Introduction
Craig Murray, Managing Director
Country Energy

One of Australia’s largest regional businesses
A decentralised regional management structure, with around 4,200 employees and 770,000 network customers in nine regions

Operating Australia’s largest electricity network
Around 200,000 kilometres of powerlines and 1.4 million power poles across urban, coastal, mountain, tableland and outback environments

Investing in customer service and communities
Created more than 700 new apprenticeships since 2001, and the largest direct employer of Indigenous apprentices in New South Wales
Our key objectives

Country Energy’s statutory objectives include

- To be a successful business and, to this end
  - Operate at least as efficiently as any comparable business
  - Maximise the net worth of the State’s investment in it
  - Exhibit a sense of social responsibility by having regard to the interests of the community in which it operates

- Protect the environment by conducting its operations in compliance with section 6 (2) of the Protection of the Environment Administration Act 1991

- Exhibit a sense of responsibility towards regional development and decentralisation

- Operate efficient, safe and reliable facilities for the distribution of electricity and other forms of energy

- Be an efficient and responsible supplier of electricity and other forms of energy and of services relating to the use and conservation of electricity and other forms of energy

These objectives are of equal importance and underpin our overall purpose
Our key challenges

- Customer expectations and compliance requirements
  - **Safety** of our employees and the public – legislation, industry codes, duty of care
  - **Reliability** of essential services – NSW Network Design Reliability and Performance Licence Conditions codify acceptable network customer service standards
  - **Environmental** protection – legislation, planning and assessment, responsibility

- Customer and employee demographics
  - **Growth** in customer numbers is strong and consumption patterns are changing – in general the coast and major regional centres are showing increasing peak demand
  - **Workforce** demographic change – 20 per cent of our meter readers will reach typical retirement age next year

- Efficiency and productivity
  - **Cost of living** pressures – need to provide a satisfactory level of service at an efficient cost
  - **Skills** and development – competition to attract and retain qualified employees, and provide secure and satisfying careers
Country Energy’s strategy

Our strategy for 2008-2009:

Be Australia’s best essential services provider.

Our priorities, objectives and targets for 2008-2009:

<table>
<thead>
<tr>
<th>Safety</th>
<th>Service</th>
<th>Value</th>
<th>Sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader in Safety</td>
<td>Promoted in Communities</td>
<td>Efficient Business Operator</td>
<td>Resourceful, Rewarded People</td>
</tr>
<tr>
<td>Low Time Injury (LTI)</td>
<td>Customer Promoter Score</td>
<td>Operational Excellence</td>
<td>Leadership Management</td>
</tr>
<tr>
<td>Decreasing</td>
<td>Greater than 25</td>
<td>Implemented Programs</td>
<td>Improved Program</td>
</tr>
<tr>
<td>Low Time Injury</td>
<td>Stakeholder Promoter Score</td>
<td>Planned Change</td>
<td>Unscheduled</td>
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<tr>
<td>Severity Rate (LTISR)</td>
<td>Greater than 25</td>
<td>Customer Performance</td>
<td>Improved</td>
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<tr>
<td>Decreasing</td>
<td>Safety Audits</td>
<td>Expectations met</td>
<td>Sick Leave</td>
</tr>
<tr>
<td>96 percent</td>
<td></td>
<td></td>
<td>Workforce Planning</td>
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<td></td>
<td>Essential Services Provider</td>
<td>Innovative Network Operator</td>
<td>An Environmental Leader</td>
</tr>
<tr>
<td>SADI</td>
<td>Customer First Contact</td>
<td>Adherence to Distribution</td>
<td>Carbon Reduction Program</td>
</tr>
<tr>
<td>Less than 392</td>
<td>95 percent</td>
<td>100 percent</td>
<td>Implemented</td>
</tr>
<tr>
<td>minutes per customer</td>
<td>Completion</td>
<td></td>
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</tbody>
</table>

Our values are: Safety • Accountability • Fun • Excellence • Teamwork • Yes, we’ll do it.

Country Energy is finding better ways to deliver essential services, because we live here too.

Our four key objectives for the next five years
Safety of the public and our employees

- We have reduced our Lost Time Injury Frequency Rate substantially, and continue to improve and enhance our safety management

- The challenge of ‘driving to zero harm’ remains our first priority
Service for customers

• A decentralised regional management structure, of 142 regional offices and service centres
• A dedicated ‘Supply Interruption Group’ call centre providing 24 hour 7 day emergency response – and three regional contact centres
• Together, these services mean we
  – provide fast response to network issues
  – are quick to resolve customer concerns
  – and are responsive to local priorities
Value for money

- Meeting customers’ service expectations
- Achieving business returns that fully recognise business costs
- Realising productivity improvements

Value – and our expenditure proposal

### Capital expenditure

- New assets and upgrades
- Renewal and compliance
- Reliability

### Operating expenditure

- Inspection and maintenance
- Fault and emergency

$4.0B over five years

$2.2B over five years
Value – and our revenue proposal

More than one quarter of the forecast first year price change is a direct result of increases in the cost of labour and materials, and necessary additional works, over the last five years.
A sustainable workforce requires –
- effective recruitment strategies
- effective retirement strategies
- development and mentoring programs
- greater workplace diversity

A sustainable environment requires –
- minimisation of environmental impacts
- rigorous planning and assessment
- consideration of network alternatives
- development of a more ‘intelligent network’ building on smart metering
Country Energy’s regulatory proposal is designed to deliver a safe and efficient electricity network service through:

- a responsive investment program matched to growing populations and changing consumption patterns
- a cost reflective maintenance and refurbishment program aiming to maintain ‘end to end’ asset condition – from major substations to home service mains and meters
- updated skills, tools and technological capability to resource these tasks, and realise productivity gains

Country Energy believes that its proposals can deliver a reliable, affordable and sustainable electricity network service for customers.
Network proposals
Ken Stonestreet, Group General Manager Networks and Infrastructure
Australia’s largest power network

Almost 200,000 kilometres of powerlines and 1.4 million poles

• vast majority of network is ‘overhead’
• 130,000 distribution and 330 zone substations ranging in capacity from 2.5 kVA to 180 MVA
• diverse asset types, three phase, single phase, SWER, operating at 240 to 132,000 Volt
• some customers supplied by > 400 km of line from nearest zone substation
• longest feeder > 1,800 km

Estimated total replacement cost ~ $14 billion
A unique power network

• Extremes of terrain and climate
  – plains, subtropics, snowfields and deserts
  – high degree of exposure to elements

• Extremes of customer densities
  – medium to high density urban
  – sparse rural
  – large ‘spot loads’ – mines and wind farms (map shows proposed new connection applications)

• An ageing network
  – 50 per cent of overhead powerlines are more than 40 years old
  – some network components are more than 70 years
  – weighted average age ~ 30 years
A distinct class of network

- Transmission / Urban
- Distribution / Non urban

- Project documentation
- Cost per Project
- Planning horizon
- Substations
- Faults per year
- Customer and stakeholder management
Key network challenges

Country Energy has identified five key network challenges –

- ageing asset profiles and varying asset conditions
- growing populations and changing consumption patterns
- increasing reliability, quality and security of supply expectations
- growing safety and environmental responsibilities
- escalating costs of key inputs including labour, materials and fuel
Key network considerations

Our overall network expenditure proposal has been developed with a range of factors in mind –

- Past performance trends and customers’ expectations
- Regulatory requirements and performance standards – including our network licence conditions
- Balance between capital expenditure, operating and maintenance expenditure and demand management opportunities
- Ability to resource our plans
- Efficiency and productivity
Our Network Asset Management Plan Provides a holistic overview of Country Energy's asset management strategies, policies, plans and programs

- Corporate plan and objectives
- Statutory objectives
- Customer and compliance expectations

Network Service Delivery Strategy

- Asset Strategy
  - Asset maintenance strategic planning
  - Capital investment strategic planning

- Asset renewal management plan
  - Replace, refurbishment, or disposal options
  - Operate, monitor performance and maintain assets
  - Acquire assets augmentation option
- Non-asset solutions
Overall expenditure forecast

Capital expenditure
- Asset renewal & replacement
- Growth
- Reliability
- Environmental, safety & statutory obligations
- Non system

Operating expenditure
- Inspection
- Pole replacement
- Maintenance & repairs
- Vegetation management
- Emergency response
- Others
- Non system

$4.0B over five years
$2.2B over five years
Expenditure forecast by category

**Capital expenditure**
- New assets and upgrades
- Renewal and compliance
- Reliability
- Support services

**Operating expenditure**
- Inspection and maintenance
- Fault and emergency

-$4.0B$ over five years
-$2.2B$ over five years
New assets and upgrades
New assets and upgrades

- Expenditure to ensure
  - Adequate network capacity
  - Ratings of equipment not exceeded
  - Supply security is maintained
  - Network performance (reliability and quality) is maintained
  - Acceptable ratings and levels of utilisation

- Sub-transmission lines and zone substations
  - Expenditure is driven by peak demand
  - Comprehensive medium term plan

- Distribution assets
  - Expenditure driven by increasing customer base
  - Impacted by increasing energy requirements
  - Expenditure tends to be more consistent and predictable
New assets and upgrades

Categories

- Easements
- Sub transmission lines and cables
- Substations
- Distribution lines and cables
- Communications
- Transformers
- Customer metering and load control
- Low voltage lines and cables
- Land
Electricity growth forecasts
2009 - 2014

- Population growth, economic growth and steady residential building activity
  - Electricity consumption to grow by 1.56 per cent per annum
  - New electricity customer connections to grow by 1.46 per cent per annum

- Average annual rate of growth in system-wide summer and winter peak demand is expected to be 3.0 per cent and 1.8 per cent, under medium growth scenario, to 2013-14
  - Adds some 75 MW to summer peak load each year

- Country Energy expects strong rates of demand growth to continue into the immediate future
  - Significant ‘economic’ load growth gradually eroding available capacity
Annual growth in peak demand

Most inland areas are growing at a rate of 0.5 per cent to 2.5 per cent

4.2 per cent on Far North Coast

4.1 per cent on Mid-North Coast

3.2 per cent in Queanbeyan and Southern Tablelands

3.2 per cent in Albury and Murray River area

3.1 per cent on South-East Coast

3.1 per cent in Broken Hill
Shift to summer peak

- Air conditioning is driving summer peak demand to increase by 3 per cent
- Average annual rate of growth in winter peak demand – 1.8 per cent per annum under base growth scenario

![Chart showing maximum demand for winter and summer](chart.png)
Temperature and loads

- Average change in maximum daily load per °C for summer has increased from 23 MW to 56 MW from 2000-01 to 2006-07
- By 2013-14 total temperature-sensitive load expected to be 51 per cent of total peak summer demand (55 per cent by 2017-18)

Figure shows typical difference between demand curves on a mild 25°C degree summer day and for an extreme 40°C summer day (at Lismore bulk supply point located in NSW far north coast)
Summer peak vs winter peak

- Almost 50 per cent of Country Energy’s zone substations are now summer peaking compared to 34.3 per cent in 2000-01

- Onerous effect of summer demand peaks
  - Lower equipment ratings at higher ambient temperatures
  - Longer duration peaks

Comparison between the system-wide load curve for peak summer day with peak winter day
New assets and upgrades

Programs

• Construction of ~ 600 km of new sub-transmission lines supplying substation loads > 15 MVA that do not currently provide N-1 security
• Augmentation of ~ 1,000 km of sub-transmission lines with constraints
• Construction of approx 400 km of sub-transmission lines to connect new assets
• 28 new or augmentation zone and sub-transmission substation projects in order to
  – Provide an N-1 level of security for loads > 15 MVA or
  – Where peak demand > firm capacity of the installed transformers
Renewal and compliance
Renewal Categories

- Sub transmission lines and cables
- Distribution lines and cables
- Substations
- Communications
- Transformers
- Easements
- Customer metering and load control
- Low voltage lines and cables
- Land
Main drivers that influence the renewal programs include:

- Physical condition
  - principle driver for Country Energy’s expenditure forecasts
  - often a good correlation with asset age
- Systemic ‘type’ faults
- Operational safety issues
- Exceeding acceptable safety factors
- Environmental, infrastructure security
- Availability of spares
**Condition based strategy**

- Country Energy does not implement programs for targeted bulk replacement of system assets reaching the end of their expected lives.
- Instead, our approach is based on combination of:
  - condition based assessments, particularly for power transformers, major substation equipment and distribution assets
  - implementation of specific long-term asset renewal initiatives
  - safe operation
  - examination of statistical failure based replacement
Weibull model

Asset renewal programs are resulting in an annual expenditure of around 1 per cent of total asset replacement cost.

- Weibull predicted rate for whole of network assets averages approx $154M per year to 2013-14.
- For comparison, a purely age based renewal program would require ~$280M per year.
Renewal Programs

• Replacement and refurbishment of
  − more than 130 power transformers
  − switchboards and circuit breakers
  − instrument transformers, substation batteries, surge diverters, earthing systems, and protection relays that represent the greatest risk

• Gradual replacement of deteriorating subtransmission lines
  − Many greater than 50 years old

• Long term replacement program for
  − HV distribution overhead lines (steel and copper)
  − HV air-break switches with fully enclosed SF6 switchgear
  − HV porcelain fuses and links with polymer fuses and links
  − overhead service cables
  − Customer metering and load control
Reliability
Reliability Categories

Easements
Land
Communications
Low voltage lines and cables
Substations
Distribution lines and cables
Customer metering and load control
Transformers
Sub transmission lines and cables
**NSW Design, Reliability and Performance Licence Conditions**

### Average reliability

#### Feeder type | Mins per customer
--- | ---
Urban | 400
Short-rural | 1000
Long-rural | 1400

#### Feeder type | Number per customer
--- | ---
Urban | 6
Short-rural | 8
Long-rural | 10

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### Individual feeders

**Design criteria**

**Network Element** | **Load Type** | **Forecast Demand or Expected Demand** | **Security Standard** | **Customer Interruption Time**
--- | --- | --- | --- | ---
Distribution Feeder | Urban (regional centres) | Any | N-1 | < 4 hours
| Urban (other than regional centres) | Any | N | Best practice repair time
| Non-Urban | Any | N | Best practice repair time
Distribution Substation | Urban & Non-urban | Any | N | Best practice repair time
### Average reliability performance

<table>
<thead>
<tr>
<th>Average minimum reliability standards for each feeder type</th>
<th>2002-03 Actuals</th>
<th>2003-04 Actuals</th>
<th>2004-05 Actuals</th>
<th>2005-06 Actuals</th>
<th>2006-07 Actuals</th>
<th>Licence conditions from 2010-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAIDI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td><strong>163</strong></td>
<td>124</td>
<td><strong>158</strong></td>
<td>109</td>
<td>114</td>
<td>125</td>
</tr>
<tr>
<td>Short-rural</td>
<td><strong>338</strong></td>
<td>293</td>
<td>276</td>
<td><strong>317</strong></td>
<td>239</td>
<td>300</td>
</tr>
<tr>
<td>Long-rural</td>
<td>418</td>
<td>373</td>
<td>625</td>
<td>578</td>
<td>497</td>
<td>700</td>
</tr>
<tr>
<td>Overall</td>
<td>306</td>
<td>262</td>
<td>299</td>
<td>304</td>
<td>242</td>
<td></td>
</tr>
<tr>
<td>SAIFI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td><strong>1.90</strong></td>
<td><strong>1.90</strong></td>
<td><strong>2.30</strong></td>
<td>1.28</td>
<td>1.36</td>
<td>1.80</td>
</tr>
<tr>
<td>Short-rural</td>
<td><strong>3.02</strong></td>
<td>2.86</td>
<td>2.51</td>
<td>2.71</td>
<td>2.47</td>
<td>3.00</td>
</tr>
<tr>
<td>Long-rural</td>
<td>3.21</td>
<td>3.18</td>
<td><strong>4.88</strong></td>
<td>4.06</td>
<td>3.82</td>
<td>4.50</td>
</tr>
<tr>
<td>Overall</td>
<td><strong>2.77</strong></td>
<td>2.67</td>
<td>2.82</td>
<td>2.55</td>
<td>2.39</td>
<td></td>
</tr>
</tbody>
</table>

Fully compliant with SAIDI and SAIFI standards only once in the last five years
Probability distribution for urban SAIDI

33 per cent chance of meeting the urban SAIDI target (or 67 per cent PoE) in the absence of targeted expenditure on feeder reliability
### Reliability gap

<table>
<thead>
<tr>
<th>Feeder category</th>
<th>Current performance</th>
<th>Reliability target</th>
<th>Adjusted target</th>
<th>Reliability gap for 20%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SAIDI</strong> (minutes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>133</td>
<td>125</td>
<td>108</td>
<td>20 mins</td>
</tr>
<tr>
<td>Short-rural</td>
<td>305</td>
<td>300</td>
<td>276</td>
<td>25 mins</td>
</tr>
<tr>
<td>Long-rural</td>
<td>533</td>
<td>700</td>
<td>635</td>
<td>0</td>
</tr>
<tr>
<td><strong>SAIFI</strong> (interruptions)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>1.80</td>
<td>1.80</td>
<td>1.62</td>
<td>0.18</td>
</tr>
<tr>
<td>Short-rural</td>
<td>2.83</td>
<td>3.00</td>
<td>2.83</td>
<td>0</td>
</tr>
<tr>
<td>Long-rural</td>
<td>4.12</td>
<td>4.50</td>
<td>4.22</td>
<td>0</td>
</tr>
</tbody>
</table>

Reliability performance gaps for 20 per cent PoE for each feeder category (including performance adjustment for other reliability programs)
Recent reliability performance for individual feeders

Number of distribution feeders exceeding Licence Condition standards – September 2005 to December 2007

- Cumulative Urban
- Cumulative Rural Short
- Cumulative Rural Long
Design planning criteria

- Regional centre plans developed by
  - Reviewing the existing network
  - Identifying gaps in meeting N-1
  - Scoping projects
Reliability Programs

• Average reliability improvement program
  - Number of sectionalising circuit reclosers required to increase the degree of network segmentation to improve reliability
  - Will nearly double the number of reclosers installed on our network to 6,000 by 2014

• Individual feeder reliability improvement program
  - Analysis of current performance, state of rural network, and underlying causes of supply interruptions
  - 110 feeder segments
  - A suite of initiatives based on causes

• Urban distribution network N-1 reinforcement program
  - Forecast using ‘bottom up’ approach
  - Individual projects identified, scoped and costed
Inspection and maintenance

• Our Asset Maintenance Management Plan includes two major work streams

  • Asset inspection and maintenance strategies, based on condition assessment
    – Zone substation inspection, condition monitoring, diagnostic testing, maintenance
    – Pole and line inspection and maintenance
    – Distribution substation, switchgear and other equipment inspection and maintenance
    – System earthing testing and maintenance

• Vegetation management strategies
Inspection and maintenance

- Management of:
  - staff and public safety
  - bushfire
  - preservation of asset lives
  - reliability
  - under performing assets
  - service objectives and compliance obligations
  - avoiding increased unplanned corrective maintenance at much higher cost
Condition assessment

- The majority of Country Energy’s inspection and maintenance programs are based on condition assessment
- Condition based programs involve undertaking
  - cyclic inspection and measurements, eg pole inspection
  - analysis of parameters, eg transformer oil analysis
- Preventative maintenance on a fixed time basis
- Even time based programs involve assessment of condition, eg vegetation clearing
Vegetation management

- Country Energy’s undertakes extensive vegetation management to
  - manage the risk of causing a bush fire
  - manage the risk to public safety
  - deliver both system wide and targeted reliability outcomes
Fault and emergency
Fault and emergency

- This activity includes fault and emergency repair and restoration of supply
- Generally in line with current levels of expenditure and activity levels, as Country Energy has included a ‘trade-off’ reduction in emergency response expenditure
- Reflects the expected effectiveness of planned capital and operating expenditure for reliability improvement
Support Services

Bill Frewen, Group General Manager External Relations
Overall expenditure forecast

Capital expenditure

Operating expenditure

$4.0B over five years

$2.2B over five years

New assets and upgrades
Renewal and compliance
Reliability
Support services

Inspection and maintenance
Fault and emergency

Financial Year

2007 2008 2009 2010 2011 2012 2013 2014

Real $M

0 100 200 300 400 500 600 700 800 900 1000
We will continue to consolidate our information systems

- Better integration to ensure consistency across core systems
- Purchase or replace infrastructure – hardware and communications
- Upgrade, enhance or modify functionality of existing systems as needed
- Improve security

New investments planned around our asset management and customer information systems
Country Energy’s fleet
~ 2,000  Heavy vehicles
~ 2,100  Light vehicles (includes trailers)
~ $120M  Estimated capital value
~ 64Mkm  Work travel per year
~ 10Mlt  Fuel consumption 2008-09
~ $17M  Fuel cost for 2008-09

Our network terrain and climate requires reliable off-road vehicles

Our fleet renewal program is based on an increasing work load, additional employees, safety and efficiency

• EWP and Crane Borer Replacement Program
  – Improved safety compliance
  – Improved operational efficiency

• Replacement of existing light fleet based on life cycle of 100,000 km
  – 6 to 4 cylinder vehicle replacement program
  – Fleet utilisation model
  – ‘5 Star’ vehicle rating system
Our property maintenance program is based on an increasing work load, additional employees, safety and efficiency

- Certain service centres are currently at, or nearing capacity
- Capital investments will be required in the form of building modifications, rebuilds and extensions
- Necessary to refurbish ageing buildings to provide a safe, efficient and secure working environment for employees

**Country Energy’s sites**

- 142 Service Centres
- 330 Zone substations
- 334 Radio sites

We will maintain our current, decentralised, regional presence
Country Energy has developed a strong Resource and Productivity Plan to ensure we can deliver our proposed expansion in works programs

- Plan developed in consultation with expert advisers, PB Associates
- Mix of internal and external labour
- Will make available the equivalent of an additional 830 full time employees by 2014
Summary

Country Energy’s regulatory proposal is designed to deliver a safe and efficient electricity network service through

- a responsive investment program matched to growing populations and changing consumption patterns
- a cost reflective maintenance and refurbishment program aiming to maintain ‘end to end’ asset condition – from major substations to home service mains and meters
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