of improving reliability performance in poor performing areas.

The approach to achieving the targeted reliability outcomes includes:

- Reducing susceptibility and improving response times through greater network segregation (use of reclosers);
- Improving response through use of improved communication and automation of the distribution network;
- Improving response options through the development of greater network interconnectivity; and
- Improving response through use of innovative solutions such as embedded generation.

The application of the reliability strategy to specific non-performing parts of the network is detailed in the RWP, which is reviewed six monthly and issued annually.

The RWP is provided as Appendix J.5.

7.6.6 Strategic Asset Renewal Plan (SARP)

Integral Energy's approach to asset renewal planning is becoming increasingly sophisticated as more assets reach the stage where renewal planning is required.

Integral Energy's asset renewal planning involves:

- High level asset renewal expenditure modelling;
- Developing bottom-up short term expenditure projections for various asset classes based on asset condition;
- Developing long term renewal programs based on prioritisation methodologies for major asset classes where required;
- Developing specific renewal plans for major unique assets; and
- Developing individual renewal plans (projects) for transmission and zone substations.

Integral Energy has a number of approaches for identifying assets for renewal, ranging from simple inspection and condition based maintenance regimes through to detailed technical analysis of key asset indicators. In general, electrical network assets will be renewed before their failure, where failure is defined as not fulfilling performance requirements. In rare instances, low criticality assets may be run to the point of failure.

This approach ensures that:

- Destructive failures that may compromise safety standards, damage other assets and require high repair and/or emergency repair costs are avoided;
- Unplanned interruptions to customer supplies are minimised;
- Interruptions to planned work programs are minimised; and
- Financial, material and human resources are effectively and efficiently managed.

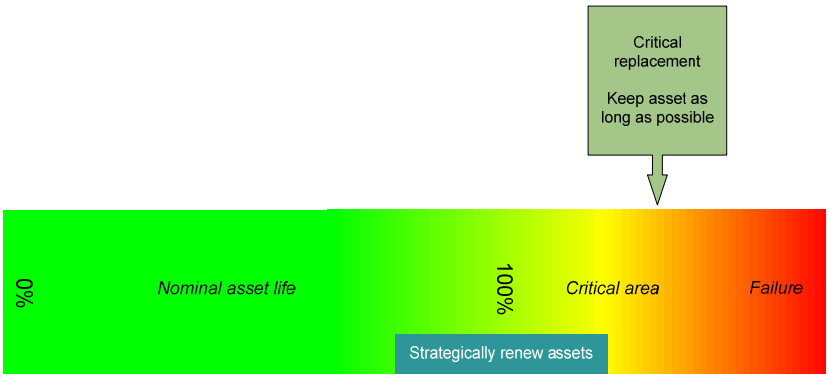
The optimal time for replacement is estimated for each asset or asset class based on actual experience, data and analysis of expected remaining life and likely failure modes. In determining the replacement timing for and criticality of an asset, the following factors may be considered:

- The likely or possible failure modes of the asset;
- How critical the asset is to the network (the customer damage factor should it fail);
- The renewal needs of other related and/or affected assets;
- The performance of the asset against its performance criteria;

- The operation and maintenance costs and trends of the assets; and
- Cost, functionality and performance of the replacement technology.

Some assets may be renewed because of the inherent inefficiencies in the ongoing maintenance of the assets. Typical examples include circuit breakers, which require intensive mechanical maintenance with specialist skills and hard to procure spare parts. Similarly, the replacement of other assets for which failure has lesser consequences may be deferred to meet network performance requirements. These factors are all considered in the development of the SARP (included in Appendix J.6) which is published annually. This combination of approaches is indicated diagrammatically in Figure 7.9 below.

Figure 7.9: Asset Renewal Timeline



The programs and projects developed by Integral Energy reflect a combination of differing approaches to the timing of asset renewal. Various factors will influence whether each project or program falls into the strategic renewal area or the critical replacement area. As described above, a large number of key asset types are approaching the end of their lives, and their replacement needs to be strategically programmed so that the effect on resources and the network is managed. An example is the need to plan for the replacement of approximately 350 33kV GCN circuit breakers spread throughout Integral Energy's network.

The critical replacement approach is typically applied when Integral Energy has unique major assets of relatively high replacement value, e.g. 132/33kV power transformers. These assets are maintained until it is clear that the need for the replacement of the asset is imminent. Managing the risks and associated potential impacts of this approach requires a long term planning horizon that reflects the risks and lead times associated with renewal of these assets. A replacement prioritisation methodology has been developed for power transformers to support an orderly and timely renewal program for this asset class. The methodology is based on the age and the critical importance of the assets, with provision for condition data to be included when and where available.

Integral Energy establishes short term renewal programs based on available data supplemented with expert knowledge of the projected end-of-life of assets. These short term programs are integrated into longer term renewal programs to provide accurate projections of expenditure, and to enable the efficient integration of renewal, growth driven and other asset management activities.

The process for developing the SARP involves a number of stages including the following:

- Identifying specific short term (1 to 2 year) renewal needs through analysis of asset age, asset condition and performance analysis, taking account of the consequence of failure;
- Formulating a long term position on renewal needs using asset renewal expenditure modelling;
- Collating and integrating short term and long term renewal expenditure needs in the SARP;
- Prioritising renewal expenditure; and
- Integrating and prioritising against other expenditure in the network investment program, especially to identify and eliminate growth and renewal project overlaps.

7.6.7 Strategic Network Maintenance Plan (SNMP)

Integral Energy's Network Maintenance Policy states that "network assets shall be maintained according to a maintenance plan". Integral Energy's Strategic Network Maintenance Plan (SNMP) analyses maintenance needs against business objectives and details the maintenance strategies the organisation has adopted for particular assets to meet the network strategy.

The SNMP provides the high level functional performance review of Integral Energy's network assets and establishes the framework by which the maintenance programs are established to fulfil Integral Energy's performance requirements. This plan is reviewed and updated annually to identify the network maintenance activities that will be undertaken over the ensuing 12 month period.

The SNMP has the following four key objectives:

- Operate and maintain Integral Energy's assets in a safe and secure manner that protects the public and electricity workers;
- Comply with all applicable regulatory obligations for operations and maintenance;
- Maintain the quality, reliability and security of the assets and services provided; and
- Take account of the effect of forecast growth on operating maintenance programs.

The operating expenditure planning and management process includes:

- Planned preventative programs such as inspection and maintenance of assets;
- Reactive work such as condition based maintenance and fault and emergency; and
- Operating and control functions.

The SNMP is provided as Appendix J.7.

7.6.8 Metering program

Under the *Rules* (Rule 7.6.1, Schedule 7.3.1 (particularly Schedule 7.3.1(c)(2)), Market Operation Rules (MOR3) and NSW Licence Conditions, Integral Energy must ensure its metering assets are tested in accordance with an asset management plan.

Under Integral Energy's metering program (see Appendix J.8) meters are grouped according to the type and year of manufacture and sampled in accordance with Australian Standard AS1284.13:2002 'In-service compliance testing'. Where samples fail this testing the relevant population is scheduled for bulk replacement over six years. Based on projected replacement rates this will ensure that the number of meters in need of replacement remains relatively constant over time.

The plan also covers how meters will be tested, and how inspection plans and testing of instrument transformers will be conducted.

7.7 Governance of the network planning framework and processes

Integral Energy's approach to network planning and asset management is subject to end-to-end oversight by an executive level Capital Governance Committee (CGC), chaired by the Chief Executive Officer. This Committee supports the significant capital program and ensures expenditure is subject to appropriate scrutiny in planning and delivery. The CGC is responsible for selecting an efficient capital portfolio and managing the efficient delivery of that portfolio. Up to the end of 2007, the role of the CGC focussed on:

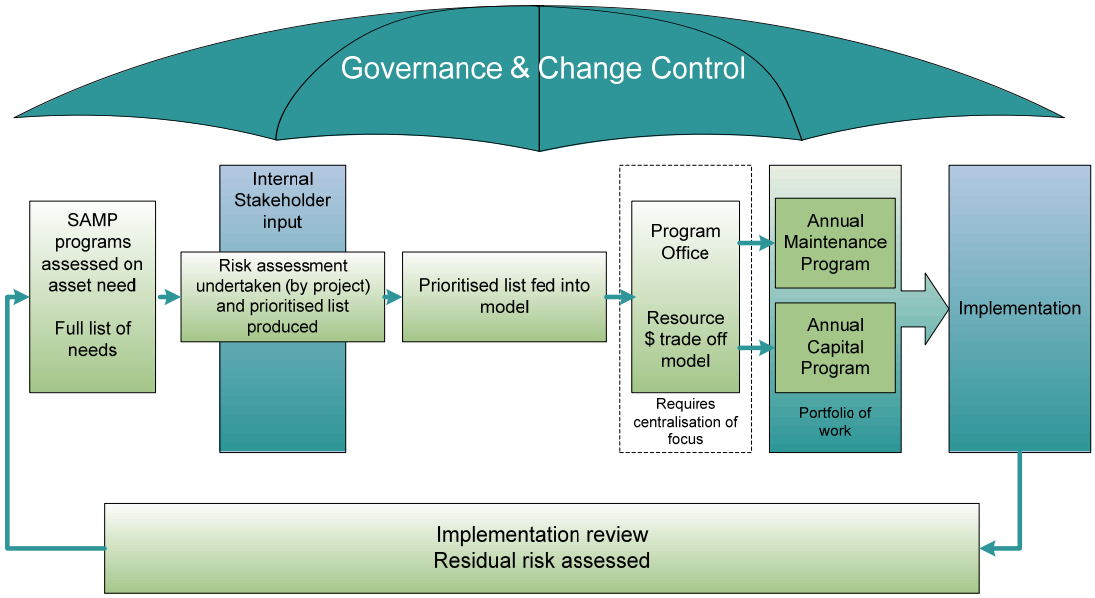
- Considering proposals for network system capital expenditure projects and programs;
- Considering proposals for information and communications technology capital expenditure, projects and programs;
- Considering proposals for property acquisition, construction and maintenance capital expenditure projects and programs;
- Considering proposals for motor vehicle capital expenditure projects and programs; and
- Ensuring the selection and delivery of capital expenditure projects and programs are consistent with corporate objectives, specific identified strategies, operational plans and regulatory requirements.

At the beginning of 2008, the CGC charter and role was expanded to include operating expenditure programs for network system assets.

7.8 Integral Energy's asset management model

Integral Energy's approach to asset management is illustrated in Figure 7.10.

Figure 7.10: Integral Energy's network asset management model and processes



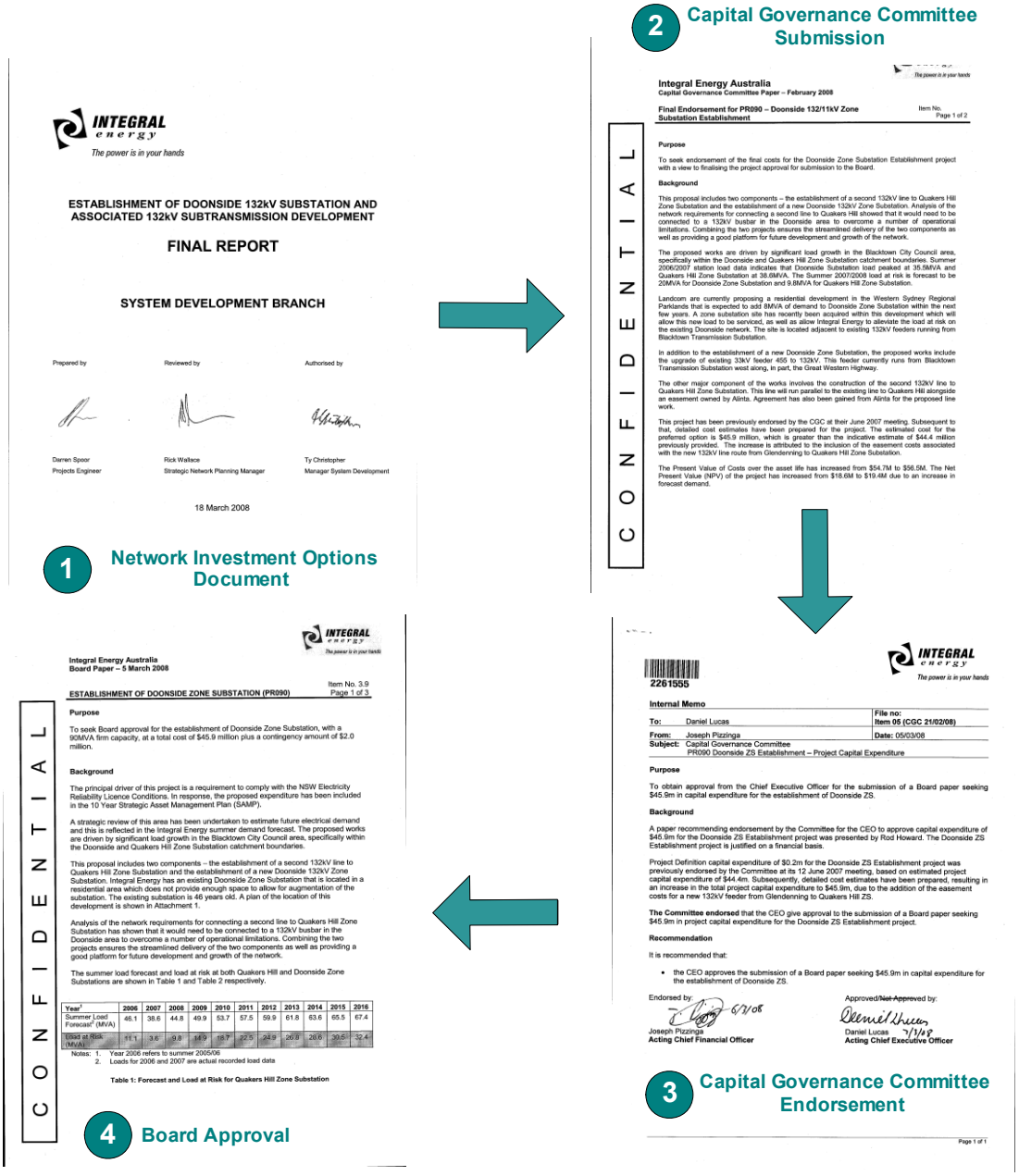
The investment planning process is integrated with the asset strategy. All expenditure on the network (capital, operating and maintenance) is evaluated and ranked on a consistent basis to ensure an optimum and efficient investment plan. The investment planning and risk management processes are integrated within the SAMP to ensure that investments align with the approved corporate risk profile.

The AER's Regulatory Test[20] is applied to all growth driven major projects above $1 million and public consultation is undertaken for all projects worth more than $10 million. The Capital Governance Committee currently receives post implementation reviews on all capital projects over $1 million..

An example of the Integral Energy asset management model is provided in the following case study of the Doonside 132kV substation and associated 132kV sub-transmission development, illustrated in Figure 7.11.

[20] Application and operation of the Regulatory Test is contained in the AER publication *Regulatory Test Application Guideline*, November 2007.

Figure 7.11: Case study of network planning and management framework and CGC



7.9 Delivering the network strategy

Integral Energy has ensured that it has or can acquire the systems, information and resources to deliver the network programs and projects.

The capital expenditure forecast for the *2009 regulatory control period* is significantly higher than the capital expenditure allowance for the *current regulatory control period*. Integral Energy also

notes that both nationally and internationally utilities are faced with the need to acquire the right volume and mix of skilled resources and materials to deliver the required expenditure programs.

While deliverability is not one of the factors that the *Rules* explicitly require the AER to have regard to when assessing whether Integral Energy's capital expenditure forecast reasonably reflects the capital expenditure criteria, Integral Energy understands that the AER and stakeholders may be concerned about the ability of Integral Energy to deliver the forecast capital program.

Integral Energy has a workforce plan in place to ensure the resources are available to deliver the proposed capital program. Integral Energy's forecast increase in labour requirements will not be as significant as the overall capital program given the increased volume of high capital cost assets. For example, the future requirements for new and replacement substations is increasing and these are capital intensive items that have a relatively smaller labour component.

Significant analysis has been completed on the timing of individual projects to achieve a balanced, even labour requirement over the *2009 regulatory control period*. This approach is consistent with maintaining a sustainable capital program in the long term, and means that some individual projects are programmed to occur later than indicated by modelling of system constraints first indicates. Overall however the NSW DRP Licence Conditions compliance date of 2014 is forecast to be met by the resource balanced program of works.

In the *current regulatory control period* Integral Energy has demonstrated its ability to meet an increased capital expenditure program. System capital expenditure[21] approximates the predicted levels from the 2004 Determination (expected to be 7% below the forecast $1,639 million).

Integral Energy's system capital expenditure for the *current regulatory control period* has increased by more than 2.5 times compared to the 1999 to 2004 period. On an annual basis, system capital expenditure has increased fivefold from the minimum annual 1999 to 2004 expenditure to the maximum *current regulatory control period* annual expenditure.

Integral Energy has shown it can deliver the increased capital investment required for a sustainable network business, and will continue to implement the proven approaches that have effectively and efficiently delivered the *current regulatory control period* capital program.

Integral Energy can deliver the higher capital program proposed for the *2009 regulatory control period* and it has implemented or commenced implementation of a range of initiatives to ensure that the increased challenging capital program can be delivered, including:

- **Design standardisation**

  For some time, designs for new transmission lines and substations have adopted a high degree of standardisation. This approach delivers benefits in terms of design resources, construction and project commissioning resources. Standardisation also provides a significant benefit to procurement, enabling standard equipment contracts to be negotiated at efficient market prices.

[21] Comprising IPART's 2004 Determination allowance and the New Licence Conditions pass through.

- **Supply chain management**

  The combination of design standardisation and a program management approach enables Integral Energy to procure materials and equipment via long term, high volume contracts. This allows long lead time materials and equipment to be ordered well in advance, and delivered in a timely manner. A large number of major equipment purchases are on a supply and install basis, which results in further efficiencies and reduces internal labour requirements.

- **Alternative delivery models**

  Historically, Integral Energy has delivered the majority of its system capital expenditure program through externally sourced, market tested mechanisms. These mechanisms include the design and construction of all civil construction works for major projects through external contractors and the delivery of major items of plant such as power transformers and switchboards on a supply and install contract basis.

  Integral Energy will continue to utilise a mix of internal and external delivery models for plant, materials and labour to deliver the capital program in an efficient and sustainable manner. Technology based solutions that minimise labour input requirements during construction and ongoing maintenance will also continue to be explored, to ensure that the capital program is delivered in an efficient and sustainable manner.

- **Increased internal staffing**

  Integral Energy continues to increase its internal resources in accordance with the strategy and associated workforce plan to enable delivery of the increased capital program on a sustainable long term basis. It has significantly increased the number of apprentice and engineering trainee intakes, and is confident that it can continue to increase its internal resources to an appropriate level that is sustainable into the long term. The workforce plan recognises the need for supplementary resources.

Parsons Brinckerhoff Australia (PB) has reviewed Integral Energy's proposed delivery strategy for its capital expenditure programs and concluded that, subject to Integral Energy adopting certain initiatives and strategies, "there is a high probability that it will deliver its entire capital and operating expenditure works programs proposed for the next regulatory period."

8

Demand Management Strategy

Demand Management (DM) is the holistic management of electricity supply by using demand side response and energy efficiency as alternatives to supply side solutions to meet customers' energy needs. DM is becoming increasingly important as a strategy to combat the growing pressures facing the industry.

Integral Energy is committed to taking a leadership role with respect to the environment and demand management. This chapter sets out Integral Energy's strategy with respect to demand management activities on its network.

8.1 Summary

Integral Energy has undertaken extensive activities to ensure not only that the organisation's regulatory obligations are met with respect to the environment and demand management, but that Integral Energy takes a leadership position within the community on these matters. Integral Energy has a comprehensive strategy relating to demand management (Appendix D.3). Integral Energy:

- Addresses the requirements of the NSW Demand Management Code of Practice, NSW Electricity Supply Act and the *Rules* that all require the investigation (and implementation where cost effective) of non-network solutions before the undertaking of investment into new network assets;
- Is an industry leader in seeking out and applying demand management initiatives;
- Has implemented ongoing network tariff reform;
- Is undertaking extensive trials, including the Western Sydney Pricing Trial, Blacktown Solar Cities trials and an Advanced Metering Infrastructure trial, to better understand customers' electricity usage patterns and options to help achieve peak demand reductions and energy efficiency;
- Undertakes significant activities in relation to demand management in accordance with the framework established by IPART with respect to the D-Factor; and
- Is committed to working with governments and the industry to progress the development of a national greenhouse policy framework that establishes a single, long term greenhouse gas emission reduction target and carbon trading scheme.

8.2 Demand side management strategy

Integral Energy pursues the efficient management of electricity supply by using demand side responses and energy efficiency as alternatives to supply side solutions. This is an important

strategy to ensure that enough electricity is supplied, at appropriate levels of reliability and price, while protecting the environment for future generations.

Integral Energy's network DM strategy covers three broad areas:

- Network demand management – to reduce peak demand and defer or avoid future capital expenditure to augment the network in order to meet peak demand;
- Better customer information – to develop optimal pricing strategies that promote the efficient use of energy and provide appropriate incentives for customers to use the network outside the times of critical network congestion; and
- A sustainable future – to contribute to the development of public policy relating to energy efficiency and network demand management.

8.3 Network demand management

The NSW Electricity Supply Act 1995 imposes as a condition of a NSW DNSP's licence a requirement for electricity distributors to investigate DM alternatives to network augmentation for specific capital expenditure projects (Schedule 2, clause 6(5)). The NSW Code of Practice – Demand Management for Electricity Distributors, May 2004 (the DM Code) requires electricity distributors to consider input to the planning process from the public and other stakeholders. Opportunity for community input into the planning of major network upgrades is to be provided to allow for the development of DM and other system support options.

The DM Code stipulates that a 'reasonableness test' is to be conducted to determine whether a request for proposals (RFP) is to be issued or some other investigation process is to be used. A RFP is a public process in which the distributor invites interested stakeholders to make submissions for system support options, to be evaluated against network options.

The Integral Energy annual Network Demand Management Plan as described in Chapter 7, details the major projects planned over the following three years and listed in the corresponding *Electricity System Development Review*. The document indicates whether a public process (the issuing of an RFP) needs to be commenced, the procedure for acquiring quotes from specific service providers to manage DM programs, and whether an in-house DM investigation is to be conducted for the current and following two financial years.

Integral Energy's approach to non-network solutions is both embraced in the network planning policy and supported by procedures to integrate demand side solutions into planning. This approach includes supporting the contracting of demand side opportunities with customers to ensure that potential proponents are given enough time to investigate non-network alternatives and develop detailed submissions. Integral Energy publishes timely 'statements of opportunity' and RFPs for demand side solutions to specific system constraints where the application of the DM Code has determined that such solutions might be viable. These documents also provide opportunities for all stakeholders to obtain further information and submit proposals for non-network options. Appendix V sets out further information in relation to how Integral Energy addresses the potential for non-network options.

8.3.1 Case studies of non-network alternatives

The case studies below demonstrate how rapidly the variety of energy efficiency and demand management initiatives is growing and how those initiatives are achieving desired results. The programs described below have been implemented to alleviate future identified constraints in specific areas of Integral Energy's network. Each has been identified, evaluated and implemented in accordance with the DM Code. Successful programs such as these will encourage more non-network solutions in the future.

Benefits to customers participating in these programs include:

- The option of a free, walk through, energy audit by signing an agreement to participate;
- Financial incentives to reduce peak power demand;
- Assistance to implement approved initiatives;
- Reduced electricity costs through improved energy efficiency;
- Improved environmental performance of the customer's establishment;
- The opportunity to enter into a financial arrangement to implement various projects with no upfront cost;
- The opportunity to demonstrate responsible corporate citizenship; and
- Improved security of electricity supply through contributing to peak demand reduction.

Through these projects, Integral Energy has demonstrated its commitment to demand management and to working with customers to improve outcomes for the community.

8.3.1.1 Castle Hill

In March 2004, Integral Energy launched an Australian first at the busy Castle Hill commercial centre, in partnership with the then Sustainable Energy Development Authority (SEDA). With commitments from Integral Energy's customers at the Castle Towers shopping centre, major retailers Coles, Myer, Target and BiLo, and the Castle Hill RSL Club, the program has delivered significant reductions in electricity demand and greenhouse gas emissions. The peak demand reduction target of 1,300 kVA was achieved through the installation of several initiatives, the largest being a new carbon monoxide monitoring and exhaust fan control system in the Castle Hill car park.

Other initiatives include the installation of more efficient lighting and improvements to air conditioning systems. Another 30 energy efficiency projects within Castle Hill, capable of delivering a further 1,000 kVA reduction in peak demand, have been identified. The additional reduction will involve further lighting upgrades, more efficient heating and cooling management strategies, building management control systems modifications, the installation of more efficient air conditioning plant and monitoring systems, and efficient lighting and controls.

8.3.1.2 Blacktown – Seven Hills

For the first time in Australia, Integral Energy has contracted two energy efficiency companies to investigate opportunities to reduce peak demand in the Blacktown – Seven Hills area of western Sydney. In this five year project, Integral Energy is seeking to defer capital expenditure on upgrading the Leabons Lane zone substation. Free energy efficiency reviews are provided to help major business customers uncover ways to save energy. Any customer who invests in projects that reduce peak power demand has and will be given a subsidy towards those projects.

To date, eighteen customers have agreed to implement the identified initiatives, with peak demand reduction currently totalling 3,720 kVA. This program is also currently reducing carbon emissions by 160 tonnes each year - equivalent to removing 40 cars from NSW roads.

8.3.1.3 Wetherill Park

The Wetherill Park program aimed to reduce or shift the peak demand, or utilise onsite generation, to cut the load on the Wetherill Park zone substation and defer construction of a new West Wetherill Park zone substation (comprising two 45 MVA transformers connecting to the overhead 132 kV system). A RFP for Wetherill Park was issued in December 2003 to identify a service provider to approach customers, conduct audits to identify efficiency initiatives and implement those initiatives approved by customers. Any organisation within the Wetherill Park industrial area supplied from the Wetherill Park zone substation could take part in the project, and major customers within the industrial area were approached to participate. Customers were offered free audits, financial incentives and assistance to implement approved initiatives. Thirty customers participated in the program with total peak demand being reduced by 5,550 kVA.

8.3.1.4 Parramatta

The Parramatta program seeks to reduce or shift the peak demand, or utilise onsite generation, to reduce the peak load on Parramatta zone substation. A RFP for Parramatta was issued to identify a service provider to approach commercial customers, conduct audits to identify opportunities and implement initiatives approved by commercial customers in a program covering five years. Any organisation within the Parramatta CBD supplied from Parramatta zone substation can take part in this project. So far, 33 customers have participated, reducing peak demand by 2,100 kVA.

8.3.1.5 Blacktown and Westmead hospitals

Blacktown Hospital has commissioned a new cogeneration plant with the potential to reduce network peak demand by 550 kVA. Integral Energy has entered into an arrangement with Sydney West Area Health Service to ensure that the generating plant is operational at times of peak demand on the network, in return for a financial payment. Other energy efficiency initiatives equating to 130 kVA of peak demand have been implemented, and others are also being explored with Blacktown Hospital.

Integral Energy has helped Westmead Hospital to implement several initiatives, which include more efficient lighting, power factor correction and high efficiency motors. The hospital is in the

process of obtaining approval to install up to 8,000 kVA of cogeneration plant. The initiatives already implemented have reduced demand by 2,100 kVA. Integral Energy will work with the health service to identify and implement further energy efficiency initiatives.

8.3.1.6 Unanderra

The Unanderra program, initiated in December 2006, seeks to increase energy efficiency, use onsite generation and reduce or shift peak demand in the Unanderra/Figtree/Kembla Grange area to defer the construction of a new zone substation in the Figtree area. Integral Energy appointed a consultant to approach customers, conduct audits to identify energy efficiency initiatives and implement initiatives approved by customers. Any organisation within the program area may take part in this project. So far, 30 customers have participated, with 5,500 kVA of peak demand being identified and 2,000 kVA of peak demand implemented.

8.3.1.7 Liverpool

The Liverpool program, initiated in August 2006, offers similar services to customers as other programs. Initiatives such as, increased energy efficiency, onsite generation and reducing or shifting peak demand are identified and implemented to defer the construction of a new zone substation in the Liverpool CBD area. Integral Energy appointed a consultant to approach customers, conduct audits to identify energy efficiency initiatives and implement initiatives approved by customers. To date, 17 customers have participated, with 4,000 kVA of peak demand being identified and 1,000 kVA of peak demand implemented.

8.4 Tariff reform

Integral Energy is committed to network tariff reform and believes that there are significant economic and equity benefits to be realised from improving the cost reflectivity of network tariffs. More cost reflective pricing signals will ensure that Integral Energy's customers are better placed to make efficient consumption and investment decisions, particularly in relation to demand management.

Reflecting this commitment, Integral Energy has undertaken significant network tariff reforms during the current regulatory period. The major tariff reforms are summarised below:

- Introduction of the inclining block tariff for residential and general supply customers;
- Introduction of a compulsory demand pricing policy for all customers with annual consumption above 160 MWh pa;
- Introduction of a seasonal peak period maximum demand price structure for large customers on a network demand tariff; and
- Introduction of a voluntary time-of-use tariff to provide small customers with greater tariff choices.

During the *2009 regulatory control period*, Integral Energy intends to investigate a broad range of innovative reform options for existing network tariffs, such as the introduction of a capacity charge for large customers, the refinement of existing time of use tariffs and the possible introduction of additional voluntary tariff options to provide small customers with greater tariff choices.

8.5 Better customer information

Integral Energy is currently undertaking three extensive trials aimed at better understanding its customers' electricity usage patterns and options to help achieve peak demand reductions and energy efficiency. The trials include:

- Western Sydney Pricing trial;
- Blacktown Solar Cities trials; and
- Advanced Metering Infrastructure trial.

Integral Energy's current pricing and metering trials are discussed below.

8.5.1 Western Sydney Pricing Trial (WSPT)

The WSPT is comprised of the Dynamic Peak Pricing and Seasonal Time-of-Use Pricing trials. The aim of these trials is to develop pricing strategies that promote more efficient energy use and provide incentives for customers to reduce or defer their demand for electricity at times of critical network congestion. Customers on the Dynamic Peak Pricing tariff pay a lower rate for electricity most of the time, but for 12 critical 'dynamic peak event' days they pay a much higher rate. If they can reduce or defer their use of electricity during a dynamic peak event, they not only save money but also help to reduce the load on the electricity supply network.

Customers on the Seasonal Time-of-Use tariff pay a higher rate for electricity during times of summer and winter peak demand, but are rewarded with a lower tariff than that charged to the general user at other times. This encourages customers to change their patterns of electricity usage in the longer term to save money, and reduces the impact of their demand for electricity during peak periods.

These trials began in August 2006 and will run until August 2008. More than 1,200 customers are participating in the WSPT, including a control group of more than 340 customers.

8.5.1.1 Initial results

Based on preliminary results, customers on the trial have responded to changes in the structure and level of their prices, particularly on hot days. Figure 8.1 examines the dynamic peak pricing event called on 11 January 2007 by comparing the consumption profile from the control group with the consumption profile for the tariff treatment groups on a 39.4ºC day.

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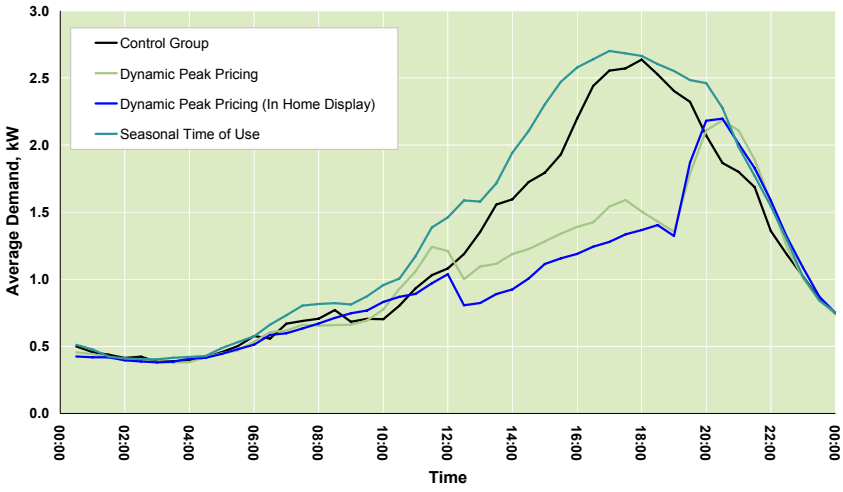
Demand management strategy

Figure 8.1: Average load profiles on 11 January 2007 with temperature at 39.4ºC



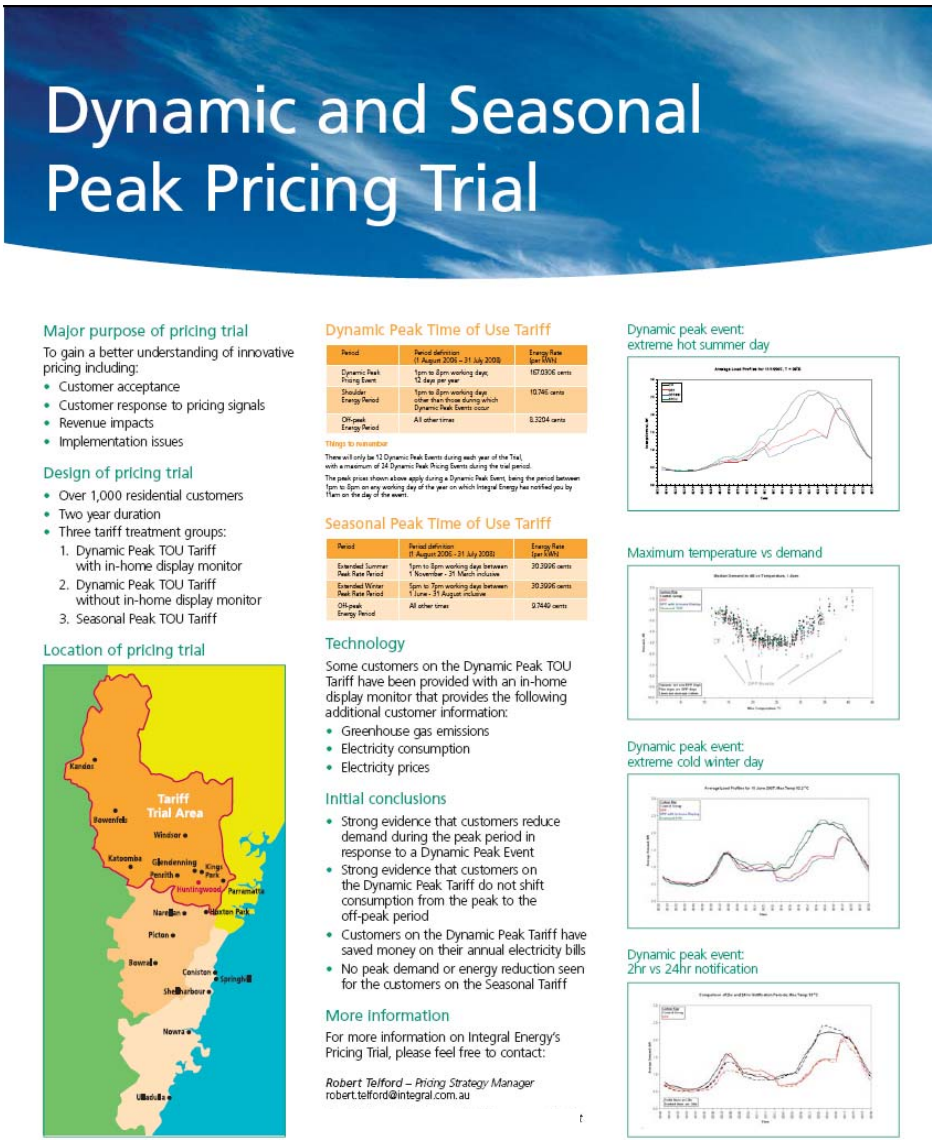
The pricing trial initial results show a statistically significant customer response to dynamic peak pricing, with customers reducing peak load by approximately 35 to 40% during peak times. Little response has been observed for the seasonal time-of-use customers compared with the control group.

The results of the WSPT have been fairly consistent over the trial duration (approximately 22 months to date). While the trial is still underway and data is yet to be fully analysed, the preliminary results show a strong demand response from customers on the dynamic peak tariffs. The results of the WSPT are being used to inform the development of Integral Energy's future network tariff strategy, and will be considered in assessing whether critical peak prices should be offered as part of Integral Energy's suite of tariff offerings.

Figure 8.2 provides details of Integral Energy's WSPT.

The information collected first hand by Integral Energy in this trial is important to better understand the price responsiveness of customers at the time of network constraints.

Figure 8.2: Integral Energy's Dynamic Peak Pricing Trial



8.5.2 Blacktown Solar Cities

Solar Cities is a $75 million initiative announced in June 2004 by the former Prime Minister in the Energy White Paper, *Securing Australia's Energy Future*. Solar Cities is an innovative program designed to demonstrate how solar power, smart meters, energy efficiency and new approaches to electricity pricing can combine to provide a sustainable energy future in urban areas throughout Australia.

Solar Cities is a partnership approach involving all levels of government, the private sector and the local community. In November 2006, Blacktown became the third 'Solar City' to be announced in Australia. The Blacktown Solar City Consortium includes BP Solar, Integral Energy, Landcom, ANZ, Big Switch Projects and Blacktown City Council.

The consortium has launched a wide range of initiatives to help promote sustainable energy use in Blacktown. These include promotion of solar electricity of over 1 MW for housing and commercial buildings, refinancing packages that include free solar hot water systems, sustainable building developments, and many other elements.

Integral Energy's role focuses on four voluntary Energy Saver trials – air conditioning cycling, pool pump control, a dynamic peak pricing trial and a seasonal time-of-use pricing trial. The objectives of these trials include increased consumer awareness of the environmental impact of energy consumption and an improved understanding of demand management options.

8.5.2.1 Air Conditioner Saver trial

The Air Conditioner Saver trial involves participants' air conditioners being cycled on for 40 minutes and then off for 20 minutes each hour during selected occasions of high electricity demand. A previous study by Integral Energy found that household temperatures rise by an average of only 1 to 2^{o}C during this time, while energy consumption is reduced by up to 30%. There are currently 300 customers on the Air Conditioner Saver trial.

8.5.2.2 Pool Pump Saver trial

Similarly, participants in the Pool Pump Saver trial will have their pool pumps turned off automatically during peak demand periods and turned on later in the evenings. There are currently 108 customers on the Pool Pump Saver trial.

8.5.2.3 Blacktown Solar City Pricing trials

The Blacktown Solar City pricing trials aim to encourage energy reduction and changes in energy use patterns in response to price signals. As part of the Dynamic Peak Pricing trial, a premium tariff applies during a limited number of peak demand periods while participants pay a reduced tariff for the remainder of the year.

In the Seasonal Saver trial, participants are charged higher tariffs during the warmer months when demand is higher, and a reduced rate at other times.

Together with free home energy consultations, energy efficiency packs, discounted solar product offers and business programs, the Blacktown Solar City project is an innovative approach to tackling the region's energy challenges. Participation is voluntary and customers are paid $100 per trial.

The Blacktown Solar City trials aim to achieve a peak demand reduction of 600 kVA at the Leabons Lane zone substation and 540 kVA peak demand reduction at the Marayong zone substation.

8.5.3 Advanced Metering Infrastructure trial

The aim of the Advanced Metering Infrastructure (AMI) trial is to evaluate the technical feasibility, costs and benefits of rolling out interval meters for monitoring electricity consumption. Interval meters measure electricity consumption more often than traditional meters, and will provide Integral Energy with a platform to develop innovative pricing structures and peak demand reduction measures that will encourage customers to use energy more efficiently. The trial involves the installation of more than 3,000 advanced meters in Blacktown to test the technology and business case of using advanced metering.

As part of the AMI trial, Integral Energy aims to obtain some real information on costs of advanced metering and also gain a greater insight into the issues that may arise as part of such a rollout.

Integral Energy's AMI trial is one of the largest AMI deployments in Australia, and provides Integral Energy with rare first hand knowledge of the costs and issues associated with an AMI roll out. This knowledge is particularly important in light of the Council of Australian Government's (COAG) national push for a roll out of advanced metering (referred to as smart meters).

Initial results of the trial indicate that the technologies appear to work, however, care must be taken in setting standards and service levels as the technology may not be able to meet some of the levels currently being contemplated by the Ministerial Council of Energy (MCE) smart metering working group. The technology is also relatively immature and significant scale pilots should be undertaken in the first stage of any mass rollout.

8.6 Ensuring a sustainable future

Integral Energy is committed to exploring ways to reduce greenhouse gas emissions while sustaining business growth. To implement this important commitment, Integral Energy has a target to reduce its carbon footprint and become carbon neutral in its direct activities by 2020. Integral Energy is also committed to:

- Empowering its customers to make more sustainable power choices by providing innovative and attractive products and services, promoting greater awareness of energy efficiency and by providing practical advice and tools;
- Working with Governments and industry to define market based and policy mechanisms for responding to climate change. This includes considering regulatory risks, network operations, adaptation strategies, smart meters, renewable energy targets, revenue risks and tariff strategies; and
- Reducing network losses through network equipment, power factor correction and demand management.

Integral Energy recognises the importance of a national carbon emissions trading scheme, but notes that considerable uncertainty surrounds the form of any scheme, and any impact such a scheme may have on a distribution business. Integral Energy therefore considers that the most appropriate regulatory treatment of a national carbon emissions trading scheme is to have the costs and associated impacts treated as a cost pass through. As discussed in Chapter 16,

Integral Energy has nominated the introduction of a carbon emissions trading scheme as pass through event for the purposes of this *regulatory proposal*.

8.7 The AER's DM incentive schemes

Integral Energy notes that the AER has recently issued a Guideline titled *Demand management incentive schemes for the ACT and NSW 2009 distribution determinations.*

In its DM Incentive Scheme Guideline, the AER will apply two demand management incentive schemes to the Integral Energy 2009 distribution determination. These schemes are:

- A D-factor scheme to apply to Integral Energy as it was applied by IPART in the *current regulatory control period*; and
- A demand management innovation allowance to apply to Integral Energy (as per appendix D of the AER's guideline).

These two demand management incentive schemes will be applied in the *2009 regulatory control period*, and to the extent that both schemes involve a lag between the approval of demand management programs and the effect on network prices, will also have financial implications for the 2014–19 *regulatory control period*.

The AER's DM incentive schemes are discussed in Chapter 17.

8.8 Future trials

Integral Energy's experience with metering and pricing trials is that they provide valuable information for both policy and business decisions.

Integral Energy proposes to continue its trial program over the 2009 regulatory control period. The forecasts in this *regulatory proposal* include an operating expenditure allowance of $1.5 million per year ($2008/09) and a capital expenditure allowance of around $1.5 million per year ($2008/09) for small scale trials including:

- Continuing to undertake further small scale trials of advanced metering. Trials of significant scale are to be treated as a cost pass through event (see Chapter 16);
- Undertaking trials of demand management control equipment such as air-conditioner cycling, pool pump control etc; and.
- Undertaking further customer response trials such as pricing trials, in home-display trials, home area network integration trials, information provision trials (such as interfacing meters with internet access).

8.9 Impact of DM on growth program

This chapter describes the processes that Integral Energy has established to ensure that non-network options are considered as alternatives to supply side solutions. The chapter also demonstrates the operation of the current demand management processes and provides examples of the projects that have resulted.

Integral Energy will continue to pursue non-network solutions where these are more efficient than the traditional supply side solutions. The processes described above will be applied and expanded during the *2009 regulatory control period*.

The AER has determined that it will continue the application of the D-factor scheme in NSW for the *2009 regulatory control period*, as it was applied by IPART in its 2004 Determination. On this basis, the impacts of the future demand management programs are not included in the forecast expenditures or demand projections for the *2009 regulatory control period*, other than some minor operating expenditure associated with the project management of the demand management program.

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Forecast capital expenditure

Integral Energy's *regulatory proposal* includes the capital expenditure required to maintain the quality, reliability and security of supply of standard control services and to maintain the reliability, safety and security of the distribution system for the forecast demand for standard control services. This chapter sets out Integral Energy's forecast capital expenditure for the *2009 regulatory control period*.

9.1 Summary

Integral Energy's proposed capital expenditure requirements for the *2009 regulatory control period* are provided in Table 9.1. These capital expenditure forecasts are also included in the AER's pro forma 2.2.1.

Table 9.1: Forecast capital expenditure for Standard Control Services

$ million 2008/09	Forecast year ending 30 June					
Expenditure category	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Growth	215.2	288.3	288.1	294.9	259.8	1,346.2
Asset renewal/replacement	138.8	152.8	151.0	155.4	186.5	784.4
Reliability and quality of service enhancement	14.3	14.2	14.4	14.7	14.9	72.6
Environmental, safety, statutory obligations	131.1	112.2	83.3	52.5	23.9	402.9
Other system assets	1.8	1.8	1.8	2.5	2.5	10.5
Total System	**501.1**	**569.4**	**538.6**	**519.9**	**487.6**	**2,616.6**
Non-system assets	72.8	72.1	71.8	62.6	56.7	336.1
Total	**573.9**	**641.5**	**610.4**	**582.5**	**544.3**	**2,952.7**
Notes: numbers may not add due to rounding and the forecasts exclude capital contributions						

Integral Energy's forecast capital expenditure requirements are prudent, efficient and based on a realistic expectation of demand forecasts and cost inputs.

The capital expenditure forecasts support the network strategy and demand management strategies described in Chapters 7 and 8 of this *regulatory proposal*. The forecasts have been developed using the planning processes described in Chapter 7 of this *regulatory proposal*. Further information concerning Integral Energy's expenditure estimation processes is contained in Appendix W.

9.2 Regulatory requirements

This section summarises the *Transitional Rules* requirements and AER's information requirements for capital expenditure.

The *Transitional Rules* (clause 6.5.7(a)) require Integral Energy's building block proposal to include the total capital expenditure forecast which it considers is required to achieve each of the following objectives:

Box 9.1: Capital Expenditure Objectives
• Meet or manage the expected demand for standard control services over the period; • Comply with all applicable regulatory obligations or requirements associated with the provision of standard control services; • Maintain the quality, reliability and security of supply of standard control services; • Maintain the reliability, safety and security of the distribution system through the supply of standard control services.

The *Transitional Rules* (clause 6.5.7(c)) stipulate that the AER must accept the forecast of required capital expenditure that is included in the building block proposal if the AER is satisfied that the total of the forecast capital expenditure for the regulatory control period reasonably reflects the following capital expenditure criteria:

Box 9.2: Capital Expenditure Criteria
• The efficient costs of achieving the capital expenditure objectives; • The costs that a prudent operator in the circumstances of the relevant DNSP would require to achieve the capital expenditure objectives; • A realistic expectation of the demand forecast and cost inputs required to achieve the capital expenditure objectives.

The *Transitional Rules* (clause 6.5.7(e)) also set out the factors that the AER must have regard to when assessing forecast capital expenditure. The AER's RIN (clauses 2.2 and 2.3.10) requires the following information:

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Forecast capital expenditure

Box 9.3: Regulatory Information Notice Requirements
The RIN requires that Integral Energy provide information in its *regulatory proposal* on a number of matters, including the following: • Forecast of the required capital expenditure that identifies the forecast by reference to well accepted categories such as asset class or driver. • The method used for developing the forecast, the key assumptions that underlie the forecast and a Directors' certification of the reasonableness of the key assumptions. • Details on material projects and programs. • Provide an overview of the expenditure estimation process used by the DNSP in developing its forecast capital expenditure. • The unit rates adopted by the DNSP for key items of plant and equipment, how these have been developed (including source material) and evidence that they reflect efficient costs. • The expenditure escalators (for example, labour, materials, land and other) used in developing the expenditure estimates. • Whether the same expenditure escalators have been used in developing proposed capital and operating expenditures, and if not, provide justification and supporting evidence as to why different expenditure escalators should apply. • Whether the expenditure estimation process involves the application of contingency factors. • How the profile of expenditure for different types of projects and programs have been developed. In addition, clause 2.3.5 of the AER's RIN requires the information for each service standard obligation that relates to the provision of Integral Energy's direct control services, including: • Details of any externally imposed obligations, including performance measures and, where applicable, relevant performance targets; • Details of any internal programs, projects or initiatives aimed at maintaining or improving network reliability and customer service performance during the next regulatory control period, in order to satisfy the particular externally imposed obligation; • The estimated impact of satisfying new, proposed or incremental externally imposed obligations on the DNSP's capital and operating expenditures for the next regulatory control period. The estimated impact of satisfying the internally imposed obligations on Integral Energy's capital expenditures for the 2009 regulatory control period are discussed and quantified in this chapter.

This *regulatory proposal* provides the information to address these *Transitional Rules* and RIN requirements.

9.3 Service standard and regulatory obligations

As noted in previous chapters, and as discussed in section 9.9, Integral Energy is subject to a wide range of obligations under the National Electricity Law, NSW Electricity Supply Act and other legislation, which affect capital expenditure requirements both directly and indirectly.

The forecasts outlined in this chapter incorporate these obligations to the extent that they are known and understood by Integral Energy at the time of this *regulatory proposal*. Aspects of compliance which have had a significant impact on particular areas of capital expenditure are noted in the relevant sections below.

Integral Energy is confident that by developing its capital expenditure forecast to meet these compliance obligations it has developed a forecast that meets the *Transitional Rules* capital expenditure objectives.

9.4 Key assumptions and forecasting method

Integral Energy's key assumptions underpinning its capital expenditure forecasts and independent review of the assumptions are in Table 9.2.

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Forecast capital expenditure

Table 9.2: Key assumptions underpinning capital expenditure forecasts

Key Assumption	Use	Independent review
Forecast growth in: • spatial maximum demand • customer connections (sections 6.1 and 9.6)	To develop the capital expenditure forecasts	CRA: "CRA International's view that the forecasts provided for this report, are reasonable and are based on sound evidence." PB: "PB has conducted a high level review and has not identified anything which would suggest that Integral Energy's process for using spatial demand as an input to forecasting network constraints is unreasonable. The process appears rigorous and transparent in the material areas."
Age and condition of assets (section 7.6.6)	Used as a key input to develop asset renewal and replacement forecasts	PB: "PB has conducted a high level review and has not identified anything which would suggest that Integral Energy's 2009 regulatory control period renewal capex forecasts do not: • comply with the Rule requirements (objectives and criteria) • represent prudent, efficient and realistic costs for the services provided • represent reasonable forecasts; and • contain an appropriate level of robustness."
Unit rates reflect the current rates embedded in Integral Energy's recent historic capital expenditure	As a base for the capital expenditure forecasts	PB : "Based on our sampled approach, PB concludes that we have not identified any reason to consider the unit rates used by Integral Energy in its recent historical capex are not reasonable or efficient"
Labour, materials and service input cost escalators (section 9.12.2)	To adjust the capital expenditure forecasts for likely cost outcomes	Competition Economists Group (CEG): Recommended escalation rates which Integral Energy has adopted in its forecasts PB: "PB confirms that the escalation rates identified in the CEG report have been correctly applied to future system capital expenditure where costings have not yet been approved by the Integral Energy Board."
Overhead allocations (section 9.12.1)	In the development of the capital and operating expenditure forecasts	AER: has approved Integral Energy's cost allocation method

The forecasts have been developed using the planning processes described in Chapter 7 of this *regulatory proposal*. Appendix Z provides a summary of where the significant variations in Integral Energy's capital expenditure, as identified in pro forma 2.2.4, are explained within the body of this regulatory proposal.

As noted in section 7.4.3, these planning processes examine proposed projects and expenditures to ensure that:

- Opportunities to leverage technology been considered;
- The costs of capital investment projects and operating programs/tasks are in line with industry benchmarks and take account of appropriate productivity savings;;
- The trade-offs between operating and capital expenditure are considered so that best network outcome is achieved at least cost; and
- The expenditures are targeted at the right aspects of the network to achieve the required outcomes.

Integral Energy engaged PB to review forecast and historical expenditures. Based on a sample approach, PB has confirmed the exclusion of contingency factors "*PB has not identified any instances where contingencies have been included in Integral Energy's forecast capex, and considers the identification and treatment of contingency allowances as part of internal approval processes is transparent and reasonable."*

9.5 Capital expenditure categories

A brief description of Integral Energy's capital expenditure categories is provided below. These categories are consistent with the cost categories reported in the IPART Regulatory Financial Statements and in Integral Energy's 2004 Network Determination submission.

Categories for capital expenditure related to system assets:

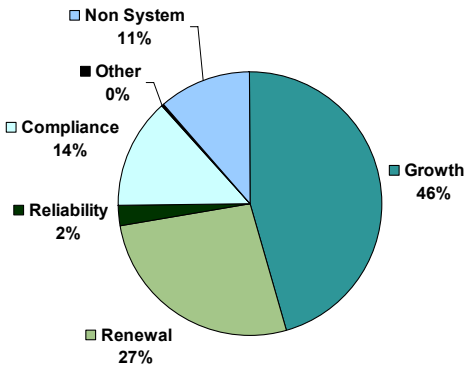
- ***Growth (demand related)*** - all capital expenditure with the primary purpose of meeting an increase in demand, or a movement of load within the network.
- ***Asset renewal/replacement*** - all capital expenditure with the primary purpose of maintaining the existing level of supply and standard of service.
- ***Reliability and quality of service enhancement*** - all capital expenditure, with the primary purpose of addressing network reliability and service quality requirements.
- ***Environmental, safety, statutory obligations*** - capital expenditure with the primary driver of compliance with environmental, safety and statutory obligations, for example, expenditure related to the costs of complying with the NSW Licence Conditions for existing assets.
- ***Other system assets*** - capital expenditure related purchasing emergency spares that are not part of inventory, such as mobile generators and emergency substations.

The non-system asset capital expenditure category includes capital expenditure not directly related to the construction or replacement of system assets but which supports the operation of the regulated network business.

9
Forecast capital expenditure

The main components of the proposed capital program for the *2009 regulatory control period* are illustrated in Figure 9.1. They are focused on growth (46% of the total program), replacing an ageing asset base (27% of the total program) and complying with regulatory obligations (14% of the total program). Collectively, these components add up to approximately 87% of the total capital program.

Figure 9.1: Components of the proposed capital program



The growth component of forecast capital expenditure is dominated by the requirements for serving forecast peak demand throughout the network (see Chapter 6). Integral Energy's capital program includes a number of major projects, such as increasing the capacity of existing substations, constructing new substations, augmenting feeders and installing new feeders, associated with this growth. The forecast growth in customer numbers also affects expenditure through the need for assets for new connections.

The asset renewal component of Integral Energy's forecast capital expenditure reflects the ageing asset base and the number and proportion of assets with declining serviceability.

The regulatory compliance component of forecast capital expenditure includes investment required to meet the specified compliance dates for the NSW DRP Licence Conditions for the security and reliability of electricity supply.

In addition to physical drivers, the capital expenditure forecasts reflect input costs such as labour, materials and contracted services (determined on a competitive basis).[22] The forecast changes in these inputs have been determined by external independent experts. Integral Energy has used these input cost escalators to develop expenditure forecasts consistent with the recent AER regulatory decisions for SP Ausnet and ElectraNet SA.

[22] Approximately 75% of capital expenditure inputs are competitively sourced including major civil works, equipment and materials, etc with the balance provided in-house.

Integral Energy's capital expenditure forecasts and the underlying assumptions have been independently reviewed by PB, to ensure they are efficient, prudent and reasonable. PB separately reviewed the compliance, growth and renewal components of the forecast capital program and considered a sample of major projects in detail. PB's report is included in Appendix K. PB did not identify anything which suggested that the capital expenditure forecasts do not:

- Comply with the Rule requirements (objectives and criteria);
- Represent prudent, efficient and realistic costs for the services provided;
- Represent reasonable forecasts; or
- Contain an appropriate level of robustness.

Integral Energy is confident that the submitted capital expenditure forecasts meet the *Transitional Rules'* objectives and criteria.

9.6 Growth (demand related) capital expenditure

As discussed in Chapter 7, Integral Energy has carried out a review of network capacity against the forecast spatial maximum demands detailed in Chapter 6 so that current and future constraints on the network are identified and assessed against the NSW DRP Licence Conditions. When the most appropriate option requires a capital investment, the associated costs are included in the capital expenditure forecasts.

The major expenditure sub-categories in this area are the Major Projects and Distribution Works Programs.

Growth in customer numbers is used to estimate the number of new connections required and the associated forecast network connection expenditure which is classified into three sub-categories: Industrial and Commercial Connections; Non-urban Extensions; and Underground Residential Development.

Growth related expenditure also includes sub-categories such as Low Voltage Development and Asset Relocations.[23]

A breakdown of Integral Energy's growth related capital expenditure by sub-categories is shown in Table 9.3.

[23] Note that the category of Asset Relocations does not include customer funded work but covers Integral Energy funding where it may be efficient to perform other work (such as a supply upgrade) in conjunction with an asset relocation driven by a customer or other party. In this case the customer would typically pay a like-for-like cost for the relocation and Integral Energy would pay the marginal cost of any upgrade for Integral Energy's benefit.

9
Forecast capital expenditure

Table 9.3: Growth capital expenditure forecasts[24]

	Forecast year ending 30 June					
$ million 2008/09	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Major Projects (ex land)	157.6	213.7	221.2	213.2	174.7	980.4
Major Projects (land)	7.5	3.3	0.0	0.0	0.0	10.8
Distribution Works Program	0.0	20.6	14.7	28.1	29.8	93.2
Asset Relocations	2.6	2.6	2.7	2.7	2.8	13.5
Industrial and Commercial Connections	15.2	15.7	16.5	17.1	17.9	82.5
Non-Urban Extensions	5.1	5.1	5.2	5.4	5.6	26.4
Underground Residential Development	10.6	10.7	11.0	11.3	11.7	55.1
Low Voltage Development	14.6	14.5	14.7	15.0	15.2	74.0
Metering	2.0	2.0	2.1	2.1	2.1	10.3
Total Growth	**215.2**	**288.2**	**288.1**	**294.9**	**259.8**	**1,346.2**
Note: numbers may not add due to rounding						

Integral Energy has included a listing of material major capital projects and programs in the AER's pro forma 2.2.3 included in Attachment 1.

In its review of major projects and programs PB concluded that "*…. Integral's costs estimates for major projects and programs appear efficient and realistic for the services provided. In general unit costs appear reasonable*."

A summary of a selected number of Integral Energy's growth related projects follows. This information is not a detailed listing of all the items that make up those programs. For many of the projects listed here, total investment will be spread over several years.

[24] Note that Table 9.3 includes capital required to maintain ongoing compliance with NSW Design Planning criteria. One-off capital costs of achieving initial compliance have been included in Table 9.6 under Environmental, Safety and Statutory Obligations.

- **Liverpool transmission substation establishment and associated works**

  The Liverpool CBD and surrounding areas are experiencing increasing demand for electricity, driven primarily by commercial and high density residential activity. The Liverpool City Council recently announced its vision for the expansion of the CBD, which involves several major spot loads, including a major sporting, entertainment, commercial and residential complex. The transmission and zone substations and the sub-transmission system supplying the area are experiencing capacity constraints.

  A RFP was issued to identify opportunities to reduce peak demand. This and other customer negotiations will be used as part of the planning process to develop long term solutions for the area. The project scope is based on establishing a transmission substation in the vicinity of the CBD and a new zone substation at North Liverpool.

- **Construction of Abbotsbury zone substation**

  There has been substantial growth in the residential sector at Abbotsbury, Cecil Hills, Edensor Park and Bonnyrigg. New areas have been released at Abbotsbury and Cecil Hills, and there has been infill development at Bonnyrigg and Edensor Park. The penetration of air conditioning has also dramatically increased. This new zone substation will supply the expanded residential area and offload the adjoining Bonnyrigg and Bossley Park zone substations.

- **Camellia 132 kV busbar and Parramatta CBD West zone substation**

  The Parramatta CBD is undergoing a major transformation as a result of changes to height restrictions for buildings. The Parramatta City Council has unveiled plans for major redevelopment to introduce additional commercial space and high density residential apartments.

  Capacity constraints are emerging in the electrical network, which is one of Western Sydney's most important commercial centres. Preliminary studies for the Parramatta CBD have shown that substantial future investment is necessary to ensure capacity and reliability. Surveys have been conducted into energy efficiency options, in conjunction with the NSW Government's Greenhouse Building Rating Scheme.

  The project scoping includes establishing a Parramatta CBD West zone substation, and establishing a second substation in the Parramatta CBD in a future regulatory period. The establishment of a 132 kV busbar at Camellia will enable the connection of the various zone substations.

- **Doonside zone substation**

  The Blacktown commercial, industrial and residential areas of Western Sydney are experiencing significant population and hence electricity demand growth. Further, a new residential area adjacent to the Western Sydney Regional Parklands is being developed. A zone substation site has been identified within the development that will allow this new load to be serviced, as well as allow Integral Energy to address the load at risk on the existing Doonside network. In addition to the establishment of a new Doonside Zone

Substation, the proposed works include the upgrade of existing transmission lines in the area.

- **Cheriton Avenue zone substation**

  This project is driven by continuing development in the Castle Hill residential and commercial area. In particular, proposed development of the Castle Towers shopping centre and the Castle Hill RSL club will add significant new demand to Castle Hill Zone Substation.

  This area is currently supplied by both Castle Hill and West Castle Hill Zone Substations however with the ultimate demand in the area forecast to reach 130MVA, additional zone substation capacity is required.

  This project involves the establishment of Cheriton Avenue Zone Substation. The site for the zone substation was purchased in 2005 to allow the staged development of the electricity network in accordance with an overall supply strategy for the North West Sector land release area.

  The North West Sector is a development area which includes up to 65,000 new residential dwellings, as well as associated new commercial town centres, employment lands and transport infrastructure in a area that has historically been undeveloped, or experience sparse rural development only.

  A demand management program commenced in May 2003 to manage the demand of Castle Towers and other major commercial customers in the area. The program was to reduce Castle Hill Zone Substation peak demand so that growth related capital works could be deferred for three years. The program was successful in achieving its objective; however load growth is such that further demand management is not able to defer the establishment of Cheriton Avenue Zone Substation any longer.

PB reviewed Integral Energy's growth related capital expenditure and states that *"documentation reviewed by PB is of a consistently high quality and demonstrates a systematic approach to the determination of network investment requirements for both compliance and growth related drivers."* In addition, PB stated that *"IE's processes should result in the development of prudent and efficient capital forecasts for growth and compliance."*

9.7 Asset renewal/replacement

According to the NSW Treasury Guidelines the nominal service life of major substation assets is 45 years. Experience indicates that most zone and transmission substations have an effective service life of between 45 and 55 years.

Nearly a third of Integral Energy's zone and transmission substations are now at, or are close to, replacement age: 25 are 45 years or older, and an additional 70 will reach 45 years within the next 10 years. The age of these assets presents Integral Energy with a significant renewal challenge.

Forecasting of required capital expenditure for renewal and replacement is developed through Integral Energy's Strategic Asset Renewal Plan (SARP).

The forecast required capital expenditure established through the SARP process is shown in Table 9.4.

Table 9.4: Forecast asset renewal/replacement capital expenditure

	Forecast year ending 30 June					
$ million 2008/09	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Distribution Substations	10.3	10.4	10.4	11.5	11.7	54.3
Distribution Mains	25.7	26.2	27.6	29.4	32.8	141.8
Transmission Substations	68.2	85.5	79.5	80.3	103.8	417.3
Transmission Mains	15.2	13.3	15.2	16.4	19.1	79.2
Metering	8.9	8.9	10.8	11.0	7.0	46.7
Other renewal/replacement	10.4	8.4	7.4	6.8	12.1	45.1
Total Renewal/Replacement	**138.8**	**152.8**	**151.0**	**155.4**	**186.5**	**784.4**
Note: numbers may not add due to rounding						

A summary of a selected number of Integral Energy's asset renewal/replacement projects follows. This information is not a detailed listing of all the items that make up those programs. For many of the projects listed here, total investment will be spread over several years.

- **Granville zone substation rebuild**

  The existing Granville zone substation was commissioned in 1957. It has now reached the end of its serviceable life and no longer has sufficient capacity to service demand in the area. In line with the strategy developed to meet the needs of the greater Parramatta area, this substation is to be rebuilt as a 132/11 kV substation.

- **Penrith transmission substation**

  The Penrith transmission substation contains many assets that have reached the ends of their serviceable lives, and does not have sufficient capacity to supply all the connected load at times of peak demand with the required level of security. Forecast demand growth will exacerbate this situation. This project will rebuild the substation, with new equipment adequate to meet demand for the foreseeable future.

- **Rydalmere zone substation renewal**

  This renewal project is expected to be complete in 2010/11. The substation was established in 1960 and supplies industrial, residential, and commercial customers in the Rydalmere and surrounding areas. Condition assessments identified the requirement to replace the switchgear as a matter of priority. Together with other site and asset age and condition issues, the complete renewal of the substation (except the power transformers)

is the most appropriate solution to address the current renewal needs and the future network needs in this area.

- **Guildford transmission substation renewal**

  With an estimated completion in 2011/12, Guildford transmission substation is 48 years old and is the key transmission supply point to the entire Parramatta and surrounding areas. It is subject to extensive corrosion of the switchyard supports structures, inadequate safety clearances, leaking and noisy power transformers and inadequate switchgear ratings.

  It is proposed to completely renew the installation with a modern equivalent indoor substation on land adjacent the existing site. The project is in the final planning stages, and is expected to be forwarded to the Board for approval during early 2008/09.

PB reviewed Integral Energy's approach to asset replacement and renewal and states that "*Integral Energy has appropriate processes in place to identify network renewal requirements and to develop prudent and efficient capital expenditure forecasts.*"

9.8 Reliability and quality of service enhancement

This section describes ongoing expenditure required to ensure that the average and individual feeder reliability performance remains within the levels mandated by the NSW DRP Licence Conditions. The approach to developing this forecast is in Chapter 7 and primarily consists of monitoring the reliability performance of all 11 and 22 kV feeders, identifying those that do not meet the standards and developing location specific responses for implementation in the timeframe specified by the NSW DRP Licence Conditions.

Table 9.5: Reliability and quality of service enhancement capital expenditure forecasts

	Forecast year ending 30 June					
$ million 2008/09	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Reliability Enhancement Projects	12.5	12.5	12.7	12.9	13.1	63.7
Reclosers	0.5	0.5	0.5	0.5	0.5	2.5
Automation reliability improvements	0.7	0.7	0.7	0.7	0.8	3.7
Load Break Switches to SCADA	0.4	0.4	0.4	0.4	0.4	1.9
Power quality monitoring equipment	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.8**
Total	**14.3**	**14.2**	**14.4**	**14.7**	**14.9**	**72.6**
Note: numbers may not add due to rounding						

A Reliability Works Program has been developed to:

- Address feeders which do not comply with Individual Feeder Standards in the NSW DRP Licence Conditions;

- Improve performance of feeders that contribute significantly to overall system SAIDI to comply with the Feeder Average Standards in the NSW DRP Licence Conditions; and

- Improve response to faults in poor performing areas.

When a poor performing feeder is identified, a detailed study is carried out to identify root causes and appropriate remedial action. Examples of such projects include:

- Construction of a new feeder to improve reliability of supply to the St Albans area. This project has an estimated cost of $2.8 million and is expected to be completed in 2009. The new feeder will improve restoration times and minimise the number of customers affected by individual faults.

- Reliability enhancement of Ringwood Zone Substation feeder RWA2. This $0.7 million project is expected to be completed in 2009. This project focuses on reducing susceptibility to faults by the installation of covered conductor in heavily vegetated areas and improving spur line protection.

Line Fault Indicators, recloser automation and SCADA controlled switch programs, which represent an $8 million investment over five years, are initiatives designed to improve response times in poor performing areas by enhancing visibility and controllability of the high voltage distribution network.

9.9 Environmental, safety and statutory obligations (including cost of complying with the NSW DRP Licence Conditions)

The environmental, safety and statutory obligations expenditure category is dominated by the expenditure required to comply with the NSW DRP Licence Conditions leading up to 2013/14 as set out in this section and as provided in the SAMP included as Appendix J.1. The estimated impact of satisfying the obligations on Integral Energy's capital expenditures for the 2009 regulatory control period are summarised in this section.

As noted in Chapter 4, the NSW DRP Licence Conditions impose a significant requirement for network augmentation on NSW DNSPs. Figures 4.2 and 4.3 in section 4.3.2.1 show the current and forecast number of network elements that currently require, and are forecast to require, investment to comply with the NSW DRP Licence Conditions. In 2008/09 this equates to 9 transmission substations, 43 sub-transmission feeders, 27 zone substations and 478 distribution feeders forecast which will therefore need augmentation over the *2009 regulatory control period.*

Integral Energy has assessed its forecast expenditure requirement in relation to the NSW DRP Licence Conditions using the processes outlined in Chapter 7. These processes involve assessing network locations against the criteria. From a forecasting perspective, a cost classification distinction that has been made between work required to achieve compliance and work required to maintain compliance is that:

- Expenditure to upgrade locations assessed as requiring investment as at 1 July 2008 is classified as environmental, safety and statutory obligations compliance expenditure; and

- Locations which are currently compliant but which are forecast to require investment after 1 July 2008 because of growth drivers or other changes in circumstance are classified in a manner consistent with the underlying cause of the non-compliance, generally growth, reliability and quality of supply.

The resulting forecast of required capital expenditure related to environmental, safety and statutory obligations is shown in Table 9.6.

Table 9.6: Forecast compliance capital expenditure

Design Planning Criteria	Forecast year ending 30 June					
$ million 2008/09	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Sub-transmission Substations	22.1	13.3	6.1	2.5	0.6	44.7
Sub-transmission Lines	1.4	3.5	3.1	0.0	0.0	7.9
Zone Substations	92.7	77.5	31.9	25.9	0.0	228.0
Distribution Feeders	12.7	15.7	39.9	21.8	20.9	111.2
Other Compliance	2.2	2.2	2.2	2.2	2.2	11.1
Total compliance capital expenditure	**131.1**	**112.2**	**83.3**	**52.5**	**23.9**	**402.9**
Note: numbers may not add due to rounding						

9.10 Capital expenditure for other system assets

Integral Energy has forecast the expenditure for purchasing essential spares to support maintaining the quality, reliability and security of supply of standard control services and to maintain the reliability, safety and security of the distribution system. These costs are shown in Table 9.7.

Table 9.7: Forecast other system capital expenditure

	Forecast year ending 30 June					
$ million 2008/09	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Other System Assets	1.8	1.8	1.8	2.5	2.5	10.5

9.11 Non-system assets

Significant non-system capital expenditure is required to safely and reliably service Integral's asset base and deliver the outcomes defined in Integral's network strategies.

The forecast non-system capital expenditure for information and communication technology (ICT), motor vehicles, land and buildings and furniture, fittings, plant and equipment is shown in Table 9.8.

Table 9.8: Forecast non-system capital expenditure

	Forecast year ending 30 June					
$ million 2008/09	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
ICT	22.2	23.2	23.6	19.1	19.1	107.1
Motor Vehicles	24.7	23.3	25.1	22.8	21.8	117.7
Land and Buildings	19.1	19.0	16.4	14.1	9.2	77.8
Furniture, Fittings, Plant and Equipment	6.8	6.7	6.7	6.7	6.7	33.5
Total Non-System Assets	**72.8**	**72.1**	**71.8**	**62.6**	**56.7**	**336.1**
Note: numbers may not add due to rounding						

9.11.1 Information and Communications Technology (ICT)

Integral Energy follows a structured process to drive alignment between the ICT programs and the network business priorities. Since 2004, Integral Energy has made significant changes to its ICT strategy and governance process to enhance the value of ICT to the business and deliver more effective and efficient business outcomes.

Integral Energy's total forecast ICT capital expenditure is $107 million over the *2009 regulatory control period*. The amount of capital spend has increased in recent years due to increasing business automation to enable efficiency needs and replacement of ageing applications and infrastructure.

Significant ICT work programs forecast include:

- Outage Management System development and integration. This program is focussed on improving response, extending capability and integrating system capability with related functions such as crew management in addition to maintaining technical currency upgrades;
- Field Force Automation. This program is designed to enable more efficient utilisation of field resources by providing data to vehicles;
- Geographic Information System (GIS) upgrade and enhancement. As one of the major corporate application groups required by the network business, capital amounts have been planned for regular technical upgrades and introducing new functionality for new layers of geospatial information; and
- Program Management Systems. Due to the large-scale increase in network growth and capital spend, Integral Energy needs contemporary project management tools to better manage the delivery of programs and provide the necessary monitoring and reporting.

Integral Energy commissioned KPMG to assess the Network ICT Plan for the years 2009 to 2014 and to undertake a review of the process to develop the plan, an assessment of the portfolio of programs and observations over the capital expenditure forecast. In their report, KPMG noted that "*Integral Energy's programs compare closely to those reported by its peer group*". Integral Energy's ICT capital expenditure also benchmarked favourably against data from KPMG's 2006/07 benchmark survey. KPMG's report is included in Appendix M.

9.11.2 Motor vehicles

Integral Energy's $118 million motor vehicle capital expenditure program is directly related to the expected number of staff employed, particularly in field-based roles, which have the highest use of light commercial vehicles, trucks and plant. Integral Energy's forecast fleet expenditure over the *2009 regulatory control period* primarily comprises replacement expenditure for existing fleet, which is driven by Integral Energy's documented vehicle replacement policies. The forecast also includes increases in the size of the fleet to support delivery of the proposed capital investment and maintenance programs. Integral Energy has assessed the increases in staff required to deliver the proposed programs, in terms of skill set and crew structure, then used this information as the basis for determining crew vehicle requirements and then developing fleet growth forecasts.

In its review of capital expenditure forecasts PB stated that Integral Energy's process to forecast expenditure for new vehicles "*is a reasonable method for estimation of vehicle requirements to cater for the expected increase in staff numbers".*

9.11.3 Land and buildings

Integral Energy's $78 million land and buildings capital expenditure program is a result of growth, renewal and compliance based drivers. Integral Energy must accommodate the forecast growth in the number of personnel required to support the proposed system capital expenditure program and the associated ongoing maintenance and operational requirements.

Approximately half of Integral Energy's facilities have been constructed in the *current regulatory control period*. The remaining sites are to be refurbished as they reach end of life or require major upgrading to ensure the ongoing delivery of suitable facilities for effective operational requirements.

Integral Energy is faced with increasing compliance requirements and evolving community expectations regarding safe and environmentally sound work practices. Meeting these requirements necessitates additional expenditure on both new and existing facilities.

Major land and buildings projects include:

- The redevelopment of the Springhill Field Service Centre;
- The modification and expansion of Integral Energy's existing Field Service Centres; and
- The replacement of aged plant and systems at Huntingwood.

PB stated that, subject to various qualifications contained in the PB report, the bottom up approach utilised by Integral Energy in its land and building expenditure forecasts captures the current and forecast capital expenditure needs of individual Field Service Centres and is considered a reasonable estimation approach.

9.11.4 Furniture, fittings, plant and equipment

Integral Energy's $34 million furniture, fittings, plant and equipment capital program is made up primarily of capitalised tools and equipment which support the network construction and maintenance programs. It also includes the furniture and fittings component of the land and buildings program.

9.12 Other considerations

9.12.1 Cost allocation method

Integral Energy's capital expenditure forecast includes only that expenditure which has been properly allocated to *direct standard control services* in accordance with Integral Energy's cost allocation method approved by the AER in March 2008. The approved cost allocation method (Appendix N) includes the application of Integral Energy's capitalisation policy (which is described in section 17.1.2 of this *regulatory proposal*).

Integral Energy considers that the cost allocations applied to the forecast capital expenditure are consistent with those required under the *Transitional Rules*.

Corporate costs have increased for a very small number of specific changes related to the increases in the programs put forward in this *regulatory proposal*. Corporate costs are discussed further in Chapter 10.

9.12.2 Unit rate cost escalation

During recent years electricity network service providers have experienced real increases (increases higher than inflation) over a range of input costs. For example, strong commodity prices have influenced equipment costs and the tight market for skilled labour has affected wages growth. The AER acknowledged these trends in its recent decisions for SP AusNet and ElectraNet.

To assess the impact of real cost increases on Integral Energy's capital (and operating) forecasts for the *2009 regulatory control period*, Integral Energy, in conjunction with the other NSW electricity businesses, retained Competition Economists Group (CEG) to prepare forecasts for a range of input cost factors.[25] These forecasts were then applied to a weighted breakdown of

[25] Escalation factors affecting expenditure forecasts, Competition Economists Group – 2008 (see Appendix L).

Integral Energy's capital costs to develop annual real escalators which, in turn, have been used to develop Integral Energy's capital expenditure forecasts. This approach is consistent with the approaches used by SP AusNet and ElectraNet and with published feedback from the AER and their consultants regarding those methods.

9.12.2.1 Forecast real input cost escalators

A summary of the input cost escalators used to calculate Integral Energy's capital expenditure escalators is shown in Table 9.9.

Table 9.9: Forecast real input cost escalators

	Percentage year ended 30 June (Real)					
Input cost escalators	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Labour	3.6	3.9	1.9	2.8	3.5	3.7
Aluminium	3.5	-0.5	-0.2	0.3	0.0	0.0
Copper	-3.7	-6.3	-4.2	-2.8	-3.1	-3.1
Steel	0.1	0.3	0.2	0.2	0.2	-0.2
Oil	12.3	-3.8	-1.3	-0.5	-2.0	-0.9
Construction	2.1	0.9	0.7	1.1	1.9	2.6
Land	4.1	4.1	4.1	4.1	4.1	4.1
Other	0.0	0.0	0.0	0.0	0.0	0.0

Source: *Escalation factors affecting expenditure forecasts*, Competition Economists Group, April 2008 (see Appendix L).

9.12.2.2 Capital expenditure components and input cost weightings

To apply the correct weighting for each input cost, Integral Energy prepared a detailed breakdown of its most recent full year capital expenditure into appropriate components with common cost drivers for escalation. Integral Energy then applied input cost weightings to each line item. In most cases a line item was associated wholly with one input cost driver. For those more complex items with multiple inputs, Integral Energy has applied the weightings published in SKM's report – *Escalation Factors affecting Capital Expenditure Forecasts*, February 2007, Tables 6, 7 and 8. This report was submitted by SP AusNet as appendix C of its regulatory proposal and accepted by the AER in its final decision. It was also relied upon by SKM in their review of ElectraNet's regulatory proposal. Integral Energy considers that the weightings are reasonably representative of the Integral Energy network.

Table 9.10 shows the categories, category weightings and input cost weightings applied by Integral Energy.

Table 9.10: Forecast capital expenditure cost components

Capital expenditure component	Weight (%)	Labour (%)	Aluminium (%)	Copper (%)	Steel (%)	Oil (%)	Construction (%)	Land (%)	Other (%)
Labour	25.6	100							
Primary Equipment	4.3			3		2			95
Secondary Systems	0.9								100
Oil	0.2					100			
Power Transformers	4.3			10	9	4			77
Distribution Equipment	2.0			3		2			95
Distribution Transformers	5.2			10	9	4			77
Copper Cable	1.7			45		5			50
Aluminium Cable	0.8		45			5			50
Concrete poles	0.6								100
Wood Poles	0.4								100
Copper conductor	0.1			65					35
Aluminium Conductor	0.5		60		5				35
Buildings	2.3						100		
Civil	5.6						100		
Fencing	1.6						100		
Major Projects (Land)	3.8							100	
Capitalised overheads (ex lab)	5.7								100
Balance	34.3								100
Total	100.0								

9.12.2.3 Capital program real cost escalators

Integral Energy applied the above weightings to the real cost escalators for each year to give the weighted annual escalator for the capital expenditure forecast as shown in Table 9.11.

Table 9.11: Forecast capital expenditure annual real cost escalators

		Percentage year ended 30 June (Real)					
Capital expenditure component	**Weight (%)**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Labour	25.6	3.6	3.9	1.9	2.8	3.5	3.7
Primary Equipment	4.3	0.1	-0.3	-0.2	-0.1	-0.1	-0.1
Secondary Systems	0.9	0.0	0.0	0.0	0.0	0.0	0.0
Oil	0.2	12.3	-3.8	-1.3	-0.5	-2.0	-0.9
Power Transformers	4.3	0.1	-0.8	-0.5	-0.3	-0.4	-0.4
Distribution Equipment	2.0	0.1	-0.3	-0.2	-0.1	-0.1	-0.1
Distribution Transformers	5.2	0.1	-0.8	-0.5	-0.3	-0.4	-0.4
Copper Cable	1.7	-1.1	-3.0	-2.0	-1.3	-1.5	-1.4
Aluminium Cable	0.8	2.2	-0.4	-0.2	0.1	-0.1	0.0
Concrete poles	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Wood Poles	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Copper conductor	0.1	-2.4	-4.1	-2.7	-1.8	-2.0	-2.0
Aluminium Conductor	0.5	2.1	-0.3	-0.1	0.2	0.0	0.0
Buildings	2.3	2.1	0.9	0.7	1.1	1.9	2.6
Civil	5.6	2.1	0.9	0.7	1.1	1.9	2.6
Fencing	1.6	2.1	0.9	0.7	1.1	1.9	2.6
Major Projects (Land)	3.8	4.1	4.1	4.1	4.1	4.1	4.1
Capitalised overheads (ex lab)	5.7	0.0	0.0	0.0	0.0	0.0	0.0
Balance	34.3	0.0	0.0	0.0	0.0	0.0	0.0
Annual Escalator (above CPI)		**1.33**	**1.08**	**0.62**	**0.92**	**1.16**	**1.28**
Cumulative over 2007/08		**1.33**	**2.43**	**3.06**	**4.01**	**5.22**	**6.57**

The above escalators have been applied to Integral Energy's capital expenditure forecasts, which were developed based on 2007/08 costs to allow for the expected increases in input costs above CPI over the *2009 regulatory control period*. These escalators have been expressed in real rather than nominal terms as the AER post tax revenue model applies the CPI component.

9.13 Forecast capital expenditure

A summary of Integral Energy's capital expenditure forecast for the *2009 regulatory control period* is provided in Table 9.12. The forecast is based on Integral Energy's key assumptions set out in section 9.4.

Integral Energy's capital expenditure forecast has been prepared in accordance with, and incorporates, the expenditure which Integral Energy considers is required to achieve each of the following objectives:

- Meet or manage the expected demand for standard control services over the period;
- Comply with all applicable regulatory obligations or requirements associated with the provision of standard control services;
- Maintain the quality, reliability and security of supply of standard control services;
- Maintain the reliability, safety and security of the distribution system through the supply of standard control services.

Table 9.12: Forecast capital expenditure for the *2009 regulatory control period*

$ million 2008/09	Forecast year ending 30 June					
Expenditure category	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Growth	215.2	288.3	288.1	294.6	259.8	1,346.2
Asset renewal/replacement	138.8	152.8	151.0	155.4	186.5	784.4
Reliability and quality of service enhancement	14.3	14.2	14.4	14.7	14.9	72.6
Environmental, safety, statutory obligations (see note re adjustment)	131.1	112.2	83.3	52.5	23.9	402.9
Other system	1.8	1.8	1.8	2.5	2.5	10.5
Total System	**501.1**	**569.4**	**538.6**	**519.9**	**487.6**	**2,616.6**
Non-system assets	72.8	72.1	71.6	62.6	56.7	336.1
Total	**573.9**	**641.5**	**610.4**	**582.5**	**544.3**	**2,952.7**
Note: numbers may not add due to rounding						

Pro forma 2.2.3 summarises the material assets (projects) included in the capital expenditure forecast, their estimated cost and location and other matters as required by clause 5.6.1.1 of the

Transitional Rules. The materiality threshold required by the RIN[26] is approximately $13 million ($2008/09).

9.14 Validation of expenditure forecasts

Integral Energy's capital expenditure forecasts have been subject to scrutiny and validation as follows:

- Internal testing to confirm that the forecasts meet the *Transitional Rules'* objectives and criteria; and
- External review and verification by PB.

9.14.1 Testing the forecasts against the *Transitional Rules'* objectives and criteria

Integral Energy considered, firstly, whether its planning and forecasting processes were consistent with the *Transitional Rules'* objectives and criteria and, secondly, whether the resultant forecasts met these requirements.

Integral Energy concluded that its planning processes explicitly considered the drivers of expenditure set out in the capital expenditure objectives and that its analysis and governance processes address the matters raised in the criteria.

In relation to the resultant expenditure forecasts, Integral Energy believes that the proposed capital program is consistent with requirements of the *Transitional Rules* and that the associated costs are efficient and prudent.

Pro forma 2.3.7 outlines linkages between the capital expenditures and network outcomes.

9.14.2 External review and verification by PB

Integral Energy engaged PB to conduct an independent review of Integral Energy's capital and operating expenditure including both forecast and historic expenditure levels.

PB reviewed the key assumptions used by Integral Energy in developing its capital and operating expenditure forecasts for reasonableness within their area of expertise.

In relation to the capital expenditure forecasts, PB, working within its Terms of Reference, found that:

- From its high level review, PB has not identified anything which would suggest that Integral's 2004 regulatory period actual results and 2007/08 capital expenditure projection do not represent efficient costs for the services provided;

[26] Based on 2% of Integral Energy's average annual revenue in the final year of the *current regulatory control period*.

- Based on its sampling approach, PB has not identified anything which suggests that the unit rates used by Integral Energy in its recent historical capital expenditure do not represent efficient costs for the services provided;

- PB has not identified anything which would suggest that Integral Energy's process for using spatial demand as an input to forecasting network constraints is unreasonable, and that the process appears rigorous and transparent;

- PB has not identified anything which would suggest that Integral Energy's 2009 regulatory control period compliance and growth, and renewal capital expenditure forecasts do not:

    - Comply with the Rule requirements (objectives and criteria);

    - Represent prudent, efficient and realistic costs for the services provided;

    - Represent reasonable forecasts;

    - Contain an appropriate level of robustness;

- PB confirms that the escalation rates identified in the CEG report have been correctly applied to future system capital expenditure where costings have not yet been approved by the Integral Energy Board;

- Integral's costs estimates for major projects and programs appear efficient and realistic for the services provided. In general unit costs appear reasonable;

- PB has not identified any instances where contingencies have been included in Integral Energy's forecast capital expenditure, and considers the identification and treatment of contingency allowances as part of internal approval processes is transparent and reasonable;

- PB considers that the volume estimation method for additional vehicle requirements is reasonable and the vehicle renewal policy is reasonable; and

- PB considers that the approach to estimation of land and buildings expenditure is reasonable.

10

Forecast operating expenditure

Integral Energy's *regulatory proposal* includes the operating expenditure required to maintain the quality, reliability and security of supply of standard control services and to maintain the reliability, safety and security of the distribution system. This chapter sets out Integral Energy's forecast operating expenditure for the *2009 regulatory control period*.

10.1 Summary

Integral Energy's operating expenditure forecast for the *2009 regulatory control period* required to meet the demand for standard control services is shown in Table 10.1. These operating expenditure forecasts are also in the AER's pro forma 2.2.2.

Table 10.1: Forecast operating expenditure over the *2009 regulatory control period*

$ million 2008/09	Forecast year ending 30 June					
	2010	2011	2012	2013	2014	Total
Core network operating expenditure[27]	**281.3**	**279.6**	**283.6**	**290.2**	**296.6**	**1,431.2**
Self insurance	3.2	3.2	3.3	3.3	3.3	16.3
Debt raising allowance	3.5	3.8	4.2	4.6	5.0	21.1
Equity raising	-	-	-	4.1	4.0	8.2
Total operating expenditure for PTRM	**287.9**	**286.7**	**291.1**	**302.2**	**308.9**	**1,476.8**
Note: numbers may not add due to rounding						

Integral Energy's proposed operating expenditure program is $1,477 million for the *2009 regulatory control period*. This program includes $1,431 million for core network operating expenditure, the objective of which is to meet the obligations and challenges facing the business and ensure that network services are delivered safely, reliably and efficiently.

The core network operating costs are based on the efficient costs for Integral Energy's network business. The forecast includes aggressive productivity improvements which have been built into the operating expenditure program to ensure customers only pay for the efficient costs of delivering essential network services.

[27] This includes network operating and maintenance expenditure and corporate support costs.

The corporate support component of the network operating cost has been calculated using Integral Energy's Cost Allocation Method which was approved by the AER in March 2008. The corporate costs also include aggressive productivity savings.

In line with the AER's approach to revenue regulation, the proposed operating expenditures include allowances for self-insurance premiums, and debt and equity raising costs associated with the proposed capital program.

PB have independently reviewed Integral Energy's operating expenditure forecasts and underlying assumptions and have confirmed that they are efficient.

On the basis of its review PB concluded that the methodology used to develop Integral Energy's *2009 regulatory control period* operating expenditure forecasts is robust and auditable, the resulting expenditure forecasts are efficient and that the resultant works programs will produce reasonable network reliability, safety and environmental outcomes as demonstrated by past performance. PB noted that a high level ratio analysis indicates that the forecasts, while reasonable, probably underestimate the increased operating expenditure requirements resulting from the impact of the future growth related capital works program. PB's report is included in Appendix K.

10.2 Regulatory information requirements

The *Transitional Rules* require Integral Energy's building block proposal to include total forecast operating expenditure for the *2009 regulatory control period* which Integral Energy considers is required to achieve each of the objectives identified in Box 10.1:

Box 10.1: Operating Expenditure Objectives
• Meet or manage the expected demand for standard control services over the period; • Comply with all applicable regulatory obligations or requirements associated with the provision of standard control services; • Maintain the quality, reliability and security of supply of standard control services; and • Maintain the reliability, safety and security of the distribution system through the supply of standard control services.

The required operating expenditure forecast has been designed to:

- Comply with the RIN requirements;
- Only include expenditure that is properly allocated to standard control services in accordance with the principles and policies set out in Integral Energy's Cost Allocation Method; and
- Include the total and the year-by-year expenditure for the relevant regulatory control period (clause 6.5.6(b) of the *Transitional Rules*).

10

Forecast operating expenditure

The *Transitional Rules* stipulate that the AER must accept the forecast operating expenditure if the AER is satisfied that the total forecast operating expenditure reasonably reflects the following operating expenditure criteria:

Box 10.2: Operating Expenditure Criteria
• The efficient costs of achieving the operating expenditure objectives; • The costs that a prudent operator in the circumstances of the relevant DNSP would require to achieve the operating expenditure objectives; and • A realistic expectation of the demand forecast and cost inputs required to achieve the operating expenditure objectives.

The *Transitional Rules* also set out the factors that the AER must have regard to when assessing forecast operating expenditure (clause 6.5.6(e) of the Transitional Rules). The AER's RIN requires information on the operating expenditure forecasts including:

Box 10.3: Regulatory Information Notice Requirements
The RIN requires that Integral Energy provide information in its *regulatory proposal* on a number of matters, including the following. • A forecast of the required operating expenditure by reference to well accepted categories such as particular programs or types of operating expenditure. Must also identify to what extent that forecast is based on fixed and variable costs and the categories of distribution services to which the forecast expenditure relates; • The method used for developing the forecast, the key assumptions that underlie the forecast and a Directors' certification of the reasonableness of the key assumptions; and • Details of self insurance including the reason for self insuring, the value of each insured event, the annual self insurance premium and confirmation of board approval. In addition, clause 2.3.5 of the AER's RIN requires the information for each service standard obligation that relates to the provision of Integral Energy's direct control services, including: • Details of any externally imposed obligations, including performance measures and, where applicable, relevant performance targets; • Details of any internal programs, projects or initiatives aimed at maintaining or improving network reliability and customer service performance during the next regulatory control period, in order to satisfy the particular externally imposed obligation; • The estimated impact of satisfying new, proposed or incremental externally imposed obligations on the DNSP's capital and operating expenditures for the next regulatory control period. The estimated impact of satisfying the internally imposed obligations on Integral Energy's operating expenditures for the *2009 regulatory control* period are discussed and quantified in this chapter.

This *regulatory proposal* provides the information to address these *Transitional Rules* and RIN requirements.

10.3 Service standard and regulatory obligations

As noted in previous chapters, Integral Energy is subject to a wide range of service standard and other obligations under the NEL, NSW Electricity Supply Act and other legislation. These include electricity industry specific requirements and obligations in areas such as Occupational Health and Safety and Environment which directly impact on the nature of the works being carried out, as well as broader obligations.

The forecasts outlined in this chapter incorporate these obligations to the extent that they are known and understood by Integral Energy at the time of this *regulatory proposal*.

The most significant obligation in relation to direct operating and maintenance expenditure arises from the Electricity Supply Act 1995 (NSW) and Electricity Supply (Safety and Network Management) Regulation 2002 (NSW) which require Integral Energy to prepare and lodge a Network Management Plan (included in Appendix Y.1). The Network Management Plan covers a range of issues relating to the sound management of the network and takes into account a number of national and state codes in its development. [28]

The Network Management Plan must nominate the network maintenance standards and procedures employed by Integral Energy. Integral Energy must comply with the plan and its performance against the plan is subject to annual review. The operating and maintenance expenditure forecasts developed by Integral Energy for the *2009 regulatory control period* are fundamentally based on the maintenance standards and procedures nominated in the Network Management Plan.

Integral Energy's operating expenditure forecasts reflect the growth in assets resulting from capital investment and include the expenditure necessary to ensure the ongoing operation and maintenance of the assets and to ensure that the service standards and regulatory obligations are met.

Integral Energy is confident that the submitted operating expenditure forecasts meet the *Transitional Rules'* objectives and criteria.

10.4 Operating expenditure forecasting methodology

Integral Energy's operating expenditure forecast is underpinned by the Network Strategy and Demand Management strategy discussed in Chapters 7 and 8 of this *regulatory proposal* and the associated corporate and network planning processes.

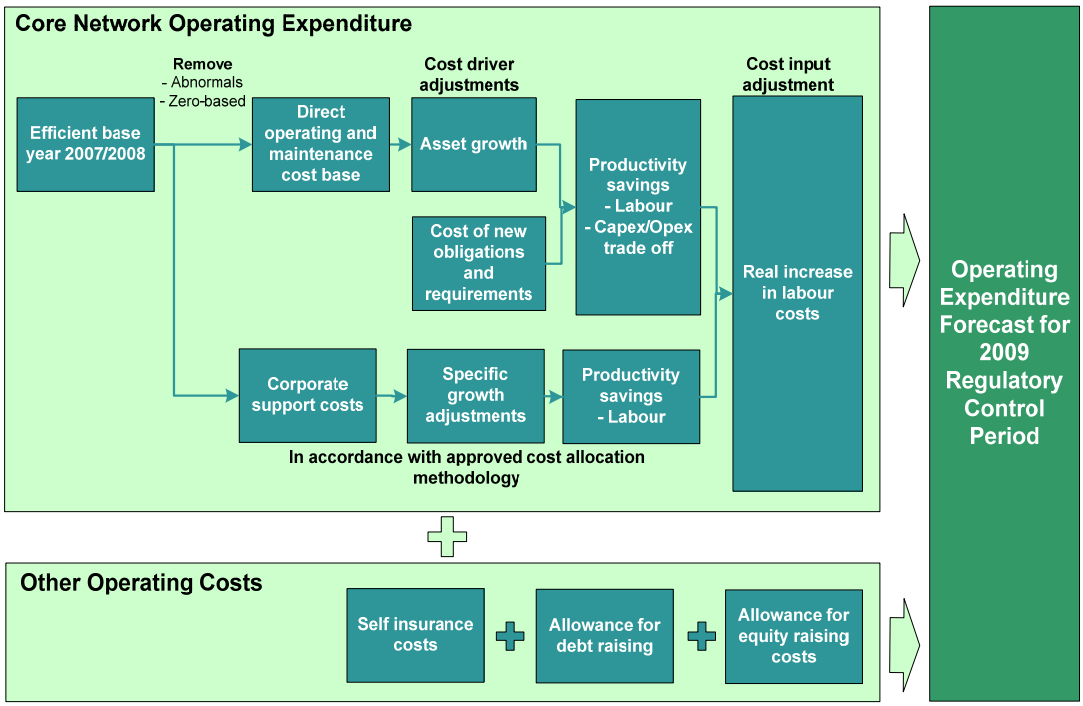
[28] Including National Electricity Network Safety Code (ESAA NENS 01-2001) and National Guidelines, Code of Practice for Service and Installation Rules (Electricity Association of NSW - December 1997) as amended, Code of Practice - Contestable Works (Electricity Association of NSW – March 1998), Code of Practice – Electricity Service Standards (Electricity Association of NSW – February 1998) and NSW Code of Practice – Demand Management for Electricity Distributors – May 2004.

10
Forecast operating expenditure

The operating expenditure forecasts in this *regulatory proposal* have been developed using the process shown in Figure 10.1. Further information concerning Integral Energy's expenditure estimation processes is contained in Appendix W.

The forecasting process recognises the different types of cost categories. Different methodologies are used depending on the nature of the cost, the underlying cost driver, and whether the cost is currently incurred or relates to a new activity or requirement. In its review of Integral Energy's forecasting methodology, PB's report states that *"The methodology used by IE to develop these forecasts is robust and auditable."*

Figure 10.1: Forecast operating expenditure process



At the highest level, the proposed operating expenditure forecast was derived by adding the core network operating expenditure forecast and a forecast allowance for other business operating expenditures of self insurance premiums and the debt and equity raising costs associated with the capital program.

In turn, the core network operating expenditure forecasts have been derived by:

- Establishing the costs for an efficient base year (2007/08);
- Removing abnormals and any costs which are estimated on a zero-based approach to establish the direct operating and maintenance cost base and confirm the corporate support cost base;

- In relation to the direct operating and maintenance cost base, adjusting for cost drivers (including the growth in the asset population and adding the cost of new obligations);
- In relation to corporate support costs, adjusting for one-off costs and for cost drivers;
- Applying aggressive productivity savings;
- Considering the interaction between operating and capital expenditure; and
- Incorporating forecast real labour input cost increases over the *2009 regulatory control period*.

The outcome of this forecasting process is set out in sections 10.7 to 10.13.

Appendix Z provides a summary of where the significant variations in Integral Energy's operating expenditure, as identified in pro forma 2.2.4, are explained within the body of this regulatory proposal.

10.5 Key assumptions

Integral Energy's key assumptions underpinning its operating expenditure forecasts and independent review of the assumptions, where appropriate, are shown in Table 10.2.

Table 10.2: Key assumptions underpinning operating expenditure forecasts

Key Assumption	Use	External review
Integral Energy's 2007/08 operating expenditure projection is efficient	As an appropriate base for developing the operating expenditure forecasts	PB: "PB has conducted a high level review and has not identified anything which would suggest that Integral Energy's 2004 regulatory period actual opex costs and 2007/08 opex projection does not: • represent efficient and reasonable costs for the services provided in accordance with Integral Energy's current operation practices and asset management plans • form an appropriate base for developing operating expenditure forecasts."
Labour, materials and service input cost escalators (section 10.9)	Operating costs have been adjusted to reflect real labour cost escalation. Unit cost escalators have not been applied to other non-labour components of operating	CEG: Recommended escalation rates which have been adopted by Integral Energy PB: "PB confirms that the escalation rates identified from the CEG report have been correctly applied to the labour component of operating expenditure."
Allocation of overhead costs (section 10.8)	To develop the capital and operating expenditure forecasts	AER: has approved Integral Energy's cost allocation method
Growth in asset population (section 10.7.2)	Direct operating expenditure reflects increases in the asset population based on historic data	PB: "PB has conducted a high level review which indicated that the use of asset growth factors to forecast future opex expenditures from a base year is reasonable, but notes that Integral's use of historical growth rates would probably underestimate these requirements."
Self insurance costs (section 10.11.1)	The operating expenditure forecasts include an allowance for self insurance costs	SAHA: Recommended certain risks which Integral Energy should self insure. The Board resolved to self insure these risks at its 2 April 2008 meeting (Item 3.3).
Debt (section 10.11.2) and equity (section 10.11.3) raising costs	The operating expenditure forecasts include an allowance for debt and equity raising costs	CEG: Recommended the debt and equity raising costs which have been adopted by Integral Energy

Integral Energy's key assumptions relating to its operating expenditure forecasts are also included in the AER's pro forma 2.3.3.

10.6 Operating expenditure categories

Integral Energy's operating expenditure forecast is presented by reference to well accepted categories of operating expenditure and in accordance with the principles and policies in its approved Cost Allocation Method.

Categories for operating expenditure are:

- ***Network operating and maintenance costs*** - Costs of operating the network and associated with planned and unplanned inspection, maintenance and repair of the electricity network including local management, planning, control and support costs. Operating expenditures include those associated with the monitoring, switching, system control and operating of the network. The maintenance category includes inspection, testing, maintenance, fault and emergency activities.

- ***Corporate support costs*** - Appropriate allocation of the costs of corporate support functions required to operate the business including Board, CEO, Company Secretary, Executive management, Finance, Human resources, IT and Regulatory areas.

- ***Self insurance*** - Independently assessed premium for risk events not covered by insurance policies and self insured by the business.

- ***Debt raising allowance*** - Independently assessed provision for the cost of raising debt associated with the forecast capital expenditure.

- ***Equity raising costs*** - Independently assessed provision for the cost of raising equity associated with the forecast capital expenditure.

10.7 Network operating and maintenance costs

Integral Energy considers the direct operating and maintenance needs associated with delivering network services in its annual asset maintenance planning process and documents the results of this process in its Strategic Network Maintenance Plan (SNMP).

PB reviewed Integral Energy's maintenance policies and its report states *"PB has carried out a high level review of IE's distribution and sub-transmission maintenance practices, policies and asset maintenance plans, and has formed the view that they are reasonable and deployed in an efficient manner."*

The SNMP details the key programs and the associated direct operating and maintenance expenditure forecast. The methodology used to develop the direct operating and maintenance expenditure forecast is set out in the SNMP and explained in section 10.4 of this *regulatory proposal*. As noted, this methodology starts with a base year and then adjusts for cost drivers and the costs of undertaking activities to meet new obligations and requirements. The outcomes of these steps for the *2009 regulatory control period* operating expenditure forecasts are described below.

10.7.1 Confirming the efficient base year costs

As noted in section 10.4, Integral Energy's operating expenditure forecasts have been developed with reference to the efficient costs projected to be incurred in 2007/08. The 2007/08 year was adopted as the base year as it provides the best and most current representation of the costs required to deliver Integral Energy's service standards and obligations during the *2009 regulatory control period* and as measured against the operating expenditure objectives in clause 6.5.6 of the *Transitional Rules*. Integral Energy also notes that the completed 2007/08 regulatory statements will be available prior to the AER making its draft determination.

PB considered the base year costs as part of its review and concluded:

"PB has conducted a high level review and has not identified anything which would suggest that Integral Energy's 2004 regulatory period actual opex costs and 2007/08 opex projection does not:

- *represent efficient and reasonable costs for the services provided in accordance with Integral Energy's current operation practices and asset management plans*
- *form an appropriate base for developing operating expenditure forecasts."*

10.7.2 Adjusting for increasing asset population

The direct operating and maintenance efficient base year reflects the costs associated with delivering operating and maintenance programs and undertaking activities related to Integral Energy's existing asset base. As the number of assets increases, additional expenditures are required for maintenance and to support the increased activity. Integral Energy has addressed the requirements of section 2.3.8(a)(1) of the RIN by including the costs to maintain the additional assets arising from forecast increases in the number of assets, driven by growth in both peak demand and customer numbers as discussed in Chapter 6.

The net number of assets within Integral Energy's asset base is forecast to increase as the rate of adding new assets exceeds the rate of retirement of older assets. The recent historical rate of net asset increases is 2.7% per annum, which is forecast to continue given the continued increases in maximum demand and customer numbers identified in Chapter 6.

The annual rate of asset increases is tracked at the asset category level and the impact of the individual category increases is then mapped against known asset operating and maintenance costs per unit. Table 10.3 provides a summary of average asset population increases for major asset categories.

Table 10.3: Asset population increases

Network Segment	Asset Category	Asset Type	Unit of measure	Average annual increase (2002/03 to 2006/07)
SUB-TRANSMISSION	**Substations**		#	3.6%
	Mains	132kV OH	km	0.9%
		132kV UG	km	3.9%
ZONE	**Substations**		#	2.5%
	Mains	33kV OH	km	-0.3%
		66kV OH	km	0.3%
		33kV UG	km	3.3%
		66kV UG	km	0.0%
		33 + 66kV UG	km	2.9%
	Switches	Switches	#	2.1%
DISTRIBUTION	**Substations**		#	3.0%
	Mains	11kV OH	km	-0.6%
		22kV OH	km	18.0%
		11kV UG	km	5.5%
		22kV UG	km	11.0%
		LV Cable UG	km	0.6%
		LV Total	km	0.3%
	Switches	Switches	#	0.9%

The net increase in assets increases operating and maintenance costs as more assets need to be serviced. However, there is a time lag in this effect as maintenance requirements are generally reduced immediately following installation. This means that adjusting maintenance costs based on the forecast growth in asset numbers (without a lag) could arguably overstate the impact on costs. Integral Energy has used the historic rates of increase for the asset population over the past five years to determine future maintenance as it is those assets which will be entering the maintenance window over the *2009 regulatory control period*.

In its review, PB concluded that Integral Energy's approach may underestimate the operating costs associated with growth in asset numbers compared to using growth rates based on the expected increase in asset population resulting from predicted growth over the *2009 regulatory control period*.

Integral Energy has included approximately $60 million of expenditure over the *2009 regulatory control period* to maintain the increased volume of assets.

10.7.3 Adjustments for new internal and external obligations

The direct operating and maintenance efficient base year reflects the costs associated with delivering operating and maintenance programs and undertaking activities related to Integral Energy's current regulatory obligations. In the *2009 regulatory control period*, Integral Energy needs to undertake new activities and incur new costs in relation to a number of obligations as summarised below. The cost of meeting these obligations has been included in Integral Energy's operating expenditure forecasts:

- Many older residential buildings rely on a connection to the water piping for earthing of their electricity supply. Due to the age and condition of the piping, Sydney Water has a program to replace older piping with a modern equivalent, which is typically non conductive plastic. This change can give rise to the risk of electrocution of Sydney Water staff or members of the public if not recognised and managed correctly.

  In cooperation with Sydney Water, Integral Energy has initiated a program of checking the neutral connection integrity of premises as Sydney Water is performing their upgrades to eliminate this risk. This is partly funded by Sydney Water, however, the Integral Energy funded component has been included in the operating expenditure forecasts.

- Integral Energy has also included an allowance in the operating expenditure forecasts for more proactive assessment of neutral deterioration in other parts of the network to avoid the potential for hazardous situations developing.

- The NSW Industry Safety Steering Committee (ISSC), which includes members from the industry, the NSW Department of Water and Energy (DWE) and WorkCover, has published a guideline which calls for clearing vegetation "to the sky" above overhead lines in certain circumstances. While Integral Energy is applying a risk managed approach to responding to this requirement, there is still a need to increase activity over historic levels. These costs have been included in Integral Energy's forecasts.

- For a number of years Integral Energy has achieved significant productivity benefits in the routine and emergency inspection of overhead lines through the used of helicopter based inspections. To address the recommendations from an investigation of a recent serious incident, Integral Energy is investing in new equipment and increasing activities related to mapping data. Integral Energy has included the related costs in its operating expenditure forecasts.

- Integral Energy has included costs for generator hire in order to meet the NSW DRP Licence Conditions where it is the most economical solution. This allows for a standby generator to be put in place for only part of the year where loads are very seasonal (for example coastal holiday areas) and can eliminate or delay the need for extensive network augmentation in more remote areas.

Based on its analysis, and as required by section 2.3.5(a)(3) of the RIN, Integral Energy has included an average of approximately $5 million per year of expenditure for the above obligations and requirements as the estimated impact of satisfying the externally imposed obligations on Integral Energy's operating expenditure for the next *2009 regulatory control period*.

10.7.4 Productivity savings

Integral Energy has applied productivity savings to its projected operating expenditures to ensure that customers only pay for the efficient costs of delivering essential network services.

The following productivity savings have been applied to the direct operating and maintenance costs over the *2009 regulatory control period*:

- 2% compounding reductions in labour costs each year across all business units including corporate support;
- Increases in costs above inflation for non-labour components of operating expenditure are to be offset by productivity improvements; and
- Expected savings arising from the continued rollout of the Risk and Condition Based Maintenance (RCBM) approach to asset management.

The proposed operating expenditure program for the *2009 regulatory control period* incorporates over $65 million of productivity savings. This is made up of the reductions of around $60 million due to the 2% compounding productivity factor, with supporting benefits of approximately $6 million in the later years of the regulatory control period from RCBM.

10.7.5 Interaction between capital and operating expenditure

Consideration of the interaction between capital and operating expenditure is embedded throughout Integral Energy's normal approach to asset management, including in areas such as:

- Development of design and maintenance standards;
- Evaluation of equipment specifications and supplier offerings;
- Decisions whether to maintain or renew/replace assets; and
- Application of Demand Management (as discussed in Chapter 8 and subject to an AER incentive scheme).

In addition to the considerations noted above, Integral Energy assessed the maintenance savings resulting from the forecast capital renewal/replacement program. The assessment was made on the basis that new assets installed as a result of the renewal/replacement program would have a lower maintenance requirement than the assets being replaced. Consideration was given to current maintenance levels relative to the overall asset base, the quantum of asset replacement and the expected ratio of savings between new assets and assets which are candidates for replacement.

As a result, Integral Energy has decreased operating expenditure by $11 million over the *2009 regulatory control period* to reflect the interaction between capital and operating expenditures.

This approach has been reviewed and supported by PB:

"Integral has made adjustments of approximately $11 million in this area over the 2009 Determination period. This is broadly in line with PB's forecast estimated savings resulting from the proposed asset replacement expenditure and hence is considered reasonable."

10.7.6 Forecast direct network operating and maintenance costs

The resulting forecast operating and maintenance expenditure costs for the *2009 regulatory control period* broken down by sub-categories are shown in Table 10.4.

Table 10.4: Forecast network operating and maintenance expenditure

	Forecast year ending 30 June					
$ million 2008/09	2010	2011	2012	2013	2014	Total
Inspections						
Sub-trans & zone substation	0.7	0.7	0.7	0.7	0.8	3.6
Distribution substation	0.5	0.5	0.5	0.5	0.6	2.6
Overhead and ground line	8.8	8.9	8.8	8.8	8.9	44.3
Installation inspections	6.1	6.1	6.4	6.7	7.2	32.5
Total inspections	**16.1**	**16.2**	**16.4**	**16.9**	**17.4**	**83.0**
Maintenance						
Sub-trans & zone substation	10.0	10.5	10.1	10.4	10.9	51.9
Sub-transmission mains	1.0	1.0	1.0	1.1	1.1	5.3
Distribution substations	1.8	2.0	1.8	1.9	2.1	9.7
Distribution mains	3.0	2.5	3.0	3.0	3.2	14.7
Network buildings	7.0	6.5	7.1	7.5	7.9	36.0
Defect management	20.1	20.0	21.6	21.8	22.1	105.6
Fault & emergency response	21.5	21.5	22.2	21.9	21.7	108.9
Vegetation management	37.9	38.9	39.3	40.4	41.6	198.1
Other maintenance	**102.4**	**102.9**	**106.2**	**108.1**	**110.5**	**530.1**
Other operating activities						
System switching	16.9	17.2	16.9	17.5	18.1	86.6
Metering	19.3	14.4	21.0	22.1	23.4	100.2
Third party recoveries	2.2	2.2	2.2	2.2	2.2	11.0
Quality of supply investigations	1.0	0.6	1.0	1.1	1.2	4.9
Other costs	11.4	15.7	12.0	12.7	13.4	65.2

	Forecast year ending 30 June					
$ million 2008/09	2010	2011	2012	2013	2014	Total
Total other operating activities	**50.7**	**50.1**	**53.3**	**55.5**	**58.3**	**267.9**
Total direct operating and maintenance costs	**169.2**	**169.2**	**175.9**	**180.5**	**186.2**	**881.0**
Note: Numbers may not add due to rounding						

Note to Table 10.4: metering costs are for types 1 to 4 meters which come within with standard control services and are primarily meter reading and data processing costs with a relatively small proportion for meter maintenance

Integral Energy has included a listing of material operating expenditure programs in the AER's pro forma 2.2.3.

The operating and maintenance programs put forward by Integral Energy cover a wide range of activities. The most significant areas over the *2009 regulatory control period* are summarised below:

- **Vegetation management**

  Vegetation management is the most significant single area of maintenance expenditure for Integral Energy. This work, carried out mainly by external contractors, reduces safety hazards and interruptions to supply on Integral Energy's overhead electricity network by trimming trees which grow too close to the mains. Vegetation management must be carried out regularly as trees grow, but in a way which is sensitive to environmental and community issues, while still ensuring the reliability and safety of the electricity supply.

- **Overhead and ground line inspections (OLI/GLI)**

  Overhead and ground line inspections (OLI/GLI) are carried out to inspect the condition of overhead lines, equipment and the poles or towers supporting them. A significant proportion of the work is carried out by external contractors. The OLI/GLI inspectors are the primary means of identifying any poles or support structures requiring replacement and also identify a range of other defects which may be present. These are electronically logged for attention by Integral Energy maintenance staff.

- **Defect management**

  Defect management is a significant area for Integral Energy as it has a large population of diverse assets spread over a large geographic area. Defects can be created by the OLI/GLI process noted above, by other inspections, by the Integral Energy Control room or via other sources. Significant resources are dedicated to identifying and responding appropriately to defects based on their priority. In addition, over the *2009 regulatory control period* Integral Energy's forecast expenditure will address a backlog of defects carried forward from previous regulatory periods.

- **Fault and emergency response**

  Fault and emergency (F&E) response is a core part of the provision of an essential service such as electricity. Fault and emergency activities range from responding to single customer outages, through to vehicle impacts, feeder outages which may affect several hundred people and up to responding to major weather or bushfire events affecting hundreds of thousands of customers (and potentially millions of people).

- **Other maintenance**

  Integral Energy has a comprehensive and extensive maintenance program to keep the assets making up the Integral Energy network in serviceable (safe and reliable) condition. This work includes most proactive work including routine scheduled maintenance, condition based maintenance, diagnostic testing and condition assessment. All Integral Energy's assets, from individual services to houses, up to bulk supply point connections to TNSPs are covered by this maintenance regime.

- **System switching**

  A significant amount of system switching is required to provide safe working access to the network to support Integral Energy's internal capital program and maintenance work, along with the needs of Accredited Service Providers working directly for customers and to meet NEMMCO requirements for network switching when required. This work is carried out by specially trained personnel and must be supported by strict procedures to minimise any risks to personal safety in what can be hazardous work environment.

- **Metering**

  As part of its standard control service, Integral Energy carries out meter reading and associated data processing for over 800,000 residential and small to medium business customers across its franchise area. This work includes physical visits to customers' premises for meter reading every three months in most cases and monthly for higher usage customer categories. Usage data collected from these meter readings is then uploaded and processed by Integral Energy for forwarding to NEMMCO and retailers for billing in accordance with NEMMCO requirements.

- **Customer research/advanced metering**

  Integral Energy has also included an allowance to carry out further research into customer usage patterns and additional load research.

10.8 Corporate support costs

Corporate support includes activities such as the Board, CEO, Company Secretary, Executive Management, Finance, Human Resources, IT and Regulatory areas. Under Integral Energy's business model, these costs are shared between the network and retail businesses.

As for the direct operating and maintenance costs, the corporate support cost forecasts were based on an efficient year. The annual base cost associated with these activities was adjusted for activities such as the costs of the regulatory submission and determination process (within the five year cycle).

Corporate support costs have not been scaled in proportion to increases in asset population but rather reflect changes in specific assessed needs. As noted in section 10.7.4, productivity savings have also been applied to these costs.

The allocation of corporate support costs to the network business has historically been subject to audit by IPART and was based on an IPART approved method. This cost allocation method has been approved by the AER and has been applied to the operating expenditure forecasts.

Integral Energy's operating expenditure forecast includes only that expenditure which has been properly allocated to prescribed distribution services in accordance with Integral Energy's approved Cost Allocation Method (Appendix N).

Table 10.5 sets out the corporate support costs allocated to the standard control, direct control operating expenditure forecast.

Table 10.5: Forecast corporate support operating expenditure

	Forecast year ending 30 June					
$ million 2008/09	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Board/CEO	3.4	1.2	1.5	1.9	1.3	9.4
Company Secretariat	4.2	4.2	4.2	4.2	4.2	20.9
Finance	31.3	30.8	31.0	31.3	31.4	155.7
Human Resources	28.7	28.6	27.2	27.5	27.7	139.6
Regulatory & Corporate Affairs	36.8	38.0	36.2	37.3	38.4	186.8
Shared Services	7.7	7.6	7.5	7.5	7.5	37.8
Corporate support costs	**112.1**	**110.5**	**107.7**	**109.6**	**110.3**	**550.2**
Note: Numbers may not add due to rounding						

The corporate support areas of the business provide necessary functions to ensure the efficient operation of the network groups these include:

- Board/CEO - provides overall governance and strategic direction for Integral Energy;
- Company Secretary – the secretariat supports the Board through the review and improvement of the organisation's corporate governance framework;
- Finance – responsible for the organisation's financial strategies, financial discipline and cash flow management and financial reporting to key stakeholders. The Finance business unit also includes procurement, fleet management and facilities management;
- Regulatory and Corporate Affairs – responsible for managing the organisation's economic regulatory affairs, for the organisation's positioning from a business strategy, environment strategy and reputational perspective and for IT & T support services;
- Human Resources – responsible for ensuring a healthy and safe environment for the organisation's people and for developing, attracting and retaining high quality staff. The Human Resource business unit also includes apprentice and cadet/graduate engineering programs as well as the training group; and
- Shared services – primarily responsible for retail energy trading, sales, marketing and customer management. It is included in this context as the provider of customer facing services including customer interaction centre, billing and customer care to the regulated Network business.

After application of the productivity savings corporate costs are forecast to be stable over the *2009 regulatory control period*.

10.9 Real labour cost escalation of core network operating costs

As discussed in section 9.12.2, to assess the impact of real cost increases on Integral Energy's capital and operating forecasts for the *2009 regulatory control period*, Integral Energy, in conjunction with the other NSW electricity businesses, retained CEG to prepare forecasts for a range of input cost factors.[29]

Real wages growth has been evident in recent history and is a factor in Integral Energy's forecast operating expenditure. Integral Energy applied the real wages growth component of the forecasts developed by CEG (shown in Table 9.11) to the labour component of forecast operating expenditure to ensure that appropriate allowances for real wage growth are included in Integral Energy's revenue requirements for the *2009 regulatory control period*.

[29] *Escalation factors affecting expenditure forecasts*, Competition Economists Group – 2008 (see Appendix K).

Integral Energy has not applied real escalators to the non-labour components of operating expenditure, such as materials. Integral Energy will offset the effect of any above CPI increases in non-labour components of operating expenditure through productivity improvements during the *2009 regulatory control period*.

Table 10.6 summarises the forecast labour cost escalations that Integral Energy has applied.

Table 10.6: Real wage growth escalators applied to operating expenditure

Real wages growth (% compounding)	Forecast year ending 30 June				
	2010	2011	2012	2013	2014
Electricity sector	3.9	1.9	2.8	3.5	3.7

10.10 Summary of total core network operating expenditure

Integral Energy's forecast core network operating expenditure over the *2009 regulatory control period i*s shown in Table 10.7.

Table 10.7: Forecast core network operating expenditure over the *2009 regulatory control period*

$ million 2008/09	Forecast year ending 30 June					
	2010	2011	2012	2013	2014	Total
Direct network operating & maintenance costs	169.2	169.2	175.9	180.5	186.2	881.0
Corporate support	112.1	110.5	107.7	109.6	110.3	550.2
Core network operating expenditure	**281.3**	**279.6**	**283.6**	**290.2**	**296.6**	**1,431.2**
Note: numbers may not add due to rounding						

10.11 Other operating costs

In line with the AER's approach to revenue regulation, the proposed operating expenditures include allowances for self-insurance premiums and debt and equity raising costs associated with the proposed capital program.

10.11.1 Self insurance allowances

There are a number of risks borne by Integral Energy in the conduct of its regulated network business which are not compensated through the WACC or otherwise, and which cannot be insured cost effectively. Integral Energy bears and manages these risks.

The AER requires the operational expenditure forecasts to specify the values that Integral Energy proposes to be attributed to self insurance costs for each regulatory year of the regulatory control period, together with:

- Details of all amounts, values and other inputs used by the DNSP to calculate its proposed self insurance costs;
- An explanation of the calculation of these amounts, values and inputs;
- A Board resolution to self insure;
- Confirmation that Integral Energy can credibly self insure the identified events;
- Details of the particular risks against which Integral Energy will self insure;
- A report from an appropriately qualified actuary or risk specialist verifying the calculation of risks and corresponding insurance premiums; and

The Integral Energy Board has resolved to self insure against the following specific risks:

- Fraud risk;
- Earthquakes;
- Insurer's credit risk;
- Counterparty credit risk;
- Bushfire risk;
- Key person risk;
- Risk of non-terrorist impact of planes and helicopters; and
- Workers compensation.

The Board resolution was made on 2 April 2008.

Integral Energy engaged SAHA International to undertake an actuarial assessment of the above risks and the corresponding self-insurance premium. The SAHA report is provided as Appendix O.

An analysis of the identified risks that Integral Energy faces as a regulated distribution business shows that some of the costs of managing these risks are already included in the base year operating expenditure and hence should not be included in the self insurance allowance to avoid any double counting. These risks are:

- Theft of assets;
- General public liability risk;

- Fault in emergency work associated with network assets (e.g. poles and lines, substations and distribution transformers); and
- Power quality.

These risks have been excluded from the estimate of the self-insurance premium.

Table 10.8 summarises Integral Energy's total forecast self insurance premiums. The SAHA International report includes full details of the amounts, values and other inputs used to calculate these proposed premiums and an explanation of the calculations involved.

Table 10.8: Forecast self insurance premiums

$ million 2008/09	Forecast year ending 30 June					
Details	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Self insurance	3.2	3.2	3.3	3.3	3.3	16.3
Note: numbers may not add due to rounding						

Pro forma 2.3.11 included in Attachment 1 sets out Integral Energy's forecast self insurance costs.

10.11.2 Debt raising costs

To raise debt, a company has to pay financing costs or transaction costs over and above the debt margin allowed in the cost of capital. Such costs are dependent on market conditions.

Integral Energy engaged CEG to advise on the debt raising cost benchmark margin. CEG advised that a margin of 15.5 basis points was appropriate for Integral Energy for the *2009 regulatory control period*. CEG's report is provided at Appendix P. This margin has been included in the AER's PTRM and results in a debt raising cost allowance of between $3.5 and $5.0 million per annum as shown in Table 10.9.

Table 10.9: Forecast debt raising cost allowance

$ million 08/09	Forecast year ending 30 June					
Details	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Debt raising allowance	3.5	3.8	4.2	4.6	5.0	21.1
Note: numbers may not add due to rounding						

10.11.3 Equity raising costs

Equity raising costs are the costs associated with raising new equity capital and include the costs of preparing and distributing information and undertaking presentations to potential investors, as well as any underpricing required to ensure the raising of the required level of funds.

Integral Energy engaged CEG to provide advice on an appropriate equity raising margin. CEG's report is provided at Appendix P.

CEG's modelling indicates that a firm with benchmark financing arrangements and with Integral Energy's capital expenditure program would need to raise an amount of $735 million from external sources to fund capital expenditure required during the *2009 regulatory control period*. The cost of raising this additional equity is estimated at $56 million.

The CEG analysis concludes that, using benchmark assumptions, an appropriate method for including those costs would be to assume that the total amount of equity funding required is raised in the middle of the period and then provide an operating expenditure allowance in perpetuity that delivers the costs required. This translates to an allowance of approximately $4.1 million per annum moving forward from year 4 of the *2009 regulatory control period*. Integral Energy has included the benchmark equity raising costs shown in Table 10.10.

Table 10.10: Forecast equity raising cost allowance

$ million 08/09	Forecast year ending 30 June					
Details	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Equity raising allowance	-	-	-	4.1	4.0	8.2
Note: numbers may not add due to rounding						

10.12 Material service contracts

In considering whether to accept the forecast expenditures submitted by Integral Energy, clauses 6.5.6(e)(9) and 6.5.7(e)(9) of the *Transitional Rules* require the AER to have regard to the extent the forecast of required capital and operating expenditure is referable to arrangements with other persons that, in the opinion of the AER, do not reflect arms length terms.

Integral Energy has completed AER pro forma 2.3.2. Integral Energy believes that none of the costs put forward in its capital or operating forecasts are referable to arrangements with other persons that do not reflect arm's length terms.

10.13 Summary of forecast operating expenditure

A summary of Integral Energy's operating expenditure forecast for direct control standard control services for the *2009 regulatory control period* is provided in the following table. The forecast is based on Integral Energy's forecasting methodology as described in section 10.4 and the key inputs and assumptions described in section 10.5.

Integral Energy's operating expenditure forecast has been prepared in accordance with, and by incorporating, the expenditure which Integral Energy considers is required to achieve each of the following objectives:

- Meet or manage the expected demand for standard control services over the period;
- Comply with all applicable regulatory obligations or requirements associated with the provision of standard control services;
- Maintain the quality, reliability and security of supply of standard control services; and
- Maintain the reliability, safety and security of the distribution system through the supply of standard control services.

Table 10.11: Forecast operating expenditure over the *2009 regulatory control period*

$ million 2008/09	Forecast year ending 30 June					
	2010	**2011**	**2012**	**2013**	**2014**	**Total**
Direct network operating and maintenance	169.2	169.2	175.9	180.5	186.2	881.0
Corporate support	112.1	110.5	107.7	109.6	110.3	550.2
Core network operating expenditure	**281.3**	**279.6**	**283.6**	**290.2**	**296.6**	**1,431.2**
Self Insurance	3.2	3.2	3.3	3.3	3.3	16.3
Debt raising allowance	3.5	3.8	4.2	4.6	5.0	21.1
Equity raising	-	-	-	4.1	4.0	8.2
Total operating expenditure for PTRM	**287.9**	**286.7**	**291.1**	**302.2**	**308.9**	**1,476.8**
Note: numbers may not add due to rounding						

Integral Energy has considered the extent to which the above operating expenditure has components which are fixed and components which are variable as outlined in Appendix U.

10.14 Validation of expenditure forecasts

Integral Energy's operating expenditure forecasts have been subject to scrutiny and validation as follows:

- Internal testing to confirm that the forecasts meet the Transitional Rules' objectives and criteria; and
- External review and verification by PB.

10.14.1 Testing the forecasts against the *Transitional Rules*' objectives and criteria

Integral Energy considered, firstly, whether its approach to forecasting operating expenditure was consistent with the *Transitional Rules'* objectives and criteria and, secondly, whether the resultant forecasts meet these requirements.

It concluded that the forecasting process explicitly considered the activities and costs required to deliver the service standard and meet obligations, including the impact of changes to these obligations.

In relation to the resultant expenditure forecasts, Integral Energy believes that the operating expenditure forecasts are efficient and prudent.

10.14.2 External review and verification by PB

Integral Energy engaged PB to conduct a high level independent review of Integral Energy's operating expenditure including both forecast and historic expenditure levels. PB reviewed the key assumptions used in developing the operating expenditure forecasts. In relation to the operating expenditure forecasts, PB:

"has not identified anything which would suggest that Integral Energy's 2004 regulatory period actual opex costs and 2007/08 opex projection does not:

- *represent efficient and reasonable costs for the services provided in accordance with Integral Energy's current operation practices and asset management plans*
- *form an appropriate base for developing operating expenditure forecasts."*

Based on its review, PB stated that:

"Integral Energy's 2009 regulatory control period opex forecasts are efficient."

"In the course of the review PB has identified two issues which are pertinent to the above verification:

- *a high level ratio analysis indicates that these forecasts probably underestimate the increased operating expenditure requirements as a result of the impact of the future growth related capital works program, and*

- *PB has identified the need for, and Integral Energy has confirmed, that the opex forecasts include an offset resulting from the proposed asset replacement / refurbishment capital works program."*

PB stated that its review:

- *"has not identified anything which would suggest that Integral Energy's maintenance policies and procedures are not reasonable and efficient";*

- *"indicated that the use of asset growth factors to forecast future opex expenditures from a base year is reasonable, but notes that Integral's use of historical growth rates would probably underestimate these requirements"; and*

- *"confirms that the escalation rates identified from the CEG report have been correctly applied to the labour component of operating expenditure"*

11

Regulatory asset base

The building block approach requires a roll forward of the regulatory asset base (RAB) to determine an allowance for the return on and of (depreciation) capital.

This chapter summarises the key requirements of the *Transitional Rules* for the roll forward of the RAB. It sets out the methodology used by Integral Energy to roll forward its RAB and provides information on its forecast capital contributions and disposals. It then provides details on the establishment of the RAB value at 1 July 2009 and a summary of the resultant RAB outcomes over the *2009 regulatory control period*. The chapter also explains Integral Energy's working capital requirements.

11.1 Summary

The *Transitional Rules* require the roll forward of the RAB by establishing an opening RAB value at 1 July 2009 which is then rolled forward to reflect the AER's findings on the efficient forecast capital expenditure for the *2009 regulatory control period* (less forecast disposals and depreciation) for each year of the *2009 regulatory control period*.

Integral Energy has determined that its RAB value at 1 July 2009 is $3,835 million and is forecast to be $6,595 million at 30 June 2014, as shown in Table 11.1:

Table 11.1: RAB over the *2009 regulatory control period*

nominal $m	Forecast year ending 30 June				
Details	**2010**	**2011**	**2012**	**2013**	**2014**
Opening RAB 1 July	3,835.3	4,318.9	4,911.7	5,489.4	6,058.9
Forecast capital expenditure/additions[30]	608.6	697.5	680.6	665.9	638.0
Regulatory depreciation	(115.8)	(95.3)	(93.2)	(86.5)	(91.4)
Disposals	(9.2)	(9.4)	(9.7)	(9.9)	(10.2)
Inflation	2.54%	2.54%	2.54%	2.54%	2.54%
Closing balance 30 June	**4,318.9**	**4,911.7**	**5,489.4**	**6,058.9**	**6,595.4**
Note: numbers may not add due to rounding					

[30] Net of capital contributions.

11.2 Regulatory information requirements

The *Transitional Rules* and AER's information requirements (as specified in the RIN) are summarised in Box 11.1.

Box 11.1: RAB information requirements

Clause 6.5.1(b) of the *Transitional Rules* requires the AER to develop and publish a model for the roll forward of the RAB (the roll forward model).

Clause S6.1.3(10) of the *Transitional Rules* states that a building block proposal must contain a completed roll forward model.

Clause 6.5.1(e) of the *Transitional Rules* states that the roll forward model must set out the method for determining the roll forward RAB from the immediately preceding regulatory control period to the beginning of the first year of the subsequent control period (adjusted for actual inflation), and from one regulatory year in a regulated control period to a subsequent regulatory year in that same regulatory control period.

The methodology for calculating the RAB is found at Schedule 6.2 of the Transitional Rules.

Clause 6.21.2 of the *Transitional Rules* deals with capital contributions and the regulatory treatment.

In addition to these *Transitional Rules* requirements, the AER requires through its RIN:

- Information as to the basis on which capital contributions in the current regulatory control period (estimates for 2007/08 and 2008/09) and the *2009 regulatory control period* have been determined and, if necessary, the process by which capital contributions have been allocated to the different asset classes in the PTRM (clause 2.3.13(a) of the RIN).
- The forecast capital contributions for each year of the next regulatory control period categorised by asset class.

This *regulatory proposal* provides the information to address these *Transitional Rules* and RIN requirements.

11.3 Methodology to be used in rolling forward the RAB

In rolling forward the RAB, Integral Energy has used the methodology set out in clauses S6.2.1 and S6.2.2 of the *Transitional Rules* for the *2009 regulatory control period* and has used the AER's Roll Forward Model, provided as Attachment 3, and the Roll Forward Model Handbook. The approach adopted by Integral Energy first establishes the opening RAB as of 1 July 2009, then rolls it forward using forecasts for capital expenditures, actual depreciation, and disposals as discussed in the following sections.

11.3.1 Establishing the opening RAB

The opening RAB for the *2009 regulatory control period* has been calculated in accordance with clause S6.2.1 of the *Transitional Rules* and the AER's Roll Forward Model provided as Attachment 3. It rolls forward the RAB from the *current regulatory control period* using actual results to 2006/07 and then incorporates projections for 2007/08 and 2008/09.

Actual results have been used to determine the value of the RAB at 1 July 2007 by:

- Rolling forward the 1 July 2004 RAB to 30 June 2007 on the basis of actual prudent capital expenditure over this period (net of capital contributions);
- Deducting actual depreciation;
- Deducting actual disposals; and
- Indexing the annual closing regulatory asset base for actual inflation.

Integral Energy has used projected results to roll forward the RAB for 2007/08 and 2008/09 by:

- Adding the projected efficient capital expenditure (net of capital contributions) to the opening RAB for each respective year;
- Deducting actual depreciation for that year;
- Deducting forecast disposals for that year; and
- Indexing the annual closing RAB for forecast inflation.

11.3.2 Rolling forward the RAB

Integral Energy has rolled forward its RAB for each year over the *2009 regulatory control period* by:

- Adding the forecast efficient capital expenditure for that year (net of capital contributions) to the opening RAB;
- Deducting depreciation as calculated by the AER's PTRM;
- Deducting forecast disposals for that year; and
- Indexing the annual closing RAB for forecast inflation.

11.4 Capital contributions

Under clause 6.21.4(a) of the *Transitional Rules*, capital contribution charges by the NSW DNSPs in respect of the *2009 regulatory control period* are to be determined in accordance with

Determination No 1 2002 made by the IPART under section 11(3) of the Independent Pricing and Regulatory Act 1992 (NSW) in 2002:

> *Determination No 1 establishes a framework for determining how much customers (network users) will be required to contribute towards the capital costs of connecting them to Integral Energy's distribution network. These capital costs include those related to the connection itself and, in some cases, those of augmenting the capacity of the distribution network so it can meet the new demand created by the customer.*

Under Determination No 1, there is a General Rule which applies to all customers, with two exceptions.

The General Rule is that a customer will pay for the direct costs of establishing the connection up to a defined point of connection to the network. These direct costs are those involved in providing and installing the line and equipment that are dedicated to that customer. Integral Energy will pay for all other costs.

The two exceptions to the General Rule are for customers in rural areas and large load customers. As well as paying connection costs under the General Rule, these customers may be required to contribute to the costs of upgrading or augmenting the network assets. These customers may also be reimbursed for some of the contributions they have paid for assets that, at some later stage, are used by other customers.

When a customer is required to make a capital contribution for connection assets, the customer can choose to have Integral Energy or an independent accredited service provider perform the work of constructing the new connection assets. Once these assets have been constructed and connected to Integral Energy's distribution network they are then transferred at no cost to Integral Energy to own and maintain.

In order to satisfy clause 6.21.2(1) of the *Transitional Rules* which states that a DNSP is not entitled to recover, under a mechanism for the economic regulation of direct control services, any component representing asset related costs for assets provided by Distribution Network Users, Integral Energy is required to separately identify the costs of providing customer connection services into two components, namely:

1. Those assets built and funded by the customer and then transferred at no cost to integral Energy; and

2. Those assets funded and/or built by Integral Energy as part of the connection of customers to the Integral Energy distribution network.

Under the Post Tax Revenue Model (PTRM) the value of the assets provided under item 1 above is netted off against the capital expenditure proposed by Integral Energy and is not included in the calculation for return of or return on capital, but is included as income for the purposes of calculating Integral Energy's tax liability.

Expenditure under item 2 above is included in the capital expenditure proposed by Integral Energy and under the PTRM Integral Energy earns a return on and return of the capital invested.

11.4.1 Actual and projected capital contributions for *current regulatory control period*

The actual and projected capital contributions for the current regulatory control period are summarised in Table 11.2.

Table 11.2: Actual/projected capital contributions for current regulatory control period

Nominal $m	Actual year ended 30 June			Forecast year ending 30 June		
Details	**2005**	**2006**	**2007**	**2008**	**2009**	**Total**
Assets transferred to Integral Energy at no cost	56.4	37.0	41.7	55.6	47.3	237.9
Integral Energy funded assets	25.3	31.5	32.0	28.4	25.2	142.4
Total	**81.7**	**68.5**	**73.7**	**84.0**	**72.5**	**380.3**

11.4.2 Forecast capital contributions for *2009 regulatory control period*

Based on the *Transitional Rules*, Integral Energy's forecast capital contributions are shown in Table 11.3.

Table 11.3: Forecast capital contributions over the *2009 regulatory control period*

2008/09 $m	Forecast year ending 30 June					
Details	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Assets transferred to Integral Energy at no cost	47.2	47.2	47.2	47.2	47.2	235.9
Integral Energy funded assets	30.9	31.5	32.7	33.8	35.2	164.0
Total	**78.1**	**78.7**	**79.9**	**81.0**	**82.4**	**399.9**

The forecasts in Table 11.3 were determined using the historic expenditures for 2005/06 and 2006/07 adjusted for abnormal items and the projected expenditure for 2007/08. A ratio between the assets transferred at no cost and Integral Energy funded assets was calculated from these historic and projected expenditures.

A forecast of the Integral Energy funded expenditure for the *2009 regulatory control period* is then developed based on the expected number of lots to be connected. The ratio developed based on

the historic and projected expenditures is then applied to the Integral Energy funded expenditure to derive the forecast for the assets transferred at no cost.

11.5 Asset disposals

Integral Energy's forecast asset disposals over the *2009 regulatory control period* are shown in Table 11.4.

Table 11.4: Forecast asset disposals over the *2009 regulatory control period*

2008/09 $m	Forecast year ending 30 June					
Details	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
System assets	2.2	2.2	2.2	2.2	2.2	10.9
Non-system assets	6.8	6.8	6.8	6.8	6.8	33.9
Total	**9.0**	**9.0**	**9.0**	**9.0**	**9.0**	**44.8**

The level of disposals over the *2009 regulatory control period* is the actual amount recorded in the most recent audited annual regulatory financial statements.

11.6 Change in asset lives

Under clause S6.2.1(e)(8) of the *Transitional Rules* the previous value of the RAB may be increased by the value of an asset to the extent that the AER considers the asset to be reasonably required to achieve one or more of the capital expenditure objectives, the asset is properly allocated to standard control services in accordance with the principles and policies set out in the Cost Allocation Method and the value of the asset has not otherwise been recovered.

As part of the previous IPART Determination, IPART used a valuation undertaken in 1998 to establish the RAB. NSW Treasury, on behalf of the NSW DNSPs, engaged Sinclair Knight Merz (SKM) to undertake an updated Optimised Depreciated Replacement Cost (ODRC) valuation as at 30 June 2002.

The SKM valuation highlighted that the initial 1998 RAB valuation was inaccurate due to an error in the asset lives of sub-transmission and zone substations. Essentially the substation ages were based on the initial commissioning dates and did not reflect Integral Energy's normal practice of commissioning equipment incrementally to minimise cost. The approach taken in the 2002 ODRC valuation was to age the substation assets at a bay level. The ageing at a more granular level had the effect of reducing the average age of the substation assets.

The effect of this error was to understate the RAB by an estimated $167 million (as at 1 July 1998 and excluding capital contributions) which when rolled forward in accordance with the *Transitional Rules* means that the RAB should be increased by $170 million at 30 June 2009. Integral Energy, in accordance with clause S6.2.1 of the *Transitional Rules*, has incorporated this amount in its

asset base roll forward. The SKM report will be made available to the AER's consultants as part of the review process if required.

11.7 Establishing RAB value as at 1 July 2009

Clause S6.2.1(c)(1) of the *Transitional Rules* specifies the value of Integral Energy's opening RAB at 1 July 2004 at $2,283 million. Clause S6.2.1(c)(2) specifies that this value is to be adjusted for the difference between forecast and actual capital expenditure in the 2003/04 financial year. Integral Energy's 2003/04 actual capital expenditure was approximately $60 million less than the forecast.

Integral Energy has determined that its RAB value at 1 July 2009 adjusted for found assets is $3,835 million as shown in Table 11.5.

Table 11.5: Establishing RAB at 1 July 2009

Nominal $m	Actual 30 June			Projected 30 June	
Details	**2005**	**2006**	**2007**	**2008**	**2009**
Opening RAB 1 July	2,283.5	2,464.8	2,706.8	2,995.4	3,330.6
Actual/projected capital expenditure/additions[31]	258.2	339.4	384.1	415.4	559.1
Actual/ projected regulatory depreciation	(67.7)	(87.4)	(86.0)	(71.5)	(121.0)
Actual/ projected disposals	(9.2)	(9.9)	(9.5)	(8.8)	(9.0)
Actual/projected inflation	2.8%	2.3%	2.7%	3.5%	2.3%
Difference between forecast and actual 2003/04					(58.9)
Adjustment for return on difference					(35.5)
Change in asset lives					170.0
Closing balance 30 June	**2,464.8**	**2,706.8**	**2,995.4**	**3,330.6**	**3,835.3**
Note: numbers may not add due to rounding					

11.8 Resulting RAB values over the *2009 regulatory control period*

Integral Energy has applied the methodology above using the capital expenditure in chapter 9 to determine an opening RAB value as at 1 July 2009 of $3,835 million. The resulting RAB values for Integral Energy over the *2009 regulatory control period* are shown in Table 11.6.

[31] Net of capital contributions.

Table 11.6: Roll forward RAB over the *2009 regulatory control period*

Nominal $m	Forecast year ending 30 June				
Details	**2010**	**2011**	**2012**	**2013**	**2014**
Opening RAB 1 July	3,835.3	4,318.9	4,911.7	5,489.4	6,058.9
Forecast capital expenditure/additions[32]	608.6	697.5	680.6	665.9	638.0
Regulatory depreciation	(115.8)	(95.3)	(93.2)	(86.5)	(91.4)
Disposals	(9.2)	(9.4)	(9.7)	(9.9)	(10.2)
Inflation	2.54%	2.54%	2.54%	2.54%	2.54%
Closing balance 30 June	**4,318.9**	**4,911.7**	**5,489.4**	**6,058.9**	**6,595.4**
Note: numbers may not add due to rounding					

Integral Energy believes that the RAB, based on the completed Roll Forward Model provided as Attachment 3 and as summarised above, is needed to operate its network efficiently, comply with the legal and regulatory obligations, and meet the service and planning standards on a sustainable basis.

32 Ibid.

12

Depreciation

The *Transitional Rules* require Integral Energy to prepare its *building block proposal* in accordance with the AER's PTRM. The AER's PTRM includes an annual allowance for the return of capital (depreciation).

This chapter sets out an overview of Integral Energy's approach to calculating depreciation for the *2009 regulatory control period*. It sets out the asset lives of Integral Energy's network system and non-system assets and the resulting depreciation allowance included in Integral Energy's revenue requirements (see Chapter 14).

12.1 Summary

Integral Energy has calculated forecast depreciation for the *2009 regulatory control period* using straight line depreciation as calculated in the AER's PTRM.

Integral Energy's forecast deprecation, included in the completed PTRM model provided as Attachment 2, is summarised below:

Table 12.1: Forecast depreciation over *2009 regulatory control period*

nominal $m	Forecast year ending 30 June					
Details	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Straight line depreciation	213.2	205.0	218.0	225.9	245.3	**1,107.4**
Inflation on opening RAB	(97.4)	(109.7)	(124.8)	(139.4)	(153.9)	**(625.2)**
Regulatory depreciation	**115.8**	**95.3**	**93.2**	**86.5**	**91.4**	**482.2**
Table may not add due to rounding						

12.2 Regulatory information requirements

The *Transitional Rules* and AER's information requirements (as specified in the RIN) are summarised in Box 12.1.

Box 12.1: Depreciation information requirements
Clause 6.5.5(a)(1) of the Transitional Rules states that depreciation for each regulatory year must be calculated on the value of the assets as included in the RAB as at the beginning of that regulatory year, for the relevant distribution system. Clause 6.5.5(a)(2) of the *Transitional Rules* requires depreciation be calculated using the depreciation schedules for each asset or category of assets that are nominated in the DNSP's building block proposal. The Transitional Rules state that the depreciation schedules must conform to the following requirements:. • The schedules must depreciate using a profile that reflects that nature of the assets or category of assets over the economic life of that asset or category of assets (clause 6.5.5(b)(1). • The sum of the real value of the depreciation attributable to any category of assets must be equivalent to the value at which that asset or category of assets was first included in the RAB for the relevant distribution system (clause 6.5.5(b)(2)); and • The economic life of the relevant assets and depreciation rates for a given regulatory control period be consistent with those determined for the same assets on a prospective basis in the distribution determination for that period (clause 6.5.5(b)(3)).

This *regulatory proposal* provides the information to address these *Transitional Rules* and RIN requirements.

12.3 Depreciation methodology

The AER's preferred approach to calculate the depreciation allowance, as reflected in the PTRM, is to adopt straight line depreciation. Integral Energy accepts that the existing straight line depreciation methodology is appropriate for the *2009 regulatory control period* due to its simplicity, consistency and transparency.

Integral Energy has calculated the depreciation allowance using the straight line methodology over the estimated standard life of the asset, in accordance with the requirements set out in clause 6.5.5 of the *Transitional Rules*. Where an asset class is made up of a number of assets with different standard lives, a weighted average life has been used. It should be noted that within an asset class the individual assets may have a standard life that is different to the weighted average life calculated for the asset class.

The PTRM calculates the depreciation allowance based on the straight line methodology and the details of all the amounts, values and other inputs used by Integral Energy to compile the depreciation schedules are provided as the input sheet to the AER's PTRM which is provided as Attachment 2.

12
Depreciation

12.4 Standard and remaining asset lives

The effective working life of an asset is its estimated life, assuming continued use in its present function as part of a continuing business, assessed and expressed on a time or use basis. In determining the useful life, Integral Energy has considered the following factors:

- The expected usage of the asset or its service utility;
- The expected wear and tear, which depends on the operational factors such as environmental conditions and the maintenance levels implemented;
- The anticipated technical life of the asset having regard to physical, technological, functional and economic obsolescence; and
- External factors such as changes in legislation.

Integral Energy has adopted the standard lives (i.e. the anticipated life of a new asset at the time of commissioning) and the estimated remaining lives that were used in the building block model used by IPART as part of the 2004 Determination. Table 12.2 shows the standard asset lives for system and non-system assets.

Table 12.2 Standard lives for system and non-system assets

Asset class	Standard life (years)	Average remaining life (years)
System Assets		
Sub-transmission lines and cables	47.4	18.1
Distribution lines and cables	50.6	32.2
Substations	40.0	19.4
Transformers	44.3	21.5
Low voltage lines and cables	52.4	27.7
Customer metering and load control	25.0	3.5
Communication	8.4	0.4
Land	N/A	N/A
Easements	N/A	N/A
Emergency spares	23.6	9.4
Non-system Assets		
IT systems	5.0	1.2
Furniture, fittings, plant and equipment	13.0	10.6
Motor vehicles	8.0	2.6

Asset class	Standard life (years)	Average remaining life (years)
Buildings	50.0	48.1
Land (non-system)	N/A	N/A
Other non-system assets	12.7	0.1

12.5 Forecast regulatory depreciation

Integral Energy has forecast its depreciation schedules for the *2009 regulatory control period* based on the AER's roll forward of the opening asset base and Integral Energy's forecast capital expenditure and disposals. The PTRM has been used to calculate the depreciation on a straight line basis.

Integral Energy has included, in the completed PTRM provided as Attachment 2, depreciation schedules by asset class based on the asset classes used to report to IPART as part of the annual regulatory accounts. These schedules also reflect the asset classes used in the Cost Building Block model used by IPART as part of the 2004 Determination.

The total of the required regulatory depreciation allowance forecasts for the *2009 regulatory control period* is shown in Table 12.3.

Table 12.3: Forecast depreciation over *2009 regulatory control period*

nominal $m	Forecast year ending 30 June					
Details	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Straight line depreciation	213.2	205.0	218.0	225.9	245.3	**1,107.4**
Inflation on opening RAB	(97.4)	(109.7)	(124.8)	(139.4)	(153.9)	(625.2)
Regulatory depreciation	**115.8**	**95.3**	**93.2**	**86.5**	**91.4**	**482.2**
Table may not add due to rounding						

13

Return on capital, inflation & taxation

This chapter sets out, in accordance with the *Transitional Rules* and RIN requirements, Integral Energy's proposed return on capital, the method that is likely to result in the best estimates of inflation and the estimated cost of corporate income tax over the *2009 regulatory control period*.

13.1 Return on capital and inflation

13.1.1 Summary

Integral Energy's proposed return on capital, as measured by the weighted average cost of capital (WACC) for the *2009 regulatory control period,* is 9.76% and represents the return required by investors in a commercial enterprise with a similar degree of non-diversifiable risk to that faced by Integral Energy. It also reflects the return required to continue to commit capital on a commercial basis.

13.1.2 Summary of regulatory requirements

The *Transitional Rules* and the AER's information requirements (as specified in the RIN) relating to the calculation of the return on capital are summarised in Box 13.1 below.

Box 13.1: Return on capital regulatory requirements

Clause 6.5.2 of the *Transitional Rules* provides that the return on capital for each regulatory year must be calculated by applying a rate of return for that regulatory control period to the value of the regulatory asset base as at the beginning of a regulatory year.

Clause 6.5.2(b) of the *Transitional Rules* sets out the formula used to calculate the weighted average cost of capital (WACC), the approach to calculating the nominal risk free rate and the approach to calculating the debt risk premium. In addition, Clause 6.5.2(b) of the *Transitional Rules* requires the following WACC parameters to be adopted:

- An equity beta of 1.0;
- A market risk premium (MRP) of 6.0; and
- The value of debt as a proportion of the value of debt plus equity of 0.6; and
- The value of equity as a proportion of the value of debt plus equity equal to 1 minus 0.6 (or 0.4).

The AER's Regulatory Information Notice (section 2.4.3) requires the following information:

- The proposed averaging period (in days) for bond rates and the start of the averaging period;

Box 13.1: Return on capital regulatory requirements
• An indicative 10 year Commonwealth bond rate; • An indicative 10 year debt risk premium; and • An inflation forecast for the *next regulatory control period*.

Section 13.1 addresses these *Transitional Rules* and RIN requirements.

13.1.3 WACC calculation and parameters

For the purposes of calculating a return on capital for the *2009 regulatory control period*, Integral Energy has adopted the WACC formula as specified in clause 6.5.2(b) of the *Transitional Rules*. In addition, in accordance with clause 6.5.2(b) of the *Transitional Rules*, Integral Energy has incorporated the following parameters into its *regulatory proposal*:

- An equity beta of 1.0;
- A market risk premium (MRP) of 6.0%;
- The value of debt as a proportion of the value of equity and debt of 0.6; and
- The value of equity as a proportion of the value of equity and debt of 0.4.

Integral Energy has included the above WACC parameters in the PTRM, which is included in Attachment 2 of this *regulatory proposal*.

13.1.3.1 Nominal risk free rate

Integral Energy's calculation of the nominal risk free rate has followed the approach outlined in section 6.5.2(c) of the *Transitional Rules*. Integral Energy's proposed approach to calculating the nominal risk free rate is as follows:

- The rate determined for the *2009 regulatory control* period is based on a moving average basis from the annualised yield on Commonwealth Government bonds with a maturity of 10 years;
- The nominal risk free rate is calculated using the indicative mid rates published by the Reserve Bank of Australia; and
- Where there are no Commonwealth Government bonds with a maturity of 10 years corresponding to the dates of the averaging period, the nominal risk free rate is calculated by interpolating on a straight line basis from the two relevant bonds closest to the 10 year term and which also straddle the 10 year expiry date.

Integral Energy has obtained expert advice from Competition Economists Group (CEG) on relevant matters relating to the calculation of the nominal risk free rate, including the commencement date and length of the period to be used in its calculation. The CEG advice is

provided in the report titled *Nominal risk free rate, debt risk premium and equity and debt raising costs* provided as Appendix P.

Clause S6.1.3(8) of the *Transitional Rules* and section 2.4.3 of the RIN requires that Integral Energy must also nominate a (confidential) commencement date and the length of the period to be used by the AER to calculate the nominal risk free rate for the regulatory control period in accordance with clause 6.5.2(c)(2) of the *Transitional Rules*.

Based on the CEG advice, Integral Energy proposes:

- 15 days as the proposed averaging period (in days) for the nominal risk free rate; and
- The proposed start date for the averaging period identified above, as provided in confidential Appendix R of this *regulatory proposal*.

Recognising that the applicable market data for the nominal risk free rate will not be available until closer to the date of the final determination, the rate set by the AER in the 2008 SP AusNet final transmission determination, 6.09%, has been incorporated into this *regulatory proposal* as the indicative 10 year Commonwealth bond rate, in accordance with section 2.4.3(a)(2) of the RIN.

13.1.3.2 Debt Risk Premium

In establishing the cost of debt for the purposes of calculating the return on capital, a debt risk premium is to be added to the nominal risk free rate, in accordance with clause 6.5.2(b) of the *Transitional Rules*.

Clause 6.5.2(e) of the *Transitional Rules* defines the debt risk premium as:

> *"The debt risk premium for a* regulatory control period *is the premium determined for that regulatory control period by the AER as the margin between the 10 year Commonwealth annualised bond rate and the observed annualised Australian benchmark corporate bond rate for corporate bonds which have a maturity of 10 years and a credit rating of BBB+ from Standard and Poors."*

As outlined in Appendix P, there is currently an insufficient number of corporate bonds with a BBB+ rating with ten years to maturity for Bloomberg to publish a 10 year bond rate. Faced with this difficulty, in the SP AusNet final determination, the AER estimated the 10 year BBB+ Bloomberg Fair Value yield as:

AER estimate of 10 year BBB+ Bloomberg Fair Value Yield	=	8 year BBB+ Bloomberg Fair Value Yield	+	10 year A Bloomberg Fair Value yield	-	8 year A Bloomberg Fair Value yield

The approach adopted by the AER appears reasonable as it does not result in a material error or an obvious bias (at least when measured against recent history).

On this basis, Integral Energy has adopted the AER's approach for calculating the debt risk premium for the purposes of this *regulatory proposal*.

In addition, sections 2.4.3(a)(1) and 2.4.3(a)(3) of the RIN require that the proposed averaging period (in days) for the debt risk premium and the start of the averaging period are included in the *regulatory proposal*, with the latter to be provided in a confidential attachment.

In calculating the debt risk premium, Integral Energy has adopted the same averaging period (15 days) used for calculating the nominal risk free rate, and has also used the same start date for the averaging period as for the nominal risk free rate, as provided in (confidential) Appendix R.

Recognising that the applicable market data for the debt risk premium will not be available until closer to the date of the final determination, the value set by the AER in its 2008 SP AusNet final transmission determination, 2.11%, has been incorporated into this *regulatory proposal* as the indicative 10 year debt risk premium in accordance with section 2.4.3(a)(3) of the RIN.

Therefore, in accordance with the *Transitional Rules* and RIN requirements, Integral Energy proposes an indicative nominal pre tax cost of debt of 8.20% for the *2009 regulatory control period*, comprising an indicative nominal risk free rate of 6.09% and an indicative debt risk premium of 2.11%.

13.1.4 Forecast inflation

Clause 6.4.2(b)(1) of the *Transitional Rules* requires that the contents of the AER's post tax revenue model (PTRM) must include a method that the AER determines is likely to result in the best estimates of expected inflation. This section provides Integral Energy's proposed method for calculating expected inflation for the *2009 regulatory control period*.

CEG has been commissioned by Integral Energy to advise on the best approach to calculating inflation. CEG's report is titled *Expected inflation methodology and rate for Integral Energy* and is provided as Appendix Q.

In its final decision for SP AusNet, the AER stated the following with respect to forecasting inflation (page 105):

> *"The AER's approach to forecasting inflation in this final decision has been in response to an acceptance that the previously ubiquitously used Fisher equation may not currently produce realistic inflation forecasts at this time, due to a bias in indexed CGS yields caused by the scarcity of these bonds…*
>
> *In the draft decision the AER determined it would take account of the RBA's target inflation band and its outlook for inflation to establish its best estimate of inflation. The RBA is the most authoritative source of advice on expected inflation, if a general approach to forecasting inflation is to be used. For the purposes of this final decision the AER considers a general forecasting approach as the methodology likely to produce the best estimates of forecast inflation.*
>
> *The AER has determined that a methodology that is likely to result in the best estimates of expected inflation is to reference the RBA's short term inflation forecasts, that currently extend out two years, and to adopt the mid-point of the RBA's target inflation band beyond that period (i.e. 2.5%). Averaging these individual year forecasts, an implied 10*

year forecast has been derived, consistent with past regulatory practice, from the RBA's inflation forecasts for 2008 and 2009 and an assumption of the 2.5% mid point for a further 8 years. This produces a best estimate of 10 year forecast inflation of 2.59%, based on a simple average."

The AER's approach in its final SPAusNet decision appears reasonable.

The following Table 13.1 outlines Integral Energy's proposed method that is likely to result in the best estimates of inflation over the *2009 regulatory control period*.

Table 13.1: Summary of inflation forecasts[33]

Statistic	Equal weight to all forecasters	BIS Shrapnel excluded	Government forecasters excluded	Government and BIS Shrapnel excluded
Mean of all observations	2.60	2.56	2.59	2.53
Median of all observations	2.50	2.50	2.50	2.50
Forecasters with mean forecasts equal or greater than 3%	None	None	None	None
Mean of observations from 2008 to 2009	2.88	2.87	2.82	2.80
Mean of observations from 2010 to 2018	2.51	2.46	2.52	2.45
Weighted average of short and long term forecasts	**2.59**	**2.54**	**2.58**	**2.52**

Integral Energy proposes an estimate of inflation of 2.54% for the *2009 regulatory control period* calculated as the weighted average mean of forecasters' short and long term expectations, excluding BIS Shrapnel forecasts, as shown in the shaded column in Table 13.1 and discussed in detail in Appendix Q.

Integral Energy notes that selecting an estimate of 2.54% for expected inflation is not materially different to the median forecast or to the mean forecast including BIS Shrapnel and is also consistent with the written advice of both the RBA and the Commonwealth Treasury who have separately noted that:

"Given inflation expectations have been firmly anchored by the Bank's inflation-target regime for some time, a rough estimate of a real risk-free rate would be the nominal government bond yield less the centre of the inflation target band (i.e. the nominal yield less 2½ per cent)."[34]

[33] *A methodology for determining expected inflation*, Competition Economists Group, April 2008 (see Appendix Q).

"The Australian Government's suspension of issuance of these inflation-linked bonds, as well as increased demand for this asset class, is likely to cause market-implied inflation estimates to exceed consensus forecasts of inflation over the medium term. We therefore recommend that the ACCC uses the mid-point of the RBA's target band for inflation (that is, 2.5 per cent per annum) as the best estimate of inflation. Since the independence of the Reserve Bank board in conducting monetary policy was formalised in 1996, annual inflation has averaged 2.5%."[35]

In accordance with the requirements of the *Transitional Rules*, Integral Energy proposes that 2.54% represents the best estimate of expected inflation for the purposes of calculating the real expected yield on a nominal Commonwealth Government Security (CGS) with a maturity of 10 years.

13.1.5 Summary of WACC parameters, variables and outcomes

Based on the requirements of the *Transitional Rules* and the RIN and the analysis provided above, Integral Energy proposes the following WACC parameters, variables and outcomes:

Table 13.2: Summary of WACC Parameters and Calculations

Parameter	Value
Parameters	
Equity Beta (β_e)	1.0
Market Risk Premium (MRP)	6.0%
Proportion of Debt to Debt Plus Equity (D / V)	60%
Credit Rating (S&P)	BBB+
Variables	
Nominal Risk Free Rate	6.09%
Nominal Risk Free Rate Averaging Period	15 days
Debt Risk Premium (DRP)	2.11%
Inflation	2.54%
Outcomes	
Nominal Pre Tax Cost of Debt	8.20%
Nominal Post Tax Cost of Equity	12.09%
Vanilla WACC	**9.76%**

[34] *A methodology for determining expected inflation*, Competition Economists Group, April 2008 (see Appendix Q).

[35] Ibid.

Recognising that the applicable market data for two variables required to calculate the return on capital – the nominal risk free rate and the debt risk premium – will not be available until closer to the date of the final determination, the *regulatory proposal* incorporates the values set out by the AER in the January 2008 SP AusNet final transmission determination for these variables for indicative purposes only.

The return on capital calculated by the AER in its final determination may differ depending on future market data for these variables.

13.2 Taxation allowance

13.2.1 Summary

Integral Energy has calculated its tax depreciation allowance based on relevant rates and methodologies in accordance with tax law and consistent with the requirements of the PTRM. Pro forma 2.4.5 of the AER's Information Templates sets out Integral Energy's detailed corporate income tax proposal. Appendix X contains extracts of Integral Energy's Income Tax Equivalent Returns for 2001-07

Table 13.3 shows Integral Energy's forecast tax depreciation allowance for the *2009 regulatory control period*.

Table 13.3: Forecast tax depreciation over the *2009 regulatory control period*

Nominal $m	Forecast year ending 30 June					
Details	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Forecast tax depreciation	118.0	114.6	141.1	158.2	168.6	**700.4**

13.2.2 Regulatory information requirements

The *Transitional Rules* and AER's information requirements (as specified in the RIN) are summarised in Box 13.2.

Box 13.2: Taxation regulatory information requirements
Clause 6.5.3 of the *Transitional Rules* stipulates the methodology to be applied in determining a tax allowance in the *building block proposal*. In addition to these *Transitional Rules* requirements, the AER requires, through its RIN, information on the National Tax Equivalent Tax Regime (NTER) values for the entire business, the regulated asset base and assets not within the regulated asset base (paragraph 2.4.5 of the RIN).

This *regulatory proposal* provides the information to address these *Transitional Rules* and RIN requirements.

13.2.3 Opening tax asset value at 1 July 2009

Pro forma 2.4.5 of the AER's Information Templates requires that NTER values are provided for each year back to the commencement of the NTER regime in 2001/02.

Integral Energy proposes an opening tax asset base as at 1 July 2009 of $2,458 million which includes $2,035 million determined using the methodology summarised below and reviewed by the AER prior to the lodgement of this *regulatory proposal* and $423 million for work in progress as required by the AER.

A key parameter of the PTRM is the value of assets for tax purposes. For businesses previously regulated under a pre-tax framework such as Integral Energy, the value of assets for tax purposes needed to be established.

The approach taken in determining the opening tax asset base as at 1 July 2009 is:

- The 2006/07 tax fixed asset register was used to provide base data - Integral Energy has used this information as the base data for determining the opening value of assets for tax purposes as at 1 July 2009, on the basis that the 2006/07 figures reflect the actual tax depreciation position. Before 2006/07, some assumptions have been made due to limitations in the availability and reliability of supporting data (discussed further below);

- The tax value of assets as at 30 June 2007 was separated into RAB and non-RAB assets. Non-system assets were allocated based on the most recent allocation basis used in preparation of the 2006/07 Regulatory Financial Statements; and

- The tax base established was rolled forward to commencement of the post tax approach, taking account of relevant tax depreciation rates and methodologies, actual capital expenditure and disposals.

The tax asset base figures for the years 2001/02 through to 2005/06 were derived from Integral Energy's tax asset register. As indicated above, there were some discrepancies that limited Integral Energy's ability to roll forward these figures on an asset class basis, however these discrepancies were largely immaterial. Using the 2006/07 closing balances as the base, the RAB and non-RAB movements for 2004/05 and 2005/06 were determined based on percentage allocations used in the regulatory accounts for the respective years. The basis of allocation for the years 2001/02 to 2003/04 was not identifiable, and therefore assumptions were applied whereby the regulatory allocation was based on an average of the three years 2004/05 to 2006/07. Copies of the relevant regulatory accounts appear at Appendices S.2 to S.4. As required by the AER, the figures in pro forma 2.4.5 exclude capital contributions.

Integral Energy considers that the approach adopted to establish the 1 July 2009 opening tax asset base, using the actual tax fixed assets register as at 2006/07 rolled forward would align to a full reconstruction of the tax asset base carried forward from 1 July 2001, if all data were available.

14

Revenue requirements

The *Transitional Rules* require Integral Energy to prepare its *building block proposal* in accordance with the AER's PTRM. The AER's PTRM is based on the building block approach of providing allowances for the return on and of capital, and for operating expenditure and taxation.

This chapter sets out an overview of the completed PTRM and Integral Energy's total revenue requirements and resulting X factors for the *2009 regulatory control period*. It includes the building block components of Integral Energy's proposed revenue requirements over the *2009 regulatory control period*. It also explains Integral Energy's proposed control mechanism for standard control services over the *2009 regulatory control period* and Integral Energy's proposed treatment of TUOS recovery.

14.1 Summary revenue requirements and X factors

Integral Energy's proposed annual revenue requirements and X factors for the *2009 regulatory control period* are included in the AER's PTRM, provided as Attachment 2, and shown in Table 14.1.

Table 14.1: Summary revenue requirements over *2009 regulatory control period*

nominal $m	Forecast year ending 30 June					
Details	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Notional revenue requirement	826.1	860.3	928.7	999.6	1,080.2	**4,694.8**
Smooth revenue requirement to achieve NPV neutral outcome	805.5	867.5	936.7	1,006.3	1,083.5	**4,699.5**
X Factors	-18.2	-3.5	-3.5	-3.5	-3.5	
Numbers may not add due to rounding						

14.2 Regulatory information requirements

The *Transitional Rules* and AER's information requirements (as specified in the RIN) are summarised in Box 14.1.

Box 14.1: Revenue requirement regulatory information requirements
Clause 6.3.1(c)(1) and clause S6.1.3(10) of the *Transitional Rules* require that the *building block proposal* must be prepared in accordance with the PTRM. Clause S6.1.3(6) of the *Transitional Rules* requires that the *building block proposal* must contain: • The provider's calculation of revenues or prices for the purposes of the control mechanism proposed by the provider together with: (i) details of all amounts, values and inputs (including X factors) relevant to the calculation; (ii) an explanation of the calculation and the amounts, values and inputs involved in the calculation; and (iii) a demonstration that the calculation and the amounts, values and inputs on which it is based comply with relevant requirements of the Law and the *Rules*. Clause 6.5.9 of the *Transitional Rules* requires that a building block determination include the X factor for each control mechanism for each regulatory year of the regulatory control period. It also provides parameters upon which the AER must set the X factors including having regard to the DNSP's total revenue requirement for the regulatory control period and being NPV neutral, minimise any variance between expected revenue for the last regulatory year of the regulatory control period and the annual revenue requirement for that last regulatory year. In addition to these *Transitional Rules* requirements, the AER requires through its RIN to include in the regulatory proposal, any other justification regarding X factors that the DNSP considers relevant (paragraph 2.4.3(a)(2)).

This *regulatory proposal* provides the information to address these *Transitional Rules* and RIN requirements.

14.3 Approach to determining revenue requirement

Integral Energy's *regulatory proposal* is based on the PTRM and the PTRM Handbook which Integral Energy has used to determine the revenue requirement. The completed PTRM is provided at Attachment 2. The revenue building block components have been described in Chapters 9 to 13.

The building block formula to be applied in each year of the regulatory control period is:

MAR = Return on capital + Return of capital + Opex + Tax

= (WACC x RAB) + D + Opex + Tax

where:

MAR = Maximum allowable revenue

WACC = Post tax nominal weighted average cost of capital

RAB = Regulatory Asset Base

D = Economic depreciation (nominal depreciation – indexation of the RAB)

Opex = Operating and maintenance expenditure

Tax = Regulated business corporate tax allowance

This maximum allowable revenue is then smoothed to determine X factors in accordance with the requirements of clause S6.1.3(6) of the *Transitional Rules*. The smoothing mechanism adopted is the weighted average price methodology as per the AER's PTRM. Under this methodology Integral Energy has used the 2008/09 distribution use of system (DUOS) prices submitted to IPART on 9 May 2008 as the base year. The PTRM then adjusts these tariff components during the *2009 regulatory control period* and calculates the X factors based on forecast quantities per tariff component.

14.4 Completed post tax revenue model (PTRM)

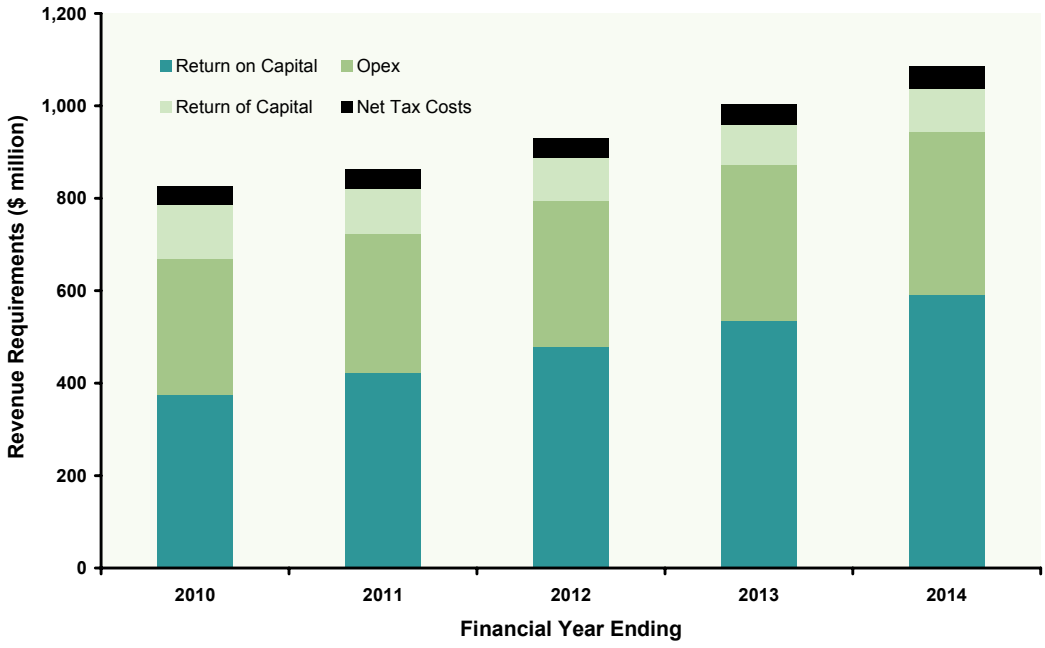
The unsmoothed revenue requirement (notional revenue requirement) for each year of the *2009 regulatory control period* is calculated as the sum of the return on capital, return of capital, operating and maintenance expenditure and corporate tax allowance. Integral Energy's proposed annual revenue requirement over the *2009 regulatory control period* in accordance with clause 6.4.3(a)(7) of the *Transitional Rules* is shown in Table 14.2.

Table 14.2: Building block revenue requirements over *2009 regulatory control period*

2008/09 $m	Forecast year ending 30 June					
Details	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Return on capital	374.2	421.4	479.2	535.6	591.1	**2,401.4**
Return of capital	115.8	95.3	93.2	86.5	91.4	**482.2**
Operating expenses	295.2	301.4	313.9	334.1	350.2	**1,594.8**
Tax allowance	40.9	42.2	42.5	43.4	47.5	**216.5**
Unsmoothed revenue requirement	**826.1**	**860.3**	**928.7**	**999.6**	**1,080.2**	**4,694.8**
Note: numbers may not add due to rounding						

The revenue requirements from the AER's PTRM are shown diagrammatically in Figure 14.1 below.

Figure 14.1: Building block revenue requirements over *2009 regulatory control period*



As shown in Table 14.2 and Figure 14.1, the unsmoothed revenue requirements increase from $826 million in 2009/10 to $1,080 in 2013/04.

14.5 X factors

Applying the forecast consumption volumes for the *2009 regulatory control period* to the building block revenues results in an average price path that is adjusted (along with CPI) by the X factors as provided in Table 14.3. Integral Energy has provided X factors based on a scenario with a higher initial year pricing increase (P_o) and a scenario with a constant X factor over the 2009 *regulatory control period*. A negative X factor indicates an increase to average network prices.

Table 14.3: Proposed X factors over the *2009 regulatory control period*

Nominal $m	Forecast year ending 30 June				
Details	**2010**	**2011**	**2012**	**2013**	**2014**
X factor	-18.2	-3.5	-3.5	-3.5	-3.5

The above X factors result in real average distribution price increases over the period. While Integral Energy's *regulatory proposal* sets out the expenditures, programs and projects required to

achieve deliver the service standards in an efficient and sustainable manner, an increase in expenditures is required over the *2009 regulatory control period*, which will result in a corresponding increase in average network prices.

The X factor smoothing proposed by Integral Energy satisfies the requirements of clause 6.5.9(b)(2) and (3) of the *Transitional Rules* in that it meets the following criteria:

- The maximum allowed revenue requirement is approximately equal to the NPV of the annual building block revenue requirement; and
- The expected maximum allowed revenue for the last regulatory year is as close as reasonably possible to the annual building block revenue requirement for that year.

14.5.1 Impact on X factor of framework changes

Integral Energy notes that a significant proportion of the average price increase from 2008/09 to 20009/10 is as a result of changes, or required adjustments, to the regulatory framework in place at the time of the *current regulatory control period*.

In particular, the following have occurred:

1. Changes to the return on capital calculation as a result of changes in nominal interest rates and inflation expectations, as well as changes in the required debt risk premium calculation in accordance with the *Transitional Rules*; and
2. IPART's approach to addressing the distribution over recovery from the previous *regulatory control period* as discussed in section 17.4.2.

14.6 Transmission use of system (TUOS) pass through

In completing its initial and annual *pricing proposals*, in accordance with clause 6.18.7 of the *Transitional Rules* and the AER's *Guideline on control mechanisms for direct control services for the ACT and NSW 2009 distribution determinations – February 2008* (Standard Control Guideline), Integral Energy will report to the AER the following information in relation to transmission related charges:

1. Transmission charges paid to TNSPs for use of the transmission system;
2. Avoided TUOS paid to embedded generators; and
3. Payments made to other DNSPs for use of their network.

Integral Energy will base its transmission cost recovery tariffs for each year (t) on a forecast of the transmission related payments for that year. Where there is a difference between forecast and actual transmission related payments, resulting in an over or under recovery of TUOS charges for year *t-2*, Integral Energy will recover or return this amount in year *t*.

Integral Energy will apply the following formula contained in appendix B of the AER's Standard Control Services Guideline to determine the amount to recover for TUOS charges:

Amount to be passed onto customers in year *t*	=	Forecast TUOS in year *t* + overs and unders adjustment to be applied in year *t*

Where:

Overs and unders adjustment to be applied in year *t*	=	Amount actually paid for TUOS in year *t-2*, minus the amount passed onto customers by way of TUOS charges in year *t-2*

14.7 Indicative prices for standard control and alternative control services

The *Transitional Rules* require that Integral Energy include its current and proposed services, and its indicative prices for each individual standard control service and alternative control service for the *2009 regulatory control period.* These are set out in pro forma 2.2.5 included in Attachment 1.

14.7.1 Standard Control Services

The indicative prices for DUOS services for the *2009 regulatory control period* are provided in pro forma 2.2.5 included in Attachment 1. These prices are produced by the AER's PTRM model using the X factors calculated based on Integral Energy's forecast energy consumption and customer growth at a tariff component level. The actual prices charged in each year of the *2009 regulatory control period* would be based on the X factors approved by the AER in its final decision and the annual pricing proposals submitted by Integral Energy to the AER for approval in each year of the *2009 regulatory control period* in accordance with clause 6.18.7 of the *Transitional Rules*.

Under the Transitional Rules, Monopoly and Miscellaneous Services and Emergency Recoverable Works are to be classified as direct control, standard control services. The AER requires Integral Energy to provide indicative prices for these services as part of the *regulatory proposal*. There are a number of options available for determining the prices for Monopoly and Miscellaneous services. Integral Energy proposes to increase prices by the cumulative CPI from 2004 to 2009 (14.4%) and then index the prices by the annual CPI throughout the regulatory period. The indicative prices for Monopoly and Miscellaneous services for the *2009 regulatory control period* are provided in pro forma 2.2.5 included in Attachment 1. No changes are proposed to the terms and conditions under which the fees are charged, and therefore these would remain the same as that implemented under IPART's 2004 Determination

In relation to Emergency Recoverable Works, Integral Energy proposes to continue with the pricing principles currently in place under the IPART 2004 Determination.

Appendix G of this *regulatory proposal* provides further explanation of Integral Energy's proposal in relation to Monopoly and Miscellaneous Services and Emergency Recoverable Works.

14.7.2 Alternative Control Services

The construction and maintenance of public lighting infrastructure is the only alternative control service proposed by Integral Energy. The indicative prices for the *2009 regulatory control period* are provided in pro forma 2.2.5 included in Attachment 1. These prices are based on the *building block proposal* for public lighting outlined in Chapter 19.

15

Customer and service outcomes

This chapter examines the following outcomes of Integral Energy's *regulatory proposal*:

- The expected impact on the reliability of electricity supply;
- The impact on the security standards for the Integral Energy's network;
- The financial impacts for Integral Energy over the *2009 regulatory control period*; and
- The average bill impact for residential and general supply customers arising from the proposed change in standard control (distribution) charges.

The outcomes in this chapter are indicative only, and are based on the AER's acceptance of the expenditure programs and related funding requirements contained in this *regulatory proposal*. Any adjustments to the *regulatory proposal* would necessitate a commensurate adjustment to the indicative outcomes contained in this chapter.

15.1 Customer pricing impacts

Implementation of this *regulatory proposal* with the proposed building blocks and resulting indicative price path would increase the charges that Integral Energy imposes on its customers:

- The average residential customer would pay an additional $89 (or 24 cents per day) on the distribution network use of system charges in the first year of the *2009 regulatory control period*; and
- The average business customer would pay an additional $301 (or 82 cents per day) on the distribution network use of system charges in the first year of the *2009 regulatory control period*.

15.2 Reliability outcomes

Integral Energy's *regulatory proposal* complies with the NSW DRP Licence Conditions for reliability performance, both for individual feeder and feeder average performance standards, and complies with the NSW DRP Licence Conditions for design standards, and with other statutory and industry based obligations including for vegetation management.

Through a combination of meeting its regulatory obligations and internal stretch targets, Integral Energy is aiming for a stretch reliability improvement, as measured by unplanned SAIDI, of approximately 20 per cent over the current year forecast of 94 minutes, to approximately 75 minutes by the end of the *2009 regulatory control period*.

Based on the reliability improvement performance achieved over the *current regulatory control period*, and subject to the AER making a determination which accommodates the expenditure levels contained in this *regulatory proposal*, Integral Energy believes it can achieve this ambitious target.

15.3 Security standard outcomes

Integral Energy has analysed the implications of the revenues contained in this *regulatory proposal* on the security standards of its network business. Integral Energy's analysis establishes that:

- The revenue level is just sufficient to achieve Integral Energy's security standard obligations, including those contained in the NSW DRP Licence Conditions; and
- A lower revenue requirement would potentially impact on Integral Energy's ability to meet its service standard obligations.

15.4 Financial implications of this *regulatory proposal*

Integral Energy has analysed the implications of the revenues contained in this *regulatory proposal* on the financial viability and sustainability of its network business. Assuming current levels of gearing and dividend payout ratio of profit after tax, Integral Energy's analysis establishes that:

- The revenue level is sufficient to achieve the minimum BBB+ investment credit grade rating required by Integral Energy and its shareholder; and
- A lower revenue requirement would potentially impact on Integral Energy's financial viability and its ability to meet its regulatory obligations, including the NSW DRP Licence Conditions.

16

Cost pass through

The *Transitional Rules* provide for the cost pass through of uncertain events that are beyond the control of the DNSPs.

This chapter sets out Integral Energy's nominated *pass through events* and its position on the *materiality threshold* in relation to the cost pass through mechanism.

16.1 Summary

In addition to the *pass through events* defined in Chapter 10 of the Rules, Integral Energy nominates a number of events that it considers should be treated as *pass through events*.

The pass though events defined in the Rules are:

- *a regulatory change event,*
- *a service standard event,*
- *a tax change event; and*
- *a terrorism event.*

Integral Energy's nominated pass through events are:

- *an asbestos event;*
- *an automated interval meters event;*
- *a business continuity event;*
- *a change in ownership event.*
- *a change in reporting requirements event;*
- *a distribution loss event;*
- *an electric and magnetic fields event;*
- *an emissions trading scheme event;*
- *a functional change event;*
- *a gradual pollution event;*

- *a retailer of last resort event; and*
- *a sabotage event.*

Table 16.1 provides definitions for these nominated *pass through events*.

Integral Energy has considered an appropriate materiality threshold for each of these nominated events. It considers that the AER's preliminary position[36] on the materiality threshold to apply for the 2009 regulatory control period is appropriate for the majority of the nominated pass through events; that is a *pass through event* is material if:

1. The revenue impact in any one year exceeds 1% of the respective DNSP's revenue for the first year of the regulatory period; or

2. The proposed capital expenditure exceeds 5% of the aggregate annual revenue requirement in the first year of the regulatory period.

However, Integral Energy believes that the materiality threshold should be cumulative; that is, if one or more related events occur that on their own do not reach the threshold but in aggregate the events do reach the threshold, then the materiality test would be passed.

In addition, Integral Energy proposes that the materiality threshold for *an automated interval meters event* should be set at $nil and the materiality threshold for *a change in reporting requirements event* should be set at $100,000.

In accordance with clause S6.1.3(2) of the Transitional Rules, Integral Energy has prepared a proposed pass through clause, provided as Appendix T.

16.2 Regulatory information requirements

The regulatory information requirements are summarised in Box 16.1.

Box 16.1: Cost pass through regulatory information requirements
Clause 6.2.8(a)(4) of the *Transitional Rules* provides that the AER may publish guidelines as to the likely approach it will take in determining materiality in the context of possible *pass through events*. Chapter 10 of the *Rules* defines a *pass through event* as any of the following events: (a) a regulatory change event; (b) a service standard event;

[36] As specified in the AER's November 2007 Issues Paper "Matters relevant to distribution determinations for ACT and NSW DNSPs for 2009-2014"

Box 16.1: Cost pass through regulatory information requirements
(c) a tax change event; (d) a terrorism event. An event nominated in a distribution determination as a pass through event is a pass through event for the determination (in addition to those listed above). Clause 6.12.1(4)(14) of the *Transitional Rules* provides that a distribution determination is predicated on the AER making a decision on the additional *pass through events* (amongst other matters) that are to apply for the regulatory control period. Clause S6.1.3(2) of the *Transitional Rules* provides that a *building block proposal* must contain a proposed pass through clause with a proposal as to the events that should be defined as *pass through events*.

This *regulatory proposal* provides the information to address these *Transitional Rules* requirements.

16.3 Integral Energy's approach to managing and costing risks

Events that are uncertain, in terms of their likelihood or their consequence, and that are generally outside the direct control of the business, represent a significant business and regulatory challenge.

A business is faced with a number of options to either mitigate the likelihood of the risk through its expenditure programs, or to mitigate the financial consequence through obtaining insurance with an external party or to self insure for the costs associated with the event should it occur.

The AER's regulatory framework provides two mechanisms by which the business can seek compensation for the expected value of these risks:

1. Seek a self insurance premium to compensate for self insured risks that the business is expected to face; or

2. Seek a pass through of the cost of an event when and if the event occurs.

Integral Energy's *regulatory proposal* utilises both these mechanisms. As set out in Chapter 10 of this regulatory proposal, Integral Energy has included the estimated cost of self insurance premiums related to a number of risks in its operating expenditure forecasts. These cost estimates are based on advice from SAHA International Ltd (Appendix O).

This chapter discusses the risks (and the associated events) that Integral Energy considers are most efficiently and practically managed through a cost pass through mechanism because the risks are significant in terms of their consequence, but uncertain in terms of the their likelihood or exact nature; a cost pass through represents a practical mechanism to keep prices as low as

possible by only passing through the costs of the event to customers if and when the event occurs. A number of these risks were also addressed in the SAHA report.

16.4 Integral Energy's nominated *pass through events*

In addition to the events defined as *pass through events* under the Rules, Integral Energy nominates the events identified in Table 16.1 as *pass through events* over the *2009 regulatory control period*:

Integral Energy has not included any costs in this *regulatory proposal* to address these events.

Integral Energy notes that some of the nominated events could arguably fall within the definition of *regulatory change event*. However, Integral Energy is proposing that some of these nominated events be treated differently with respect to the materiality threshold to apply. In addition, Integral Energy requires certainty on the treatments of all these events.

Further discussion on a number of the nominated events is provided in the SAHA report (Appendix O). The remaining events are discussed in the following sections.

Table 16.1: Nominated *pass through events*

Event	Definition	Rationale & further details
Asbestos event	An asbestos event occurs if during the course of the regulatory control period Integral Energy becomes liable for any claims arising from the presence of asbestos or any asbestos related materials in any of its assets or the use of asbestos or any asbestos related materials in its operations including claims by present and former employees of Integral Energy and/or third parties and as a consequence, the costs to Integral Energy of providing direct control services are materially increased.	SAHA (Appendix O)
Automated interval meters event	An automated interval meters event is an event which results in Integral Energy being required to install automated interval meters (otherwise known as smart meters) for some or all of its customers or to conduct large scale metering trials during the course of the regulatory control period, regardless of whether that requirement takes the form of the imposition of a statutory obligation or not, and which: (a) falls within no other category of pass through event; and (b) materially increases the costs of Integral Energy providing the direct control services.	Section 16.4.1
A business continuity event	A business continuity event occurs if during the course of the regulatory control period an event occurs which significantly impacts the ability of Integral Energy to provide direct control services in accordance with its usual operations, regardless of whether the event impacts a specific region or section of the population or is more widespread, and as a consequence of that event, the costs to Integral Energy of providing direct control services are materially increased.	SAHA (Appendix O)
A change in ownership event	A change in ownership event occurs if during the course of the regulatory period there is a change to the ownership of Integral Energy's retail electricity business and as a consequence the costs to Integral Energy of	Section 16.4.2

Event	Definition	Rationale & further details
	providing direct control services are materially increased.	
A change in reporting requirements event	A change in reporting requirements event is an event which results in the imposition of additional reporting requirements on Integral Energy as a Distribution Network Service Provider to the Australian Energy Regulator or any other regulator which: (a) occurs during the regulatory control period; (b) falls within no other category of pass through event; and (c) materially increases the costs of Integral Energy providing the direct control services.	Section 16.4.3
A distribution loss change event	A distribution loss change event is an event which results in the imposition of costs or legal obligations on Integral Energy in relation to distribution losses from the operation of its distribution network which: (a) occurs during the regulatory control period; (b) falls within no other category of pass through event; and (c) materially increases the costs of Integral Energy providing the direct control services.	Section 16.4.4
Electric and magnetic fields event	An electric and magnetic fields event occurs if during the course of the regulatory control period either of the following types of events occur: (a) Integral Energy becomes liable for any claims directly related to electric and magnetic fields from any of the assets it owns and operates or has owned and operated including claims by present and former employees of Integral Energy and/or third parties; or (b) The manner in which Integral Energy undertakes 'live-line' work is affected due to the potential exposure of the people undertaking this work to electric and magnetic fields and as a consequence of that event, the costs to Integral Energy of providing direct control services are materially increased.	SAHA (Appendix O)
An emissions trading scheme event	An emissions trading scheme event is an event which results in the imposition of legal obligations on Integral Energy arising from the introduction or operation of a carbon emissions trading scheme by the Commonwealth during the course of the regulatory control period and which: (a) falls within no other category of pass through event; and (b) materially increases the costs of Integral Energy providing the direct control services.	SAHA (Appendix O)
A functional change event	A functional change event is an event which results in the imposition of new obligations, or changes the nature of the existing obligations, on Integral Energy as a Distribution Network Service Provider which: (a) occurs during the regulatory control period;	Section 16.4.5

Event	Definition	Rationale & further details
	(b) falls within no other category of pass through event; and (c) materially increases the costs of Integral Energy providing the direct control services.	
A gradual pollution event	A gradual pollution event occurs if during the course of the regulatory control period either of the following events occur: (a) Integral Energy becomes liable for any claims directly arising from the conduct of its network operations which resulted in the pollution of the surrounding environment; or (b) The manner in which Integral Energy undertakes its network operations is affected due to the unacceptable risk of polluting the surrounding environment; and as a consequence of that event, the costs to Integral Energy of providing direct control services are materially increased.	SAHA (Appendix O)
A retailer of last resort event	A retailer of last resort event is an event which results in the imposition of costs or legal obligations on Integral Energy relating to the Retailer of Last Resort scheme under the Electricity Supply Act 1995 (NSW) and which event: (a) occurs during the regulatory control period; (b) falls within no other category of pass through event; and (c) materially increases the costs of Integral Energy providing the direct control services	SAHA (Appendix O)
A sabotage event	A sabotage event occurs if an act (including but not limited to, the use of force or violence or the threat of force or violence) of any person or group of persons (whether acting alone or on behalf of or in connection with any organisation or government) materially increases the costs to Integral Energy of providing direct control services and that event is not a terrorism event under the Rules.	SAHA (Appendix O)

16.4.1 An automated interval meters event

In April 2007, the Council of Australian Governments (COAG) committed to a national mandated rollout of electricity smart meters to areas where benefits outweigh costs, as indicated by the results of a cost benefit analysis.

Recent announcements from COAG and MCE identify the potential for a mandated, distributor led rollout of smart meters to customers across NSW. Due to considerable uncertainty surrounding the form, associated costs and forecasting implications of such a rollout, or any associated trials, Integral Energy considers that a cost pass through is the most appropriate regulatory means of addressing this issue.

Integral Energy has defined *a smart meter rollout event* as:

An automated interval meters event is an event which results in Integral Energy being required to install automated interval meters (otherwise known as smart meters) for some or all of its customers or to conduct large scale metering trials during the course of the regulatory control period, regardless of whether that requirement takes the form of the imposition of a statutory obligation or not, and which:

(a) falls within no other category of pass through event; and

(b) materially increases the costs of Integral Energy providing the direct control services.

This definition is intended to cover a situation where Integral Energy is required to undertake work, and incurs costs, associated with a full or partial smart meter rollout or with undertaking trials related to a smart meter rollout.

The Ministerial Council on Energy has recently published a Regulatory Impact Statement (RIS) concerning the cost benefit analysis of a full smart meter rollout. The MCE's decision in relation to any smart meter rollout is expected to be made at its meeting in June 2008.

The size of the mass rollout of interval meters proposed by the MCE is unprecedented in Australia. There is currently limited understanding of the total impact on a DNSP's business of a mass rollout and how it will impact costs. Given the likely decision to proceed with a mass rollout, but with uncertainty as to the exact timing and approach involved, it is proposed that any Government decision to rollout interval meters be treated as a *pass through event*.

A decision to mandate the rollout of smart meters may affect Integral Energy in other ways, such as changes to:

- The volume and pattern of consumer demand arising from the rollout and any associated changes in tariff structures, requiring adjustments to the demand and energy forecasts for the *2009 regulatory control period* to be revisited;
- Performance requirements on the network, where additional expenditure may be required for the introduction of improved, real-time performance monitoring and response systems ("smart grid" technology); and
- Communication and information storage and transfer functionality, for example processes and systems, and associated costs.

As part of preparation for a mass rollout of smart meters, Integral Energy may need to undertake trials to facilitate an efficient rollout. It is proposed that the costs associated with metering trials to enable an efficient rollout are also treated as a cost pass through.

Given the significant scale of any mass rollout of smart meters, it will be important to undertake significant trials to ensure implementation risks are identified and managed so that a smooth rollout can occur. As the nature, scope and timeframes for any trials are yet to be confirmed, Integral Energy proposes that any necessary trials be treated as pass through events, rather than incorporating estimates of the costs into the expenditures contained in this *regulatory proposal*.

16.4.2 A change in ownership event

The NSW Government has indicated that it intends to transition a number of the State's electricity assets in the near future including the potential separation of Integral Energy's retail business from its network operations. The consequences for the regulated network business of such a transaction are widespread. The cost to Integral Energy of providing direct control services could be materially increased as:

- A portion of the corporate costs – such as the costs of the Board and CEO – would be fully allocated to a standalone network business where these are currently shared with Integral Energy's retail business; and
- A transition may result in stranded costs, additional resource costs or the costs of additional obligations placed on the network business.

Integral Energy has not included any costs in this *regulatory proposal* associated with *a change in ownership event*. The nature and magnitude of any additional ongoing requirements on the network business will remain uncertain until a formal Government policy announcement takes place.

Therefore, Integral Energy proposes to treat the additional costs imposed on the network business arising from the separation of Integral Energy's retail business as a pass through event for the *2009 regulatory control period*.

16.4.3 A change in reporting requirements event

The AER has not comprehensively set out its detailed requirements relating to reporting requirements for DNSPs arising from the move to the national regulatory framework.

Given that Integral Energy's information and management systems, processes and polices are designed to meet current reporting requirements, new reporting obligations, including in relation to the preparation of annual regulatory accounts, could materially affect the costs to Integral Energy of providing direct control services. Integral Energy proposes the additional costs associated with AER reporting requirements, including, but not limited to, the preparation of annual regulatory accounts, be treated as a pass through event.

16.4.4 A distribution loss event

Currently Integral Energy reports its Distribution Loss Factors (DLFs) to the AER for the purpose of settling retailer bills and payments to distributors. DNSPs already face incentives to restrict losses as part of their capital and operating expenditure planning and approval processes. The AER has decided that it will not include distribution losses as part of its Efficiency Benefit Sharing Scheme during the upcoming regulatory period. However, there may be a material cost to the business should an emissions charge be imposed in relation to distribution losses as part of the Federal Government's greenhouse policy or if financial responsibility for losses is transferred to network businesses.

Integral Energy proposes that both the direct (carbon price) and indirect (network planning and operational) costs associated with meeting that impost should be treated as possible pass through events.

In addition, Integral Energy proposes that any requirement placed on the network business to become financially responsible for settling the costs of losses in the market be treated as a pass through event with the costs to be included in the regulatory determination accordingly.

16.4.5 A functional change event

A transfer of non-pricing distribution functions to a national framework is expected to occur during the *2009 regulatory control period*. Integral Energy seeks the associated costs of any additional obligations or requirements placed on network businesses as a result of these reforms to be considered pass through events.

The current MCE workplan includes the review of a number of structural arrangements within the NEM. These include distributor obligations to provide connection services for small end customers and the interface with retailers and embedded generators. The results of that review are expected to be included in a move to a national framework by the end of 2009. The changes to existing arrangements will have a transitional and ongoing costs impact that are not included in Integral Energy's expenditure projections for the upcoming regulatory control period.

Therefore, it is proposed that any transfer of non-pricing distribution functions to network businesses be treated as a pass through event with the incremental costs to be included in the regulatory framework accordingly.

16.5 Materiality threshold for pass through events

The AER's preliminary position on the materiality threshold to apply for the *2009 regulatory control period*, as specified in its November 2007 Issues Paper titled *Matters relevant to distribution determinations for ACT and NSW DNSPs for 2009-2014* is to adopt a threshold which assesses the revenue effect of a *pass through event*, which is similar to the current approach adopted in the ACT and in the NSW determinations made by the IPART.

The AER's preliminary position is that a *pass through event* is material if:

1. The revenue impact in any one year exceeds 1% of the respective DNSP's revenue for the first year of the regulatory period; or

2. The proposed capital expenditure exceeds 5% of the aggregate annual revenue requirement in the first year of the regulatory period.

The AER has indicated that it intends to use the PTRM to assess the revenue impact of an event. Integral Energy notes that the AER has not issued a final decision with respect to an applicable materiality threshold.

While Integral Energy generally agrees with the AER's proposed use of a materiality threshold at the levels indicated above, it believes that the materiality threshold should be cumulative; that is, if one or more related events occur that on their own do not reach the threshold but in aggregate the events do reach the threshold, then the materiality test would be passed. In addition, Integral Energy proposes that the materiality threshold for *an automated interval meters event* should be set at $nil and the materiality threshold for *a change in reporting requirements event* should be set at $100,000.

In relation to the materiality threshold for *a an automated interval meters event*, Integral Energy considers that setting a materiality threshold of $nil will ensure that trials can be undertaken with no incentive to introduce larger (or smaller) trials than necessary to ensure the Government's policy objective can be delivered efficiently.

In relation to the materiality threshold for a *change in reporting requirements event*, Integral Energy considers that a threshold of $100,000 for this event allows for a reasonable degree of changes to the current reporting arrangements to be accommodated without exposing the organisation to unreasonable financial risks.

17

AER Guidelines & transitional issues

The AER, in accordance with the *Transitional Rules*, has developed guidelines setting out its approach to establishing incentive mechanisms in the following areas:

- An efficiency benefit sharing scheme;
- A service target performance incentive scheme; and
- A demand management incentive scheme.

This chapter sets out Integral Energy's comments on these incentive schemes and discusses a number of transitional issues arising from the move to the national regulatory framework.

17.1 Efficiency benefit sharing scheme

The *Transitional Rules* provide for an efficiency benefit sharing scheme (EBSS) for DNSPs and users to share the efficiency gains/losses derived from the DNSP's operating expenditure being less/more than the forecast operating expenditure allowed by the AER.

This section sets out Integral Energy's response to the AER's guideline on the EBSS and the requirements of the RIN.

17.1.1 Regulatory requirements

The *Transitional Rules* and AER Guidelines requirements are summarised in Box 17.1.

Box 17.1: EBSS regulatory requirements
Clause S6.1.3(3) of the *Transitional Rules* provides that a *building block proposal* must contain at least a description, including relevant explanatory material, of how the DNSP proposes the efficiency benefit sharing scheme should apply for the relevant regulatory control period. Section 5.7.2 of the AER's *Final Decision: Efficiency Benefit Sharing Scheme for the ACT and NSW 2009 distribution determinations* (February 2008) provides that the following information will be required of DNSPs in their regulatory proposal before the commencement of the *2009 regulatory control period*: • A description of their capitalisation policy including any proposed changes to the policy and a calculation of the impact of those policy changes on forecast operating expenditure; • The method for accounting for demand growth to be used at the end of the regulatory control period to adjust forecast growth for outturn demand growth;

Box 17.1: EBSS regulatory requirements
• Any proposed cost category exclusions including disaggregated forecasts for those cost categories to enable exclusion from the EBSS; • Forecast operating expenditure for non-network alternatives for exclusion from the EBSS.

The following sections address the regulatory requirements relating to the EBSS for the as outlined in Box 17.1.

17.1.2 Capitalisation policy

Clause 2.3.6(a)(2) of the RIN requires that Integral Energy provide its up-to-date capitalisation policy. Integral Energy has recently decided to revise its capitalisation policy to increase the capitalisation threshold from $500 to $1,000 effective 1 July 2008. On an ongoing annual basis, it is estimated that between $350,000 and $500,000 of purchases will now be expensed rather than capitalised. Integral Energy's policies and procedures are expected to be updated to reflect this decision by 30 June 2008. Integral Energy's current capitalisation policy is set out in Company Policies 6.4: Capital expenditure and 9.2.7: Network capital expenditure planning. These documents are included in Appendix Y.

17.1.3 Taking account of actual demand growth

Information concerning Integral Energy's forecasting process and forecasts is in Chapter 6. Integral Energy will advise the AER at the end of the *2009 regulatory control period* of any changes in actual peak demand, energy consumption and customer numbers compared with AER forecasts. Integral Energy will also advise the AER of any required adjustments to the EBSS to take account of these variances.

Integral Energy looks forward to working with the AER to better define how variances in outturn demand and cost changes will be addressed prior to the introduction of the EBSS at the start of the *2009 regulatory control period.*

17.1.4 Proposed cost category exclusions

In addition to the costs associated with the pass through events nominated in Chapter 16, payment for transmission use of system (TUOS) charges is proposed to be treated as an excluded cost category for the purposes of the EBSS.

The AER requires that disaggregated forecast information for proposed cost category exclusions is provided as part of the *regulatory proposal*. However:

- Pass through costs are by nature uncertain and difficult quantify with accuracy - information concerning those costs cannot therefore be provided; and

- Forecast information for TUOS is only available one year in advance. At the time of preparing the *regulatory proposal*, information concerning TUOS for the *2009 regulatory control period* is not available.

Integral Energy proposes to provide the AER with the relevant information as part of the annual pricing proposal process when it becomes available.

17.1.5 Forecast operating expenditure for non-network alternatives

As required by clause 2.3.9(a)(1) of the RIN, information concerning Integral Energy's forecast non-network projects is in Chapter 7.6.4.

The introduction of the EBSS – the first time such a mechanism will be applied to Integral Energy – brings with it a number of uncertainties as to how the mechanism will be adjusted for growth and changes in activity levels. There is significant financial exposure that would be introduced if the EBSS does not adequately consider these matters, potentially impacting on the funding available to meet service obligations in the *2014 regulatory control period*.

It is proposed that the AER introduce a mechanism in its final determination to allow, for any negative carry forward amounts to not be applied or to be offset against any positive carry forward amounts. This approach would preserve the integrity of the incentive mechanism, designed to encourage genuine efficiency, while not unreasonably hindering the ability for DNSPs to meet service standard obligations in the *2014 regulatory control period*.

Integral Energy looks forward to working with the AER to better define how cost variances will be addressed prior to the introduction of the EBSS at the start of the *2009 regulatory control period.*

17.2 Service target performance incentive scheme

This section outlines Integral Energy's views on the AER's service target performance incentive scheme (STPIS).

Clause 6.6.2 of the *Transitional Rules* provides that the AER may develop and publish a STPIS to provide incentives (which may include targets) for DNSPs to maintain and improve performance. The objective of the scheme is to discourage DNSPs from reducing expenditure such that their performance levels fall below those assumed in the DNSP's *regulatory proposal*.

17.2.1 AER decision

The AER stated in its *Final decision service target performance incentive scheme arrangements for the ACT and NSW 2009 distribution determinations* (February 2008)[37] that it will not introduce a STPIS with a financial impact for the NSW and ACT DNSPs for the *2009 regulatory control*

[37] Page 15.

period. However, the AER will implement a data collection and analysis exercise in accordance with clause 6.6.2(h) of the *Transitional Rules*.

To progress the development of the STPIS, the AER will:

1. Complete the national STPIS as required to be developed under the general Chapter 6 *Rules* (expected by mid 2008);

2. Determine specific data collection requirements (including parameters) and other elements of the arrangement in accordance with the national STPIS, as soon as practicable following the finalisation of national STPIS;

3. Undertake annual reporting of performance data against the agreed measures commencing from 1 July 2009, with the first set of data expected to be reported to the AER during 2010;

4. Collect data over a two to three year period before engaging with the businesses to determine appropriate targets to apply for the data analysis phase, based on the principles within the national STPIS; and

5. Conduct an analysis of each DNSP's performance against their targets under the framework of the national STPIS in the final years of the *2009 regulatory control period* and model the financial outcomes that would have prevailed, had revenue been placed at risk.

Following the completion of the trial, the AER will conduct and publish a review and conclusions of the outcomes of the exercise towards the end of the *2009 regulatory control period*. This will inform public consultation (and the framework and approach process) for consideration in applying the national STPIS to the ACT and NSW DNSPs at the *2014 regulatory control period*.

17.2.2 Integral Energy's position

Integral Energy broadly supports the AER's proposed adoption of a paper-based STPIS trial during the *2009 regulatory control period* based on a generally applicable national scheme. This approach is appropriate in light of the AER's consultation obligation under the *Transitional Rules*.

Integral Energy will actively participate in the STPIS trial to ensure a scheme is developed that appropriately targets service incentives, while taking account of relevant regulatory obligations and other incentives that exist elsewhere within the regulatory framework, including the Efficiency Benefit Sharing Scheme (EBSS).

While a paper-based trial may be appropriate to define the data requirements and parameters to be measured in a STPIS, Integral Energy cautions against using actual results of the trial for the purposes of establishing STPIS targets and incentives for the *2014 regulatory control period.* This concern is due to the absence of financial incentives in a paper-based trial that would otherwise need to be considered by Integral Energy in its decision making framework.

Integral Energy looks forward to working with the AER to better define how the STPIS paper trial will be conducted over the *2009 regulatory control period.*

17.3 Demand management incentive schemes (DMIS)

The AER has recently issued a Guideline titled *Demand management incentive schemes for the ACT and NSW 2009 distribution determinations* (DMIS).

In its DM Incentive Scheme Guideline, the AER will apply two demand management incentive schemes to the Integral Energy 2009 distribution determination:

- A D-factor scheme to apply to Integral Energy as it was applied by IPART in the *current regulatory control period*; and
- A demand management innovation allowance to apply to Integral Energy (as per appendix D of the AER's guideline).

These two demand management incentive schemes will be applied in the *2009 regulatory control period*, and to the extent that both schemes involve a lag between the approval of demand management programs and the subsequent impact on network prices, will also have financial implications for the *2014 regulatory control period*.

17.3.1 Summary of regulatory requirements

Box 17.2: DMIS regulatory information requirements
Clause S6.1.3(5) of the *Transitional Rules* provides that a *building block proposal* must contain at least a description, including relevant explanatory material, of how the DNSP proposes the demand management incentive scheme should apply for the relevant regulatory control period.

17.3.2 D-factor scheme

Integral Energy supports the AER's continuation of the application of the D-factor scheme in NSW for the *2009 regulatory control period*, as it was applied by IPART in its 2004 Determination. The D-factor scheme to be applied by the AER is identical to that in IPART's Guidelines on the Application of the D-factor in the 2004 Determination (IPART's D-factor guidelines). IPART's guidelines represent the results of a demand management consultation group established to develop principles and guidelines on:

- Avoided distribution costs;
- Foregone revenue;
- Loss management investments; and
- Network planning.

The D-factor scheme operates on a two year lag. Integral Energy supports the AER's commitment to honour the recovery of relevant expenditure undertaken as part of the D-factor scheme in the final two regulatory years of the *2009 regulatory control period*, to be recovered in the first two regulatory years of the *2014 regulatory control period*.

As it has done in the *current regulatory control period*, Integral Energy will pursue demand management initiatives throughout the course of the *2009 regulatory control period* and will seek recovery of the eligible costs in accordance with the AER's Guidelines.

17.3.3 Demand management innovation allowance

The AER will also apply a demand management innovation allowance to Integral Energy for the *2009 regulatory control period*. The aim of the scheme is to encourage DNSPs to undertake efficient broad-based demand management which may provide long term benefits to consumers and DNSPs.

The AER's demand management innovation allowance will allow Integral Energy to seek recovery of up $600,000 per annum, on an ex post basis, over the *2009 regulatory control period*. The AER considers that the amounts provided under the scheme will allow DNSPs to conduct a number of demand management programs over the *2009 regulatory control period*. Integral Energy has not included any costs associated with the demand management innovation allowance in its forecasts.

Integral Energy acknowledges that the AER's introduction of the DM innovation allowance is a positive move to encourage demand management innovation and intends to undertake innovative tariff and non tariff-based programs to pursue demand reductions across the network during the *2009 regulatory control period*.

While supportive of the demand management innovation allowance, an increase in the annual allowance to $1 million is sought to support a higher level of innovative demand management activity for the long term benefit of consumers. The increase in the annual allowance to $1 million per year is in line with the AER's recommended annual allowance to be provided for EnergyAustralia and reflects Integral Energy's view that the relative size of the businesses should not reduce the amount of funding provided for this important element of the regulatory framework.

In seeking funding through the demand management innovation allowance, Integral Energy will implement the AER's determination on this matter and will apply the AER's scheme accordingly. Integral Energy looks forward to working with the AER to ensure the demand management incentive schemes are effective in achieving future demand reductions.

17.4 Transitional issues

The *Transitional Rules* were established by the Ministerial Council on Energy (MCE) in order to provide certainty to customers, DNSPs and the AER for the *2009 regulatory control period* given that the new national Rules would not be in place in sufficient time to be fully incorporated into the businesses' *regulatory proposals*.

This section does not repeat the provisions of the *Transitional Rules* including the specific requirements placed on the AER and Integral Energy during the determination process. Rather, it describes those areas that are not specifically addressed in the *Transitional Rules*, but that are nonetheless important for the AER to consider when issuing its final determination for the *2009 regulatory control period*.

17.4.1 Regulatory information requirements

The *Transitional Rules* requirements and AER's information requirements as specified in the RIN are summarised in Box 17.3.

Box 17.3: Transitional issues regulatory information requirements
The AER requires an understanding of any transitional issues facing the DNSP in moving to the new national framework. The DNSP's regulatory proposal must contain details of any transitional issues (either arising in chapter 11 of the *Transitional Rules* or otherwise) that it considers should be taken into account by the AER when making the 2009-14 distribution determination. To assist in assessing the transitional arrangements, the AER has developed pro forma 2.4.1.

This *regulatory proposal* provides the information to address the RIN requirements.

17.4.2 Transitional issues

In addition to the provisions in the *Transitional Rules*, Integral Energy has identified the following issues considered relevant for the *2009 regulatory control period* in the transition from a state-based to a national regulatory framework:

- Prices set below cost reflective levels;
- Forecast TUOS charges; and
- Pricing side constraints.

The following sections address these transitional issues.

17.4.2.1 Prices set below cost reflective levels

IPART's 2004 Determination was premised on the move from a revenue cap to a weighted average price cap (WAPC) form of price control. As the "overs and unders account" previously established by IPART to collect any difference between allowed and actual revenues – central to a revenue cap – was not required under the WAPC, Integral Energy was directed to return its *forecast distribution* over recovery balance as at 30 June 2004 ($73 million) to customers through lower prices during the *2004 regulatory control period*.

IPART's approach to eliminating the *forecast distribution* over recovery balance was to reduce Integral Energy's building block revenues, calculated based on efficient costs, by 1/5 of the over

recovery balance, in net present value (NPV) terms, in each year of the *2004 regulatory control period*. In accordance with IPART's approach, the *forecast distribution* over recovery balance will be fully returned to customers by the end of 2008/09. The 2008/09 prices have therefore not been set at a level to recover efficient costs; rather, they have been set to recover efficient costs less the adjustment required to eliminate the forecast distribution over recovery, in NPV terms ($22.1 million).[38]

A revenue requirement based on efficient costs, that implicitly includes the $22.1 million correction for the ongoing return of the over recovery, results in a change in prices in 2009/10 as a direct result of the treatment of the over recovery balance. If this adjustment is not made, prices will be below cost reflective levels by $22.1 million in perpetuity, resulting in a transfer of value to customers of approximately $225 million.[39]

Integral Energy seeks specific reference in the final determination that a portion of any price change in 2009/10 arises solely as a result of adjusting for IPART's treatment of the forecast distribution over recovery, rather than additional costs put forward by Integral Energy.

17.4.2.2 Recovery of charges for transmission use of system services

Clause 6.18.7 of the Transitional Rules addresses the recovery of charges for transmission use of system (TUOS) services. In accordance with this clause, Integral Energy must provide, as part of its annual pricing proposal, tariffs designed to pass on to customers the charges to be incurred for transmission use of system services from TransGrid.

The amount to be passed on to customers in a given year must not exceed the estimated amount of the TUOS charges adjusted for over or under recovery of TUOS charges from a previous year. An issue arises as to whether the over or under recovery for pricing in year (t) is calculated from forecasts from the previous year (t-1) or actual results from year (t-2).

The extent of the over or under recovery is the difference between:

- The amount actually paid for TUOS charges; and
- The amount passed on to customers for TUOS charges.

The AER, in its February 2008 final decision on *Control mechanisms for direct control services for the ACT and NSW 2009 distribution determinations* stated that the TUOS overs or unders is to be settled in a single regulatory year and that this approach is more consistent with the requirements of Chapter 6 of the Rules than recovering the overs or unders over a longer period.

In addressing this matter, the AER stated:

[38] *Final Report – NSW Electricity Distribution Pricing 2004/05 to 2008/09*, IPART page 254.

[39] Value transfer to customers calculated based on a perpetuity (PV) equal to Y / r, where Y = the income stream ($22 million per annum) divided by r, which is equal to the constant rate of interest (assumed to be 9.76%).

"it will use data from the 2004-09 regulatory control period for which there is actual TUOS data available in determining the TUOS overs and unders adjustment for each regulatory year." [40]

Integral Energy considers that the use of actual data from the *2004 regulatory control period* is a pragmatic approach that eliminates the forecasting risk associated with the TUOS overs and unders amount. The AER's guideline is silent, however, on whether actual data is also to be applied for calculating the TUOS overs and unders amount from 2011/12 onwards when data from the *2009 regulatory control period* would be required. Clarity on this issue is sought from the AER.

17.4.2.3 Side constraints on tariffs

The *Transitional Rules* set out, in clause 6.18.6, side constraints on tariffs for standard control services. The permissible percentage for tariff movements is the greater of the following:

- The CPI-X limitation on any increase in expected weighted average revenue between the two regulatory years plus 2%; or
- CPI plus 2%.

Appendix A to the AER's Standard Control Services Guideline states that:

The side constraints will limit the change in the expected average revenue for a tariff class, weighted by tariff component, from one regulatory year to the next. The AER requests that DNSPs provide audited quantity data for it to assess compliance with the side constraint formula. [41]

Integral Energy believes that the above approach as set out in the AER's guideline on standard control services is appropriate and consistent with the policy intent of introducing side constraints on distribution tariffs as it establishes a constraint on tariffs, by demonstrating compliance against audited quantity data.

However, Integral Energy is concerned that the wording in clause 6.18.6(b) of the *Transitional Rules* may cause an unintended consequence for DNSPs when pursuing efficient tariff structures, within the CPI-X plus 2% side constraints:

"The expected weighted average revenue to be raised from a tariff class for a particular regulatory year … must not exceed the corresponding expected weighted average revenue for the preceding regulatory year by more than the permissible percentage".

[40] *Control mechanisms for direct control services for the ACT and NSW 2009 distribution determinations,* Page 8.

[41] Guideline on c*ontrol mechanisms for direct control services for the ACT and NSW 2009 distribution determinations*. Page 11.

The AER's approach appears to (correctly) establish a pricing side constraint as it removes any volume impact by applying the same actual (audited) volumes to both the current and subsequent regulatory years. Therefore, any revenue changes between the current and subsequent regulatory years are solely as a result of pricing changes and are not volume-related.

It is not clear, however, whether the wording in clause 6.18.6(b) of the *Transitional Rules* follows the same approach as it does not appear to remove any differences arising from volume changes.

For example, if prices are held constant between two regulatory years, but volumes increase by more than 2%[42], the side constraint limit would be exceeded and prices would need to be reduced solely as a result of forecast volume changes. Not only would such a result limit the ability to pursue tariff reform to achieve improvements in pricing efficiency, it would also appear to be inconsistent with the weighted average price cap required in clause 6.2.5(c1)(1)(i) of the *Transitional Rules*.

Integral Energy looks forward to working with the AER to address this issue, which may require proposing a *Transitional Rule* change to ensure clarity.

[42] Simplified example assuming one tariff category that is 100% volume based and CPI-X = 0.

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Assurances and certifications

The AER requires the following assurances and certification relating to the lodgement of a *regulatory proposal* by a DNSP:

1. Under Schedules 6.1.1.(5) and 6.1.2(6) of the *Transitional Rules*, Integral Energy is required to submit a Directors' certification of the reasonableness of key assumptions that underlie the capital and operating expenditure forecasts;

2. As required by clause 2.4.4 of Attachment 2 of the RIN, Integral Energy must undertake certain procedures to review the actual capital and operating expenditure information for the current and previous regulatory control periods provided as part of the *regulatory proposal*; and

3. As required under section 28M(d) of the NEL, the Chief Executive Officer must make a statutory declaration verifying the information and documentation contained in the *regulatory proposal*.

This *regulatory proposal* provides details on Integral Energy's compliance with these regulatory obligations.

18.1 Certification statement

In accordance with Schedules 6.1.1(5) and 6.1.2(6) of the *Transitional Rules* and paragraph 9 of the RIN, Integral Energy is required to lodge a *revenue proposal* that contains a certification by at least two of the Directors of Integral Energy on the reasonableness of key assumptions that underlie the forecasts of capital expenditure and operating expenditure respectively. That certification must follow the format used in Attachment 4 to the RIN.

The certification statement is included at Appendix A.

18.2 Review of procedures

Under clause 2.4.4 of Attachment 2 of the RIN, the AER requires that actual capital and operating expenditure for each year ended 30 June 2005 to 30 June 2007 is reviewed by the RNSP to ensure:

1. Consistency with the cost allocation methodology that existed at the time; and

2. Arithmetic accuracy of the inputs used to develop the information and the accuracy of the process used to convert those inputs into actual outputs.

The review for the above must be in accordance with the Australian Auditing Standard AUS 904 (Engagements to Perform Agreed Upon Procedures) or the updated version of that standard and

provided to the AER. The AER may require the independent auditor to explain its findings to the AER.

The AER also requires that the DNSP provide information regarding whether the actual capital and operating expenditure for the years ending 30 June 1999 to 30 June 2007 has been independently audited and, if so, explain the details associated with any such audits including providing copies of the relevant reports (clause 2.4.4(d) of Attachment 2 to the RIN).

Integral Energy has attached copies of the agreed upon procedures reports that accompanied the annual regulatory accounts provided to IPART during the years ending 30 June 2005 through 30 June 2007 (see Appendix S.1). Those reports confirm the matters set out above and have been subject to an agreed upon procedures review by an independent auditor (PwC).

The actual capital and operating expenditure for the years ending 30 June 1999 through to 30 June 2007 have not been independently audited.

18.3 Officer's statutory declaration

Section 28M(d) of the Law states that a regulatory information instrument may specify that the information in the instrument "be verified by way of statutory declaration by an officer of the RNSP, or a related provider, to whom the instrument applies". The AER requires through clause 11 of the RIN, a statutory declaration by the Chief Executive Officer to verify the information provided to the AER as part of the *regulatory proposal*. The verification must include that the information and documentation provided to the AER in accordance with the RIN:

- Is complete in all material respects; and
- Is accurate in all material respects and can be relied upon by the AER to assess the regulatory proposal and make a distribution determination for Integral Energy.

The statutory declaration is included at Appendix B.

Regulatory Proposal:

Direct Control Services Classified as Alternative Control Services (Public Lighting)

Building Block Proposal (Chapter 19)

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Alternative direct control services – Public Lighting

Integral Energy's public lighting is the only direct control service classified as an alternative control service for the *2009 regulatory control period*. The *Transitional Rules* require that a *regulatory proposal* for alternative control services include:

- The proposed control mechanism;
- A demonstration of the application of the proposed control mechanism; and
- The necessary supporting information.

This chapter describes Integral Energy's approach to the provision of the alternative control service of public lighting for the *current regulatory control period* and for the *2009 regulatory control period*. Further information can be found in the pro formas in Attachment 1.

19.1 Summary

Integral Energy operates and maintains over 185,000 public lights across its network area with annual growth running at a rate of around 4,000 lights per annum. The public lighting network provides safety and security for pedestrians and vehicle traffic as well as enhancing the visual environment. This system serves 29 public lighting customers including road authorities and 23 local councils. Integral Energy is committed to providing public lighting services that effectively and efficiently meet the needs of these customers.

Integral Energy's public lighting repair times and telephone response times are currently among the best in NSW. Integral Energy proposes to maintain the current levels of service performance for the *2009 regulatory control period*.

The NSW Public Lighting Code is the principal source of service standard obligations for public lighting and this *regulatory proposal* has been prepared to comply with the NSW Public Lighting Code of 1 January 2006 (Public Lighting Code).

Integral Energy is proposing the following forms of control to public lighting services over the *2009 regulatory control period*:

- A schedule of fixed prices public lighting services for the first year of the *2009 regulatory control period*; and
- A price path for the remaining years of the *2009 regulatory control period*.

The revenue required in relation to Integral Energy's public lighting program has been calculated according to the requirements in the *Transitional Rules* based on the key individual building block

components of the return on capital, return of capital (depreciation), operating expenditure and net tax costs.

Projected capital expenditures for 2007/08 and 2008/09 are the values recommended in the 2008 IPART decision[43]. The forecast capital expenditure for the *2009 regulatory control period* is based on these efficient levels taking into account the following drivers of cost increases:

- Real increases in input costs; and
- An increase in the replacement of columns and luminaires.

The operating expenditure required for the *2009 regulatory control period* is based on existing efficient levels as confirmed by IPART and adjusted to reflect:

- The increasing asset base projected at 2.2% per annum;
- Cost of labour increases;
- The implementation of major traffic route and commuter station patrols;
- The inclusion of corporate overheads; and
- Expenditure reductions consistent with Integral Energy's forecast of productivity savings.

For consistency and simplicity, Integral Energy proposes to apply the same WACC as for the standard control services.

Integral Energy proposes to continue with the present depreciation assumptions identified in the 2008 IPART decision on Integral Energy public lighting[44] for the *current regulatory control period* and for the *2009 regulatory control period.*

Applying the forecast volumes for the *2009 regulatory control period* to the building block revenues results in an average price path that is adjusted (along with CPI) by the "X factors" as provided in Table 19.1. Integral Energy has provided X factors based on a scenario with a higher initial year pricing increase (P_o) and constant real increases for the remaining four years of the *regulatory control period*. A negative X factor indicates an increase to average public lighting prices.

[43] *Statement of reasons for Decision*, IPART 27 February 2008.

[44] *Ibid*.

Table 19.1: Proposed public lighting X factors over the 2009 regulatory control period

	Forecast year ending 30 June				
Details	**2010**	**2011**	**2012**	**2013**	**2014**
X factor	-3.0%	-1.5%	-1.5%	-1.5%	-1.5%

The above X factors result in real average public lighting price increases over the *2009 regulatory control period.*

In 2006 and 2008 Integral Energy reported[45] that the costs incurred in providing public lighting services were greater than the revenues received from public lighting tariffs. This revenue shortfall is, and remains, inconsistent with the regulatory arrangements that apply to Integral Energy's provision of public lighting services. Integral Energy recognises that any move of public lighting tariffs to a cost reflective basis must be balanced with an understanding of customer impacts.

Integral Energy is proposing a staged approach to achieve cost reflectivity that is supported by its framework of customer consultation established during 2006 and 2007. Within this consultation framework, Integral Energy has communicated the need for price increases and has discussed the application of previous increases with its public lighting customers. Integral Energy has advised its public lighting customers that it has placed a moratorium on public lighting cost increases for 2008/09 pending completion of the regulatory proposal review process.

Integral Energy will continue to consult extensively with customers to implement these improvements in a responsible manner.

19.2 Regulatory information requirements

The *Transitional Rules* and AER's information requirements (as specified in the RIN and guidelines[46]) are summarised in Box 19.1.

[45] *Prices for the construction and maintenance of Public Lighting Infrastructure*, report by Integral Energy to IPART dated 30 June 2006 and *Prices for the construction and maintenance of Integral Energy's Public Lighting Infrastructure*, report by Integral Energy to IPART dated 21 December 2007.

[46] *AER final decision on control mechanisms for alternative control services for the ACT and NSW* 2009 distribution determinations dated February 2008.

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Alternative direct control services – public lighting

Box 19.1: Alternative control services regulatory information requirements

Clause 6.8.2(c)(3A) of the *Transitional Rules* provides that the DNSP's *regulatory proposal* must include for direct control services classified as alternative control services the proposed control mechanism, a demonstration of the application of the proposed control mechanism, and the necessary supporting information.

Clause 6.2.5(c2) of the *Transitional Rules* sets out what the control mechanism for alternative control services may consist of.

In addition to these *Transitional Rules* requirements, the AER requires through its RIN the following information:

- Details of any externally imposed obligations, including performance measures and, where applicable, relevant performance targets;
- Details of any internal programs, projects or initiatives aimed at maintaining or improving network reliability and customer service performance during the next regulatory control period, in order to satisfy the particular externally imposed obligation;
- The estimated impact of satisfying the externally imposed obligation on the capital and operating expenditures for the next regulatory control period;
- Details of any internally imposed service performance standards developed to assist in satisfying externally imposed standards;
- Information to support the application of the proposed control mechanism;
- Historic and forecast capital and operational expenditure requirements and justification for any material differences;
- Asset value information, including the opening asset value as at 1 July 2004 and the proposed opening asset value at 30 June 2009;
- Pricing information, including a schedule of prices for the first year, a proposed price path and indicative prices for each year of the *next regulatory control period;*
- Service level information, including:
    - A demonstration of how the forecast expenditures will deliver the required levels of service outlined in the Public Lighting Code;
    - Details and explanations of any divergence from the NSW Public Lighting Code.

This *regulatory proposal* provides the information to address these *Transitional Rules*, guidelines and RIN requirements for public lighting.

19.3 Proposed control mechanism

This section describes the control mechanism that Integral Energy is proposing for public lighting for the *2009 regulatory control period*. Integral Energy's public lighting is the only direct control service that is classified as an alternative control service for the *2009 regulatory control period*.

The *Transitional Rules* require that a *regulatory proposal* include:

- The proposed control mechanism;
- A demonstration of the application of the proposed control mechanism; and
- The necessary supporting information for alternative control services.

In compliance with the *Transitional Rules*, Integral Energy proposes the following forms of control for public lighting services over the *2009 regulatory control period*:

- A schedule of fixed prices for public lighting services for the first year of the regulatory control period; and
- A price path for the remaining years of the regulatory control period, based on the CPI-X methodology contained in the AER's PTRM..

Integral Energy proposes that a limited building block approach be employed to assess the efficiency of the Integral Energy prices.

19.4 Overview of the public lighting services

Public lighting is important in providing safety and security for pedestrians and vehicle traffic as well as enhancing the visual environment. Integral Energy is committed to providing public lighting services that effectively and efficiently meet the needs of our customers.

Public lights are typically installed in street locations including residential streets and main roads utilising existing electricity poles or on specific public lighting poles (often referred to as "columns"). The type of lighting required is dependent upon the road type and customer requirements.

Integral Energy currently serves 29 public lighting customers, including 23 local councils, with over 185,000 installed lights. The number of public lights is steadily increasing at between 2% to 4% per annum. This growth is due mainly to installations for new subdivisions and infill lighting for Councils. Integral Energy is not anticipating any change in the number of public lighting customers over the *2009 regulatory control period*.

The majority of public lighting construction projects are contestable, in which case the public lights may be installed by a customer or their contractor. Once completed and operating, Integral Energy is responsible for the ongoing maintenance and repair of the lights. Integral Energy also directly undertakes the construction of minor public lighting works and other public lighting projects at the customer's request.

To reflect the above arrangements Integral Energy provides two types of regulated public lighting services, namely Schedule 1 and Schedule 2. This naming terminology for public lighting services is one used internally by Integral Energy. The key difference between these schedule types relates to the funding of the initial capital costs and the responsibility for ongoing maintenance and replacement of the public lighting assets.

- Schedule 1 – Integral Energy provides the capital funding up to a pre determined limit for each type of public lighting asset and also funds all operating costs relating to the service. Integral Energy provides maintenance and replacement of the equipment.

- Schedule 2 – the capital costs of installation are funded by the developer or customers. Integral Energy provides maintenance and replacement of the equipment.

Integral Energy also provides the unregulated NightWatch lighting service which is additional external lighting to help promote business and provide valuable extra security. NightWatch expenditures are excluded from the assets and expenditures provided in this *regulatory proposal.*

The provision of public lighting services faces a number of future challenges that will have a profound effect on public lighting products and services. New technologies, improved designs, better tree management, and improved consultation and information sharing with customers are all expected to deliver improved outcomes to public lighting customers and the public in general.

19.5 Public lighting obligations

The most significant public lighting service obligations imposed on Integral Energy that materially impact public lighting expenditure include:

- The NSW Public Lighting Code;

- Australian Standard (AS/NZS1158) Lighting for Roads and Public Spaces and the nominated design requirements of individual customers; and

- IPART Final Determination NSW Electricity Distribution Pricing 2004/05 to 2008/09 - Regulation of Excluded Distribution Services Rule 2004.

The Public Lighting Code is the principal source of obligations for customer service performance for public lighting. The Public Lighting Code is a voluntary code that was introduced to help clarify the relationship between public lighting service providers and customers and sets out benchmarks to assist local councils. The existing Integral Energy public lighting systems and processes are designed to satisfy the Public Lighting Code.

Integral Energy proposes to comply with the Public Lighting Code for the *2009 regulatory control period*.

Other obligations include financial reporting, environmental, occupational health and safety, etc. These obligations also apply to standard control services and are discussed in detail in Chapter 5 and the AER's pro forma 2.3.5.

Many of the regulatory obligations and requirements, including those relating to existing Occupational Health and Safety (OH&S) and the environment, are embedded in Integral Energy public lighting systems, processes and policies and are evident in current expenditures. These existing regulatory obligations and requirements are incorporated within the capital and operating public lighting costs for the *2009 regulatory control period* and are described later in this chapter.

19.6 Customer service performance standards

The following sections describe the service performance obligations that arise from the Public Lighting Code, how Integral Energy currently meets these obligations and how Integral Energy will continue to meet these obligations in the *2009 regulatory control period*.

As a provider of public lighting services, Integral Energy considers that it has a role in the initiation of service quality improvements and productivity savings. Integral Energy proposes to continue to work with public lighting customers to identify opportunities for safety, quality and productivity improvements over the *2009 regulatory control period*.

In the 2007 review of Integral Energy public lighting expenditures, IPART's consultant stated that "*Integral appears to have been a leader in the public lighting field in terms of using and introducing modern designs and energy-efficient luminaires*."[47] Integral Energy proposes to continue to deliver this leadership role in the *2009 regulatory control period*.

19.6.1 Service performance obligations

Integral Energy has implemented a public lighting compliance framework to satisfy the service standards described in the Public Lighting Code. In particular, elements of the framework include:

- Operating a 24 hour call centre to receive fault reports from customers;
- Establishing a management plan and reporting system for the design and construction of public lighting assets;
- Managing and monitoring the bulk lamp replacement program to ensure efficient and safe operation of the system to achieve agreed maintenance standards and to maintain the designed lighting technical parameters of the luminaire;
- Cleaning, inspecting and repairing luminaires during re-lamping;
- Ensuring that repairs of public lighting assets are undertaken within an average of eight working days per customer per year from receipt of the reported fault, and endeavouring to provide repairs more quickly in high priority cases;

[47] *Review of Integral Energy's Public Lighting Capital and Operating Expenditure (FINAL REPORT)*, Wilson Cook & Co October 2007.

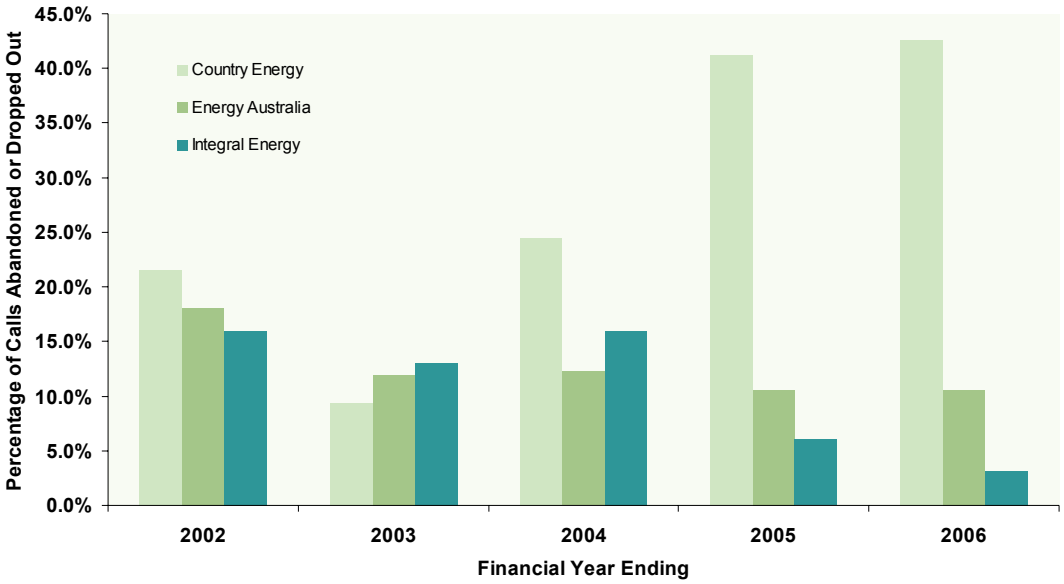
- Supplying quarterly service reports to all major customers with active project requirements; and
- Submitting annual reports to Integral Energy's public lighting customers.

It is recognised in the Public Lighting Code that in certain circumstances, such as severe storms, or network faults these standards may not be achievable.

19.6.2 Historical service performance

Integral Energy has established a 24 hour call centre to receive calls from customers in relation to faults and emergencies including public lighting calls. Integral Energy has also developed an online form to allow customers to notify of public lighting problems via the internet. The performance of the Integral Energy call centre was highlighted in the 2006/07 IPART performance review[48] and has significantly improved in recent years as shown in Figure 19.1.

Figure 19.1: Percentage of call abandoned or dropped out



Integral Energy has developed a Public Lighting Management Plan to help maintain and improve public lighting services. The plan details how Integral Energy manages and operates a safe and reliable public lighting network. This plan has been distributed to all major public lighting customers and is available on Integral Energy's website.

Integral Energy has developed and implemented the bulk lamp replacement program to ensure efficient and safe operation of the public lighting system to achieve agreed maintenance

[48] *NSW Electricity Information Paper No. 5, Distribution businesses' performance against customer service indicators for the period 1 July 2001 to 30 June 2006*, IPART.

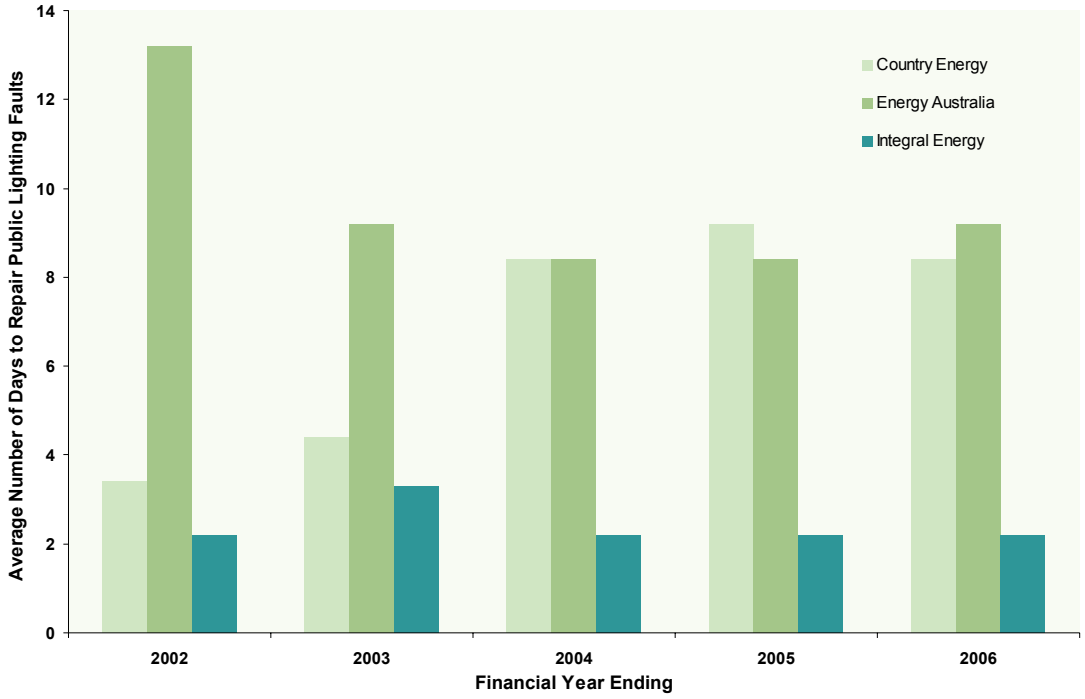
standards and to maintain the designed lighting technical parameters of the luminaire. This program includes cleaning, inspecting and repairing luminaires during re lamping. The following figure from IPART highlights the effectiveness of the bulk replacement program in reducing public lighting faults.

Figure 19.2: Number of reported public lighting faults [49]

As required under the Public Lighting Code, Integral Energy ensures that public lighting assets are repaired within an average of eight working days. Average repair times in 2005/06 and 2006/07 were under three days. Integral Energy's average number of working days to repair public lighting faults compares favourably with those of other NSW DNSPs.

[49] *ibid*

Figure 19.3: Average number of working days to repair public lighting faults[50]



Integral Energy provides quarterly service reports to all major customers who have active projects and annual reports are compiled and submitted to all councils where Integral Energy provides significant public lighting services.

19.6.3 Service performance over 2009 regulatory control period

The forecast expenditures for the *2009 regulatory control period,* as described later in this chapter, are based on current expenditure levels and adjusted for identified cost input changes such as the base increase in the volume of public lighting assets, increases to labour cost inputs and removal of cross subsidies between direct control services.

Integral Energy is not proposing to alter the public lighting service standard performance from the current levels. Service level performance for the *2009 regulatory control period* is forecast to remain at the current levels provided Integral Energy is allowed revenues sufficient to meet the described expenditure requirements.

The Australian Standard (AS/NZ 1158) for public lighting identifies a requirement for street light patrols. Following consultation with councils, Integral Energy is proposing to undertake additional street lighting patrols. The additional patrols are scheduled to commence in 2009/10.

[50] Ibid.

Any reduction in future revenues would impact the ability of Integral Energy to deliver the service standard performance obligations described above.

19.7 Capital expenditure

Public lighting capital expenditure is required to deliver new and additional public lighting assets and replace assets that have reached the end of their economic lives.

19.7.1 New lighting installations

New lighting installations typically include new residential estates, road infrastructure or business park estates. IPART identifies these services as contestable and Integral Energy is one of a number of construction providers utilised by public lighting customers. These are Schedule 2 installations.

Integral Energy also provides a design and construction service for installations which meet the Public Lighting Code infill lighting criteria. These are sites that do not meet the mandated contestability criteria. New infill construction typically includes the design, certification, quotation and installation of small scale public lighting infrastructure. These installations are Schedule 1 installations.

Integral Energy also provides non-standard public lighting services to meet the specific lighting or aesthetic needs of its customers. These non-standard services are referred to as schedule 3 services and are not classified as alternative control services.

19.7.2 Replacement and refurbishment

The expected operating life of public lighting assets depends on the type of asset. The average operating life of the lamp (e.g. light globe) is typically 3 years, luminaires and control equipment typically operate for 20 years and the operating lives of poles, columns and brackets is typically 35 years.

To ensure the safety of the public and to meet customer service performance standards, Integral Energy has adopted two complementary approaches to asset replacement:

- The bulk replacement of short life assets (e.g. lamps) and selected asset types; and
- The condition based replacement of longer life assets.

These approaches are the most cost effective means of meeting Integral Energy's public lighting obligations.

The Public Lighting Code requires that Integral Energy institute bulk replacement programs for lamp replacement. These programs are typically applied to lamp replacements where it is more economic to replace a geographic group of lamps at once than replace them individually as they

fail. Bulk replacement also provides a higher quality of service through increased light output, fewer outages and meets the principles expressed in the Australian Standard[51] for public lighting.

Condition-based replacement programs are based on specific asset triggers. For example:

- Steel column replacement is based on mechanical strength deterioration due to reduction in steel wall thickness;
- Wood pole replacement is based on the outer concentric wall thickness having deteriorated below acceptable mechanical strength;
- Steel bracket replacement is based on mechanical fatigue or rust deterioration; and
- Luminaire replacement is based on corrosion or lack of serviceability.

The technical consultants that advised IPART in the 2008 public lighting decision recommended that Integral Energy escalate expenditures to address an "*increasing quantity of street lighting structural problems*". Integral Energy will implement a program to review the overall condition of steel columns and where appropriate implement increased inspection and replacement in line with the consultant's recommendation.

As described earlier, Integral Energy maintains different pricing structures to reflect the initial capital contribution to the construction of public lighting assets as detailed in pro forma 2.2.5. Assets that were funded by the customer (schedule 2 installations) are charged at a lesser rate than those that were funded by Integral Energy (schedule 1 installation).

As the public lighting asset base is ageing, Integral Energy is now replacing greater volumes of asset that were originally funded by the customer. IPART's consultant noted in the 2008 Decision on public lighting expenditures;

"*The present level of public lighting capex* (capital expenditure) *is unlikely to be adequate to maintain the assets in sound condition in the long term, given the current average age of its steel lighting columns of 18 years (compared with a conventional view of their life of 20 to 30 years) and the very low number of replacements currently being undertaken (350 are envisaged in FY 2008, amounting to only around 0.5% of the population).*"[52]

To reflect the capital investment made by Integral Energy when replacing and/or refurbishing all schedule 2 installations, these installations will revert to schedule 1 installations based on the following criteria:

- For pole mounted luminaires at their 20th anniversary from commissioning;
- For column mounted luminaires at their 35th anniversary from commissioning; and

[51] AS/NZ 1158

[52] *Review of Integral Energy's Public Lighting Capital and Operating Expenditure (FINAL REPORT)*, Wilson Cook & Co October 2007.

- Where replacements are forecast in any year a half year schedule 2 and schedule 1 assumption shall be applied for specific fixed rate calculations (for price modelling purposes only).

This is a new initiative and is proposed to commence in conjunction with the *2009 regulatory control period*.

In 2008 IPART stated[53] that "*an appropriate level of corporate overheads should be included in the cost of providing the public lighting services*". In the *current regulatory control period* corporate overheads have already been included in the pricing of prescribed services and should not be recovered again through public lighting charges.

On this basis, corporate costs have not been included in the public lighting capital expenditure for the *current regulatory control period*. In line with Integral Energy's cost allocation methodology, the forecast public lighting capital expenditure for the *2009 regulatory control period* has included an allowance for capitalised overheads. The forecast capitalised overhead allowance has been removed from the standard control services accounts to ensure that there is no double counting of overheads.

The following sections describe the current, forecast and proposed public lighting capital expenditures.

19.7.3 Historic capital expenditure

The actual and projected capital expenditures for the *current regulatory control period* comply with the current IPART allowances in IPART's Statement of Reasons for Decision of 27 February 2008.

Table 19.2: C*urrent regulatory control period* public lighting capital expenditure

	Actual year ended			Projected year ending	
nominal $m	**2005**	**2006**	**2007**	**2008**	**2009**
Actual/projected capital expenditure	4.6	5.6	4.9	5.0	5.1

The increase in capital expenditure for 2005/06 highlighted in the above table was due to an increase in the number of column replacements completed in that year. A number of projects that had previously been completed were also closed off in that year.

19.7.4 Forecast capital expenditure

The proposed capital expenditure for the *2009 regulatory control period* is provided in Table 19.3.

[53] *Statement of reasons for Decision*, IPART 27 February 2008.

Table 19.3: *2009 regulatory control period* public lighting capital expenditure

08/09 $m	Forecast year ending 30 June				
Details	**2010**	**2011**	**2012**	**2013**	**2014**
Proposed capital expenditure	5.3	5.3	5.3	5.4	5.5

Capital expenditure increases for the *2009 regulatory control period* are due to:

- Real increases in input costs; and
- An increase in expenditures for the replacement of steel columns and luminaries.

19.8 Operating expenditure

The annual recurring costs of public lighting are largely dependent on the volume and type of equipment installed. The major asset classes that drive operating expenditure are:

- Lamps;
- Luminaires;
- Brackets; and
- Columns and poles (where dedicated for public lighting).

There are additional costs associated with the maintenance of billing and asset management systems as well as managing the purchase, storage and distribution of lighting equipment. The major activities associated with public lighting are as follows:

- Patrols and inspections;
- Maintenance; and
- Bulk replacement programs;
- Fault and emergency repairs;
- Billing and customer inquiries/connections;
- Asset and contracts management;
- Purchasing and logistics; and
- Corporate overheads.

In 2008 IPART stated[54] that "an appropriate level of corporate overheads should be included in the cost of providing the public lighting services". In the *current regulatory control period* corporate overheads have already been included in the pricing of prescribed services and therefore were not recovered again through public lighting charges.

On this basis, corporate costs have not been included in the public lighting operating expenditure for the *current regulatory control period*. In line with Integral Energy's cost allocation methodology, the forecast public lighting operating expenditure for the *2009 regulatory control period* has included an allowance for corporate overheads. The forecast public lighting corporate overhead allowance has been removed from the standard control services accounts to ensure that there is no double counting of overheads.

19.8.1 Historic operating expenditure

The actual and projected operating expenditures for the *current regulatory control period* comply with the current allowances in IPART's Statement of Reasons for Decision of 27 February 2008.

Table 19.4: C*urrent regulatory control period* public lighting operating expenditure

	Actual year ended			Projected year ending	
Nominal $m	**2005**	**2006**	**2007**	**2008**	**2009**
Actual/projected operating expenditure	9.7	9.9	9.8	9.3	9.6

The following is a list of operating expenditure increases that were recommended by IPART's consultants and accepted by IPART in its 2008 Decision.

Table 19.5: IPART Decision - Operating expenditure increases

IPART 2008 decision	Efficient operating expenditure $m
Labour cost increases above CPI	0.1
Pro rata maintenance cost increases	0.2
Additional inspections and associated minor repairs	0.9
Increase in piece rate payment for bulk change and emergency repairs	0.5
Share of outage management system (OMS) operating expenditure	0.2
Total	**1.9**

[54] *Statement of reasons for Decision*, IPART 27 February 2008.

Integral Energy has managed operating expenditure over the 2007/08 period to a level lower than the increases identified in IPART's 2008 Decision.

Operating expenditure in 2007/08 is also expected to be slightly lower than the amount recommended by IPART's consultants[55] and the allowance determined by IPART.[56] The IPART public lighting determination was not finalised until late February 2008 and this resulted in some 2007/08 expenditures being deferred while the outcome of the determination was unknown.

19.8.2 Forecast operating expenditure

The proposed operating expenditure for the *2009 regulatory control period* is provided in Table 19.6.

Table 19.6: *2009 regulatory control period* public lighting operating expenditure

Nominal $m	Forecast year ending 30 June				
Details	**2010**	**2011**	**2012**	**2013**	**2014**
Proposed operating expenditure	10.0	10.0	10.4	10.7	11.1

Integral Energy is subject to a number of cost drivers impacting public lighting operating expenditure. Operating expenditure increases for the *2009 regulatory control period* are due to:

- The inclusion of corporate overheads;
- The annual increase of 2.2% in the number of public lighting assets requiring inspection, operating and maintenance; and
- An increase in labour cost inputs.

IPART and its consultants stated in the 2008 public lighting Decision that Integral Energy's operating expenditure did not include an allowance for corporate overheads and prices in the future would need to reflect these costs. A proportion of costs, relating to corporate overheads, were included for recovery via prescribed service charges in the IPART 2004 Determination. To ensure that there is no double counting; corporate overheads have been specifically excluded from the operating expenditure used as the basis for public lighting price setting in the current period.

The operating expenditure forecast by Integral Energy for the *2009 regulatory control period* includes an allocation of corporate overheads. This allocation is significantly reduced from the amounts identified by IPART and their consultants due to the following:

[55] *Review of Operating Expenditure in Integral Energy's Revised Public Lighting Price Proposal*, Wilson Cook & Co, 22 February 2008.

[56] *Statement of reasons for Decision*, IPART 27 February 2008.

- Application of the AER approved Cost Allocation Method;
- An increased allocation to direct control services based on the proposed increases to these expenditures; and
- Proposed business efficiencies over the *2009 regulatory control period*.

As a result of the above factors, the resulting Integral Energy operating expenditure forecasts are significantly less than those projected from the 2008 IPART Decision on public lighting.

19.9 Public lighting RAB

Integral Energy has rolled forward its RAB for its alternative control services consistent with the roll forward methodology accepted by IPART in the 2008 public lighting decision.

19.9.1 Opening regulatory asset base as at 1 July 2004

Integral Energy has determined that its RAB value at 1 July 2009 is $37.3 million as shown in Table 19.7.

Table 19.7: Establishing RAB at 1 July 2009

Nominal $m	30 June				
Details	**2005**	**2006**	**2007**	**2008**	**2009**
Opening RAB 1 July	24.1	26.8	30.3	33.0	35.2
Actual Capital expenditure/additions	4.6	5.6	4.9	5.0	5.1
Depreciation	(2.6)	(2.9)	(3.3)	(3.6)	(4.0)
Actual disposals	-	-	-	-	-
Indexation	0.6	0.8	1.1	0.8	0.9
Closing balance 30 June	**26.8**	**30.3**	**33.0**	**35.2**	**37.3**
Note: numbers may not add due to rounding					

The opening value as at 1 July 2004 is consistent with IPART's February 2008 decision.

19.9.2 Regulatory asset base for 2009 regulatory control period

The resulting closing RAB value for Integral Energy over the *2009 regulatory control period* is shown in Table 19.8.

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Table 19.8: Roll forward RAB over the *2009 regulatory control period*

Nominal $m	Forecast year ending 30 June				
Details	**2010**	**2011**	**2012**	**2013**	**2014**
Opening RAB 1 July	37.3	40.0	42.6	45.0	47.3
Forecast capital expenditure/additions	5.6	5.7	5.9	6.2	6.5
Regulatory depreciation	(2.9)	(3.2)	(3.5)	(3.9)	(4.3)
Forecast disposals	-	-	-	-	-
Closing balance 30 June	**40.0**	**42.6**	**45.0**	**47.3**	**49.5**
Note: numbers may not add due to rounding					

19.10 Depreciation

Integral Energy has adopted straight line depreciation to calculate the depreciation allowance, consistent with its approach for standard control services.

Consistent with previous IPART determinations, a standard life of 20 years has been used for additions to public lighting assets. Consistent with the Integral Energy's proposal to IPART and the 2008 public lighting decision, the remaining life of the opening asset base is assumed to be halfway through its useful life, or 10 years.

Integral Energy has forecast its depreciation schedules for the *2009 regulatory control period* based on the roll forward of the opening asset base and the forecast capital expenditure. The PTRM has been used to calculate the depreciation on a straight line basis.

The total of the required regulatory depreciation allowance forecasts for the *2009 regulatory control period* is shown in Table 19.9.

Table 19.9: Forecast depreciation over *2009 regulatory control period*

Nominal $m	Forecast year ending 30 June					
Details	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Total forecast depreciation	2.9	3.2	3.5	3.9	4.3	**17.8**

19.11 Return on capital and taxation

Integral Energy has applied the rate of return for its alternative control services at the same rate of 9.76% proposed for its standard control services set out in section 13.1.

Integral Energy has calculated its tax depreciation allowance in accordance with tax law on a straight line basis and consistent with the requirements of the PTRM.

19.12 Summary revenue requirements

Integral Energy's revenue for public lighting has been determined based on the revenue building block components consistent with the approach used for its standard control services set out in section 14.3.

Integral Energy's proposed annual revenue requirement over the *2009 regulatory control period* is shown in Table 19.10.

Table 19.10: Building block revenue requirements over *2009 regulatory control period*

Nominal $m	Forecast year ending 30 June					
Details	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Return on capital	3.6	3.9	4.2	4.4	4.6	20.7
Return of capital	2.9	3.2	3.5	3.9	4.3	17.8
Operating expenses	10.0	10.0	10.4	10.7	11.1	52.3
Tax allowance	1.5	1.4	1.3	1.3	2.4	7.8
Unsmoothed revenue requirement	**18.0**	**18.5**	**19.5**	**20.3**	**22.4**	**98.6**
Note: numbers may not add due to rounding						

Integral Energy's proposed annual revenue requirement and resulting X factors over the *2009 regulatory control period* are shown in Table 19.11.

Integral Energy has provided X factors based on a scenario with a higher initial year pricing increase (P_o) and constant real increases for the remaining four years of the *regulatory control period*. A negative X factor indicates an increase to average public lighting prices.

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Table 19.11: Summary revenue requirements over *2009 regulatory control period*

Nominal $m	Forecast year ending 30 June					
Details	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Notional revenue requirement	18.0	18.5	19.5	20.3	22.4	98.6
Smooth revenue requirement	17.5	18.5	19.7	20.9	22.1	98.7
X Factors	-3.0	-1.5	-1.5	-1.5	-1.5	

The above X factors result in real average public lighting price increases over the period. A moderate increase in public lighting expenditures is required over the *2009 regulatory control period*, which will result in a corresponding increase in average public lighting prices.

19.13 Proposed price path

Integral Energy is proposing a relatively smooth price path with a slightly higher initial price increase followed by annual increases to bring public lighting revenues to a cost reflective position.

Integral Energy is committed to efficient pricing signals for public lighting services but at the same time recognises transitional impacts on individual customers. Integral Energy will consult with stakeholders regarding options to manage the price transition based on the following principles:

- Pursuing forward cost reflectivity through the application of efficient and reflective costs for all new lights;
- Exploring a range of options in consultation with customers to make the transition more manageable for them; and
- Undertaking price transition in a transparent and consultative manner.

19.14 Indicative prices

Prices for the range of lighting services have generally been tailored to reflect the underlying installation, maintenance and replacement services required by customers.

Pro forma 2.2.5 included in Attachment 1 sets out Integral Energy's indicative price schedules based on the outputs of the PTRM modelling. Prices for each year of the *current regulatory control period* are also provided in pro forma 2.2.5.

19.15 Customer impact

The majority of Integral Energy's public lighting customers are local councils. Public lighting is one of many important functions for which local councils are responsible and typically represents a small but material percentage of overall expenditures.

The NSW Government sets a limit on the total amount of income that a council can raise from certain rates and charges. This is called the "rate peg" percentage and it is specified by the Minister for Local Government each year. Because of rate pegging, council's overall rates revenue cannot increase by more than the percentage increase approved by the Minister. Public lighting costs are captured within the rate-peg percentage.

Councils can apply to the Minister for Local Government to increase their general income by more than the rate-peg limit. This is called a special variation application. If approved, the Minister will specify the percentage by which the council may increase its general income.

Integral Energy has considered the above rate pegging mechanism and the proposed public lighting price increases. Integral Energy believes that it is important that the public lighting prices signal the economic cost of the service provision. Costs move independently of the rate pegging limit and hence it will be important to not limit any price increase to the rate pegging limit. Once public lighting outcomes are approved, Integral Energy will consult with the councils to seek to allow sufficient time to identify the impact on their respective businesses and seek recognition of this through the rate peg process.

Access to the special variation application also provides councils with the potential to apply for specific rate increases to more accurately reflect individual public lighting impacts. Integral Energy's proposed five year price path should assist councils in their forward planning for public lighting charges.

Integral Energy will undertake consultation with all public lighting customers to discuss the proposed public lighting price increases.

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Glossary

Term	Definition
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
AMI	Advanced Metering Infrastructure
building block proposal	Per the Transitional Rules
CEG	Competition Economists Group
COAG	Council of Australian Governments
CPI	Consumer Price Index
DLFs	Distribution loss factors
DM	Demand management
DM Code	NSW Code of Practice – Demand Management for Electricity Distributors, May 2004
DMIS	Demand management incentive schemes for the ACT and NSW 2009 distribution determinations
DMP	Demand management plan
DNSP	Distribution network service provider
DRP	Debt risk premium
DWE	Department of Water and Energy
DWP	Distribution network status report and associated distribution works program
EBSS	Efficiency benefit sharing scheme
GDP	Gross Domestic Product
GIS	Geographic information system

ICT	Information and Communications Technology
IPART	Independent Pricing and Regulatory Tribunal of NSW
ISSC	NSW Industry Safety Steering Committee
kWh	Kilowatt Hour
Luminaire	An apparatus that distributes, filters or transforms the light transmitted from one or more public lighting lamp and includes, other than the lamps themselves, all the parts necessary for fixing and protecting the lamps and where necessary circuit auxiliaries together with the means for connecting them to the distribution system.
MAR	Maximum allowable revenue
MCE	Ministerial Council of Energy
MRP	Market risk premium
MWh	Megawatt Hour
NEL	National Electricity Law
New Conns	New connections table
NPV	Net present value
NSW	New South Wales
NSW DRP Licence Conditions	The NSW DRP Licence Conditions for the design planning and reliability performance introduced on 1 August 2005 and as amended on 1 December 2007
ODRC	Optimised depreciated replacement cost
OMS	Outage management system
Pass through event	Per the Transitional Rules
PoE	Probability of Exceedance
PTRM	Post tax revenue model
RAB	Regulatory asset base
RCBM	Risk and condition based maintenance approach
2009 regulatory control period	The regulatory period 1 July 2009 to 30 June 2014

Regulatory proposal	Per the Transitional Rules
RFP	Request for proposal
RIN	Regulatory Information Notice
RIS	Regulatory Impact Statement
RoLR	Retailer of Last Resort
Rules	National Electricity Rules
RWP	Reliability works program
SAIDI	System average interruption duration index
SAIFI	System average interruption frequency index
SAMP	Strategic asset management plan
SARP	Strategic asset renewal plan
SKM	Sinclair Knight Merz
SME	Small Medium Enterprises
SNMP	Strategic network maintenance plan
STPIS	Service target performance incentive scheme
TNPR	Transmission network planning review
ToR	Terms of Reference
Transitional Rules	Clause 11.15 and Appendix 1 to Chapter 11 special transitional Chapter 6 arrangements for economic regulation of NSW distribution services for the *2009 regulatory control period*
TUOS	Transmission Use of System
WACC	Weighted Average Cost of Capital
WAPC	Weighted Average Price Cap
WARL	Weighted Average Remaining Life
WSPT	Western Sydney Pricing Trial

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