

Powerlink Revenue Determination



Gordon Jardine – Chief Executive
Merryn York – Manager Revenue Reset Project

20 April 2006

Outline

- Key drivers
- Main elements of revenue proposal
 - RAB and past capex prudence
 - Capex
 - Opex
 - Overall revenue
- Service standards
- Impact on prices

High reliability at a reasonable price

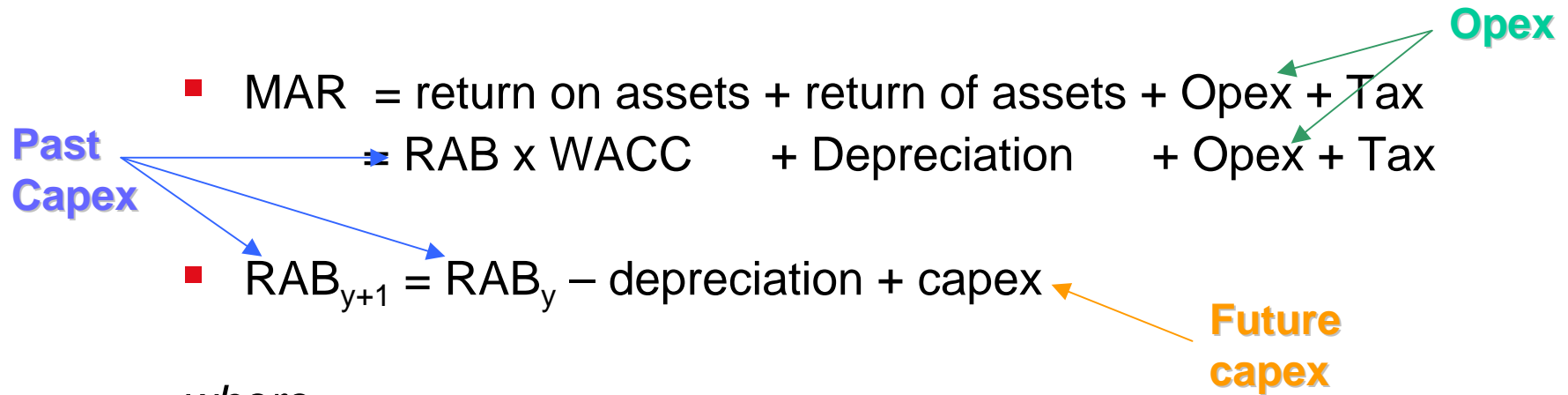
“It is clear that the community is not prepared to risk falling service quality and potential system failure in return for lower prices. On the contrary, there is an apparent expectation that service quality should increase and that system security be paramount.”

*QCA Final Determination Regulation of Electricity Distribution
April 2005*



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Regulated Revenue – building block calculation



where

- MAR = Maximum Allowable Revenue
- RAB = written down value of Regulated Asset Base
- WACC = Weighted Average Cost of Capital (return)
- Depreciation = Annual depreciation
- O&M = Operating and Maintenance cost allowed by ACCC
- Tax = Effective company tax payable

Key drivers

- **Mandated reliability obligations** – Licence, Electricity Act, NER Schedule 5.1 and Connection Agreements
- Load growth in Queensland is much higher than the rest of the NEM

“In Queensland, demand growth in electricity is running at twice the levels forecast four years ago. Significant infrastructure investment is therefore needed.”

Steve Edwell, ACCC Update, Issue 18 February 2006

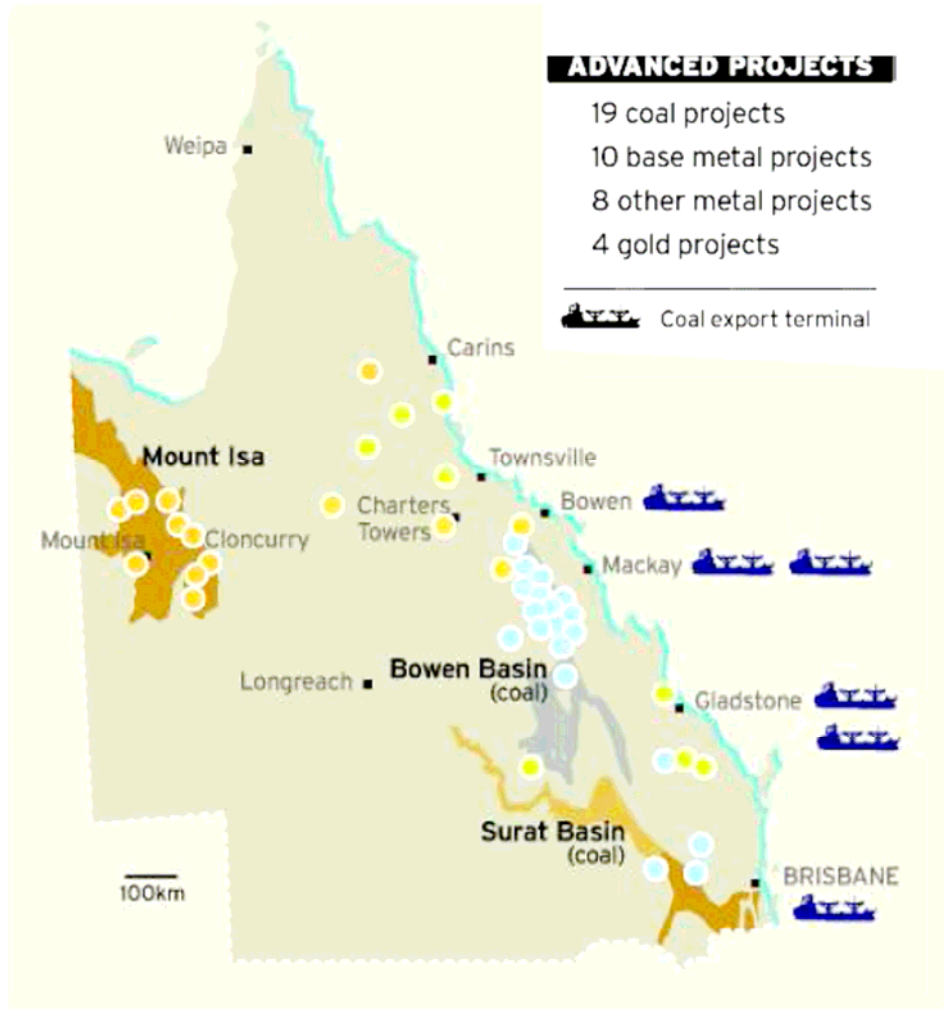
- Replacement of aged assets – first wave



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Mining industry basks in \$5b investment

Queensland mining projects



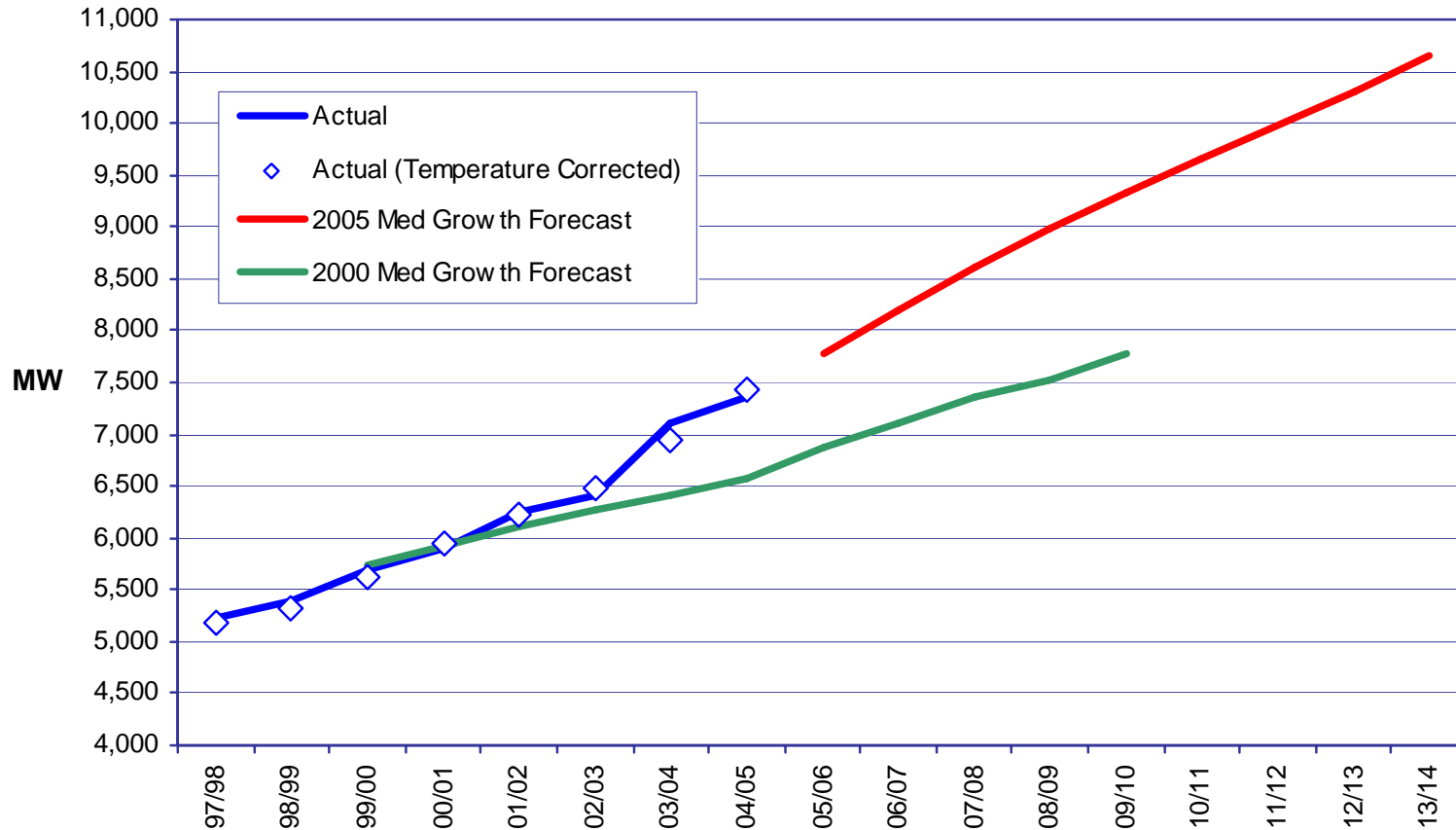
*The Courier-Mail,
Tuesday 18 April 2006*



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Demand forecast

Queensland Actual & Forecast Summer State Peak Demand



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Understanding the cost drivers

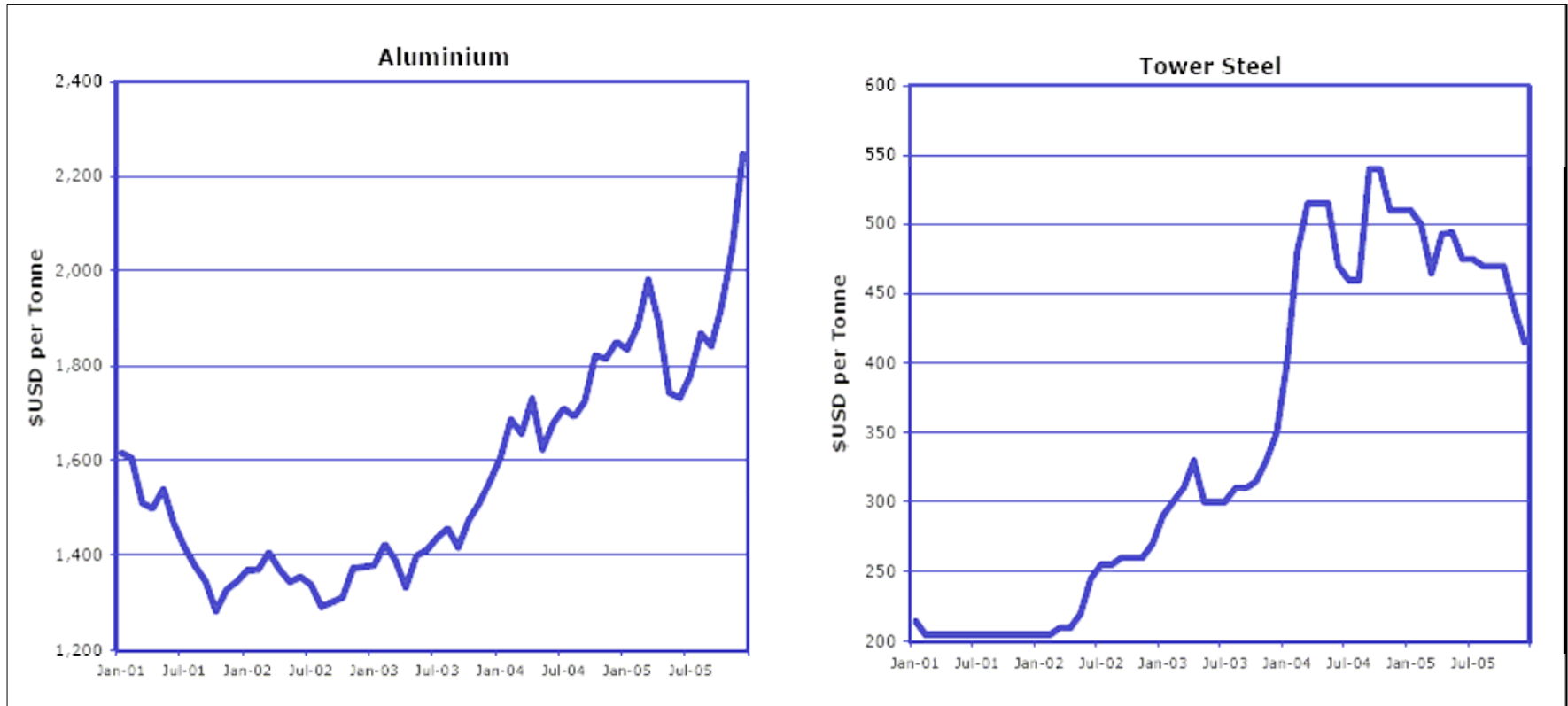
“The AER wishes to move away from detailed assessment of projects towards a greater focus on underlying cost drivers.”

Steve Edwell, EUAA Conference, October 2005



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External factors forcing up input costs



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T&D trends from 1970 to 2005:

- ▶ The features of competitors equipment **standardized**. The differences in technologies offered narrowed.
- ▶ RFQ's moved towards **functional specifications**
- ▶ Domestic **markets opened** to international suppliers
- ▶ **Manufacture in LCC** (low cost countries) increased
- ▶ Supply was larger than demand (**over capacity**)
- ▶ **Purchasing was aggressive** (negotiation of larger quantity Term Contracts, raw material prices were stable or dropping, factories improved efficiencies...).
- ▶ **The price of electrical equipment decreased from 2% to 4% annually, driven by competition.**

Material trends 2002 to 2006:

- ▶ **Strong ongoing material demand is driving prices upward.**
 - ◆ **Copper LME price increased 240% in past 3 years**
 - ◆ **GOES** (grain oriented electrical steel) **increased between 110% & 150% over 2 years** (depending on grade & location)
 - **Few mills produce high grade**
 - **limited new capacity coming on stream**
 - **access to base steel is limited** (also used in electrical & automotive steels)
 - ◆ **SF6 is in shortage, price increases 50%**
 - ◆ **Transformer oil price and shortages**
 - ◆ **Steel fabrication prices have increased as much as 150% due to material increases & labour shortages**
- ▶ **The price of electrical equipment is forecast to increase from 1% to 10% per year**

CONCLUSION

- ▶ Worldwide equipment **demand is high** and forecast to grow strongly.
- ▶ **Factory capacity is relatively static**. New factories are being built in LCC (China, India...) but these are primarily to support local demand and they only replace the shut down of uncompetitive factories in **Europe, USA**.
- ▶ **Equipment prices will gradually increase due to material price increases, reduced competition in an expanded market and to justify further investment.**

Forecast capital expenditure

In reporting cost blowouts, Chris Pointon, President of BHP Billiton's stainless-steel materials division, cited increased labour costs, increased contractor costs and increased materials costs:

“It’s a world wide phenomenon, and it’s related to unexpected increases in demand for raw materials.”

Business Review Weekly, 24-30 November 2005

Chris Pointon also sees these conditions persisting:

“We firmly believe this is a step change and these increased costs will continue for some time.”

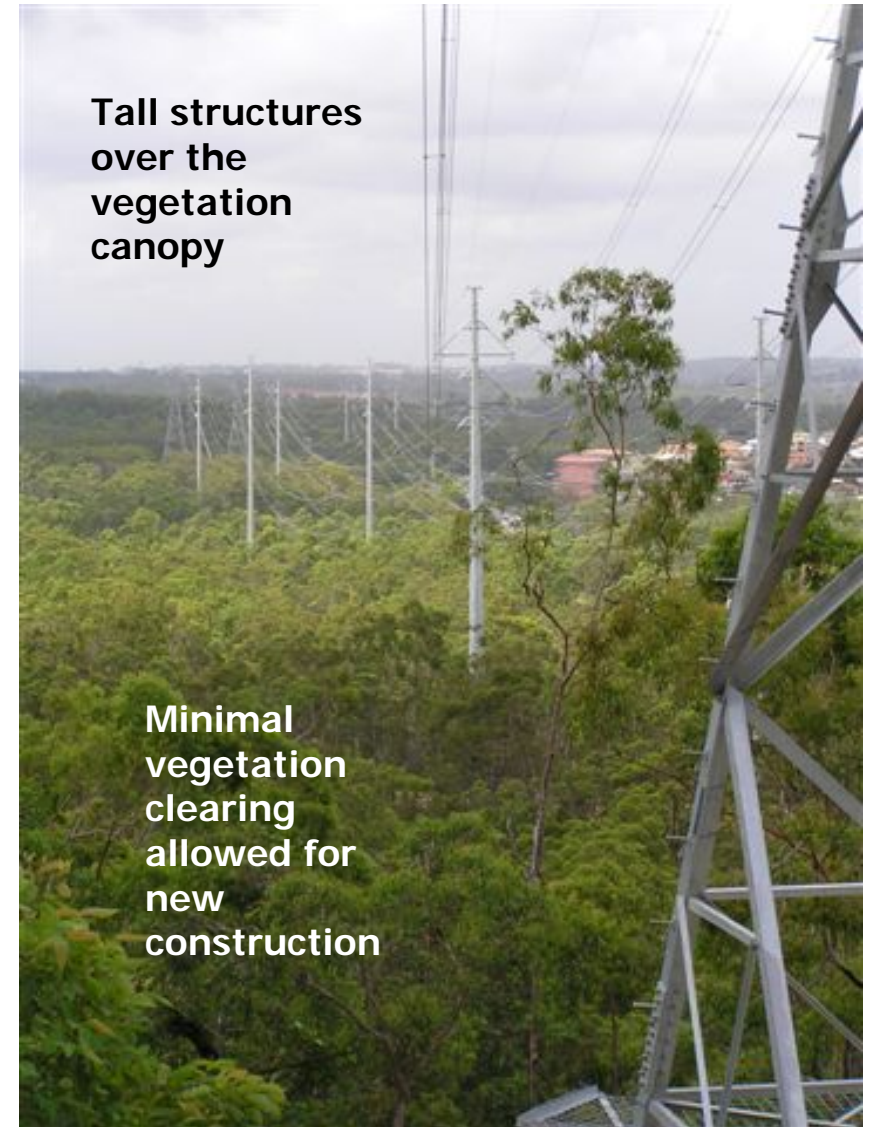
The Australian, 27 September 2005



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Greater obligations

- Vegetation Management Act
 - ❑ Changed dramatically the way in which vegetation is cleared on transmission line easements
- Impacts
 - ❑ Increases initial construction costs
 - ❑ Increases maintenance costs (vegetation management requirements apply for the life of the transmission line)



Greater obligations

- Electrical Safety Act 2002
 - Absolute must do
 - Revised safe approach distances – required review of designs + all work practices.
 - Safety compliance audits
 - Risk assessments for all work – impacted particularly on live work

- Undergrounding
 - SEQ Regional Infrastructure Plan defines “urban footprint”
 - Expected to require some increased undergrounding
 - Ex ante framework must make allowance now

Revenue Proposal - Details

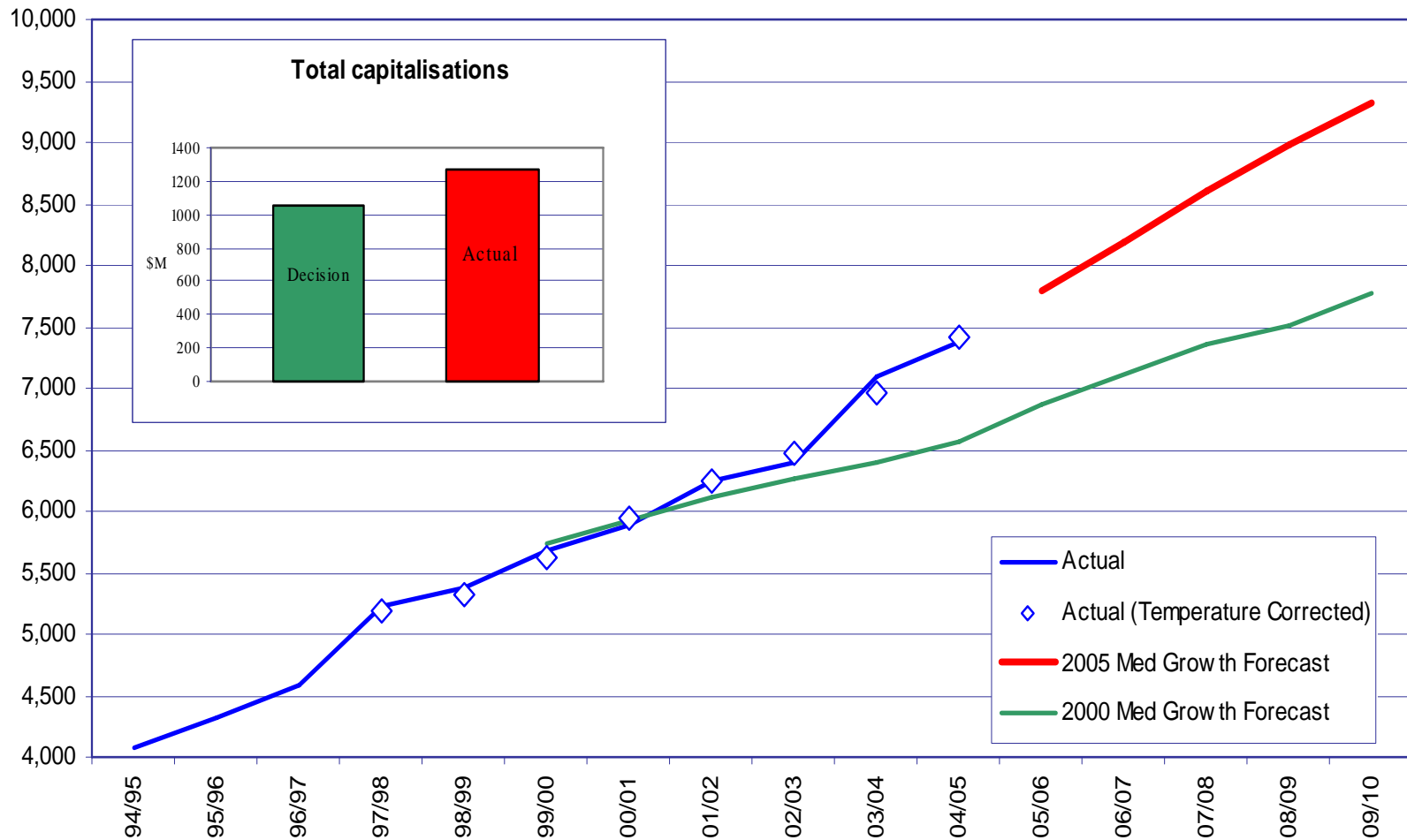


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Regulatory Asset Base

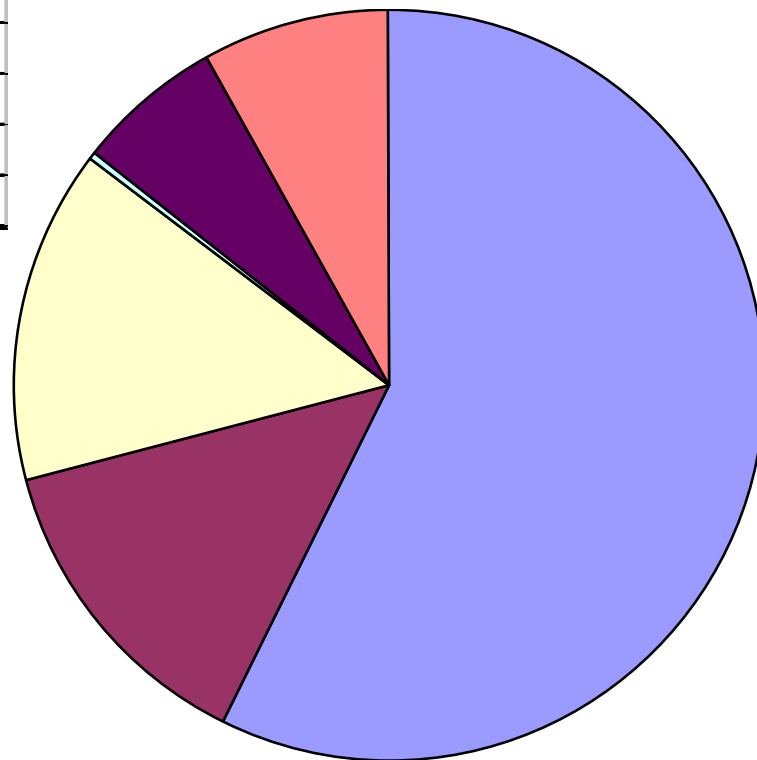
- Roll forward approach – no asset revaluation
- Actuals (audited accounts) to June 2005
- Forecast two final years to June 2007
- Prudency assessment of past capital expenditure
- Accounting changes for recognition of capital expenditure

Higher demand forecast



Prudency of past capital expenditure

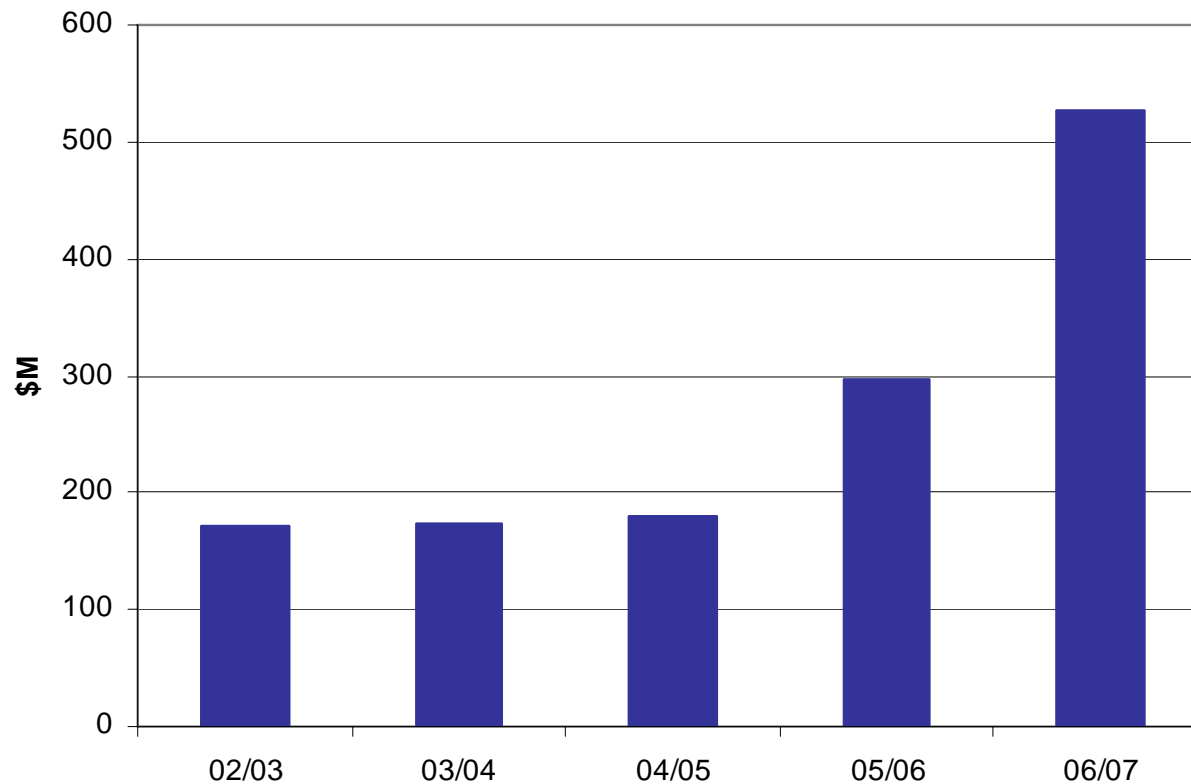
	No. Projects	Capitalised Cost \$m
>\$10 million	25	673.5
\$1 million - <\$10 million	145	424.33
< \$1 million	176	46.47
Sub Total		1,144.30
FDC		129.81
Total (incl. FDC)	346	1,274.11



- Augmentations
- Non-augmentations
- Replacements
- Security/Compliance
- Other
- Non-network

Capital expenditure current regulatory period

- Increased capital spend is already occurring in last years of present period



Opening asset base – next period

\$m nominal	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07
Opening asset base	2,276.87	2,394.42	2,553.69	2,682.79	2,856.80	3,011.42
2001 decision capex at actual CPI	155.24	180.11	190.78	233.23	202.34*	93.25*
Economic depreciation (CPI adjusted)	37.70	20.84	61.68	59.23	47.72*	56.09*
Closing asset base	2,394.42	2,553.69	2,682.79	2,856.80	3,011.42	3,048.57
Add capitalisation over 2002 – 2007 allowance						219.15*
Other Adjustments						(1.19)
Closing RAB 30 June 2006						3,266.53
Transition (Assets Under Construction roll in)						529.95*
Opening RAB 1 July 2007						3,796.48

Note: Numbers may not add due to rounding

* Forecast

■ Opening RAB 1 July 2007

\$3,796.48



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Capital expenditure forecast

- Main drivers
 - demand forecast
 - replacement of aged assets
 - security needs for critical infrastructure
 - “support the business” functions
- More physical work
- But also
 - higher input costs – labour, materials, contractors
 - some (limited) undergrounding in “urban footprint”

How is the capex forecast?

- Augmentation capex – based on demand growth and mandated reliability obligations
- Combination of “committed” (early years) and “projected” (using various scenarios)

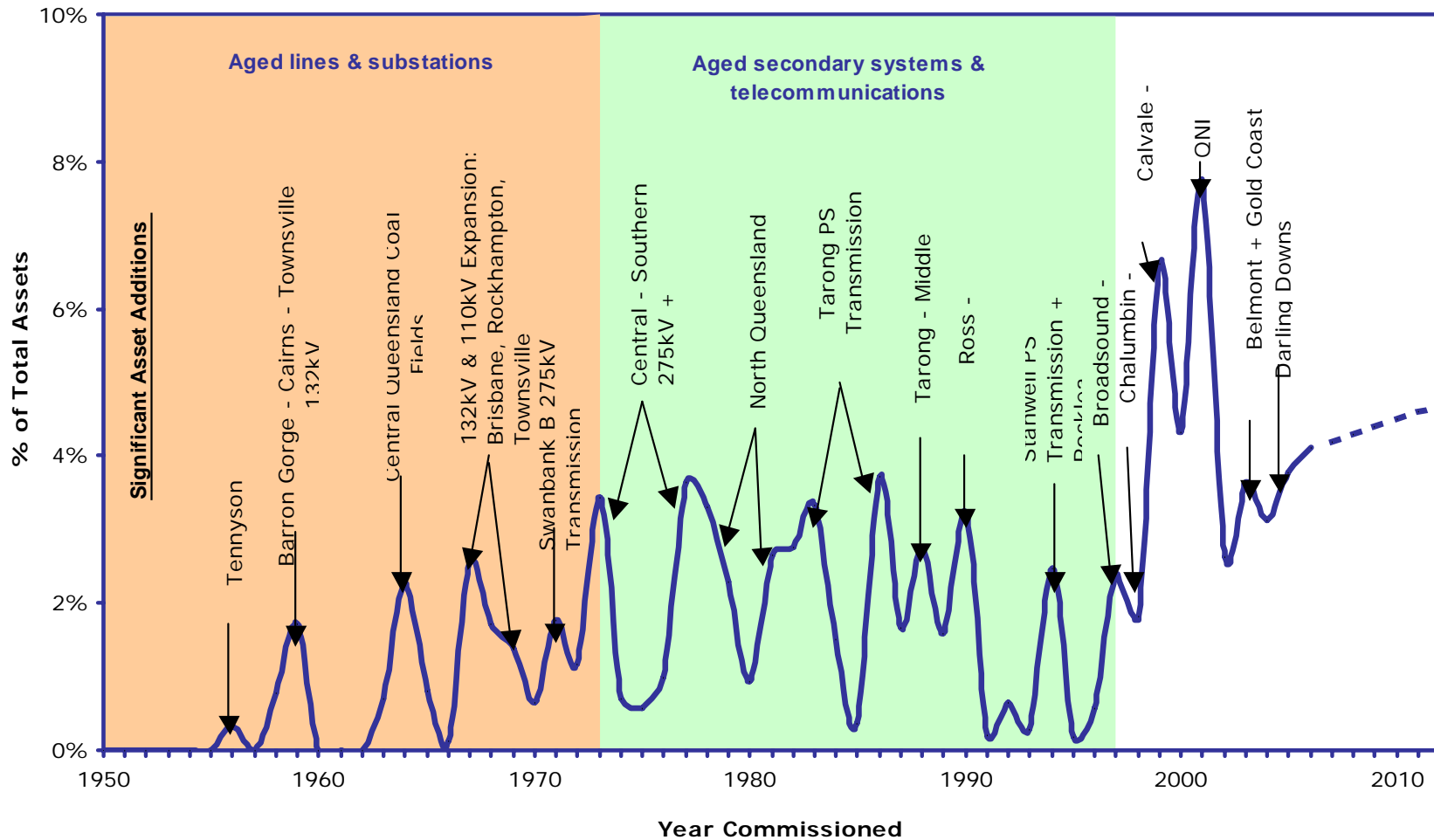
Capex forecast – scenarios

- Scenarios built from themes:
 - load growth
 - inter-regional trade
 - generation from gas (PNG pipeline)
 - greenhouse options (eg. carbon signal)
- Results in 40 possible scenarios
- Detailed grid planning done for each scenario to identify augmentations needed in each
- Each scenario is given a probability (by consultant)
- Projected capex is the probability-weighted average of the 40 scenarios

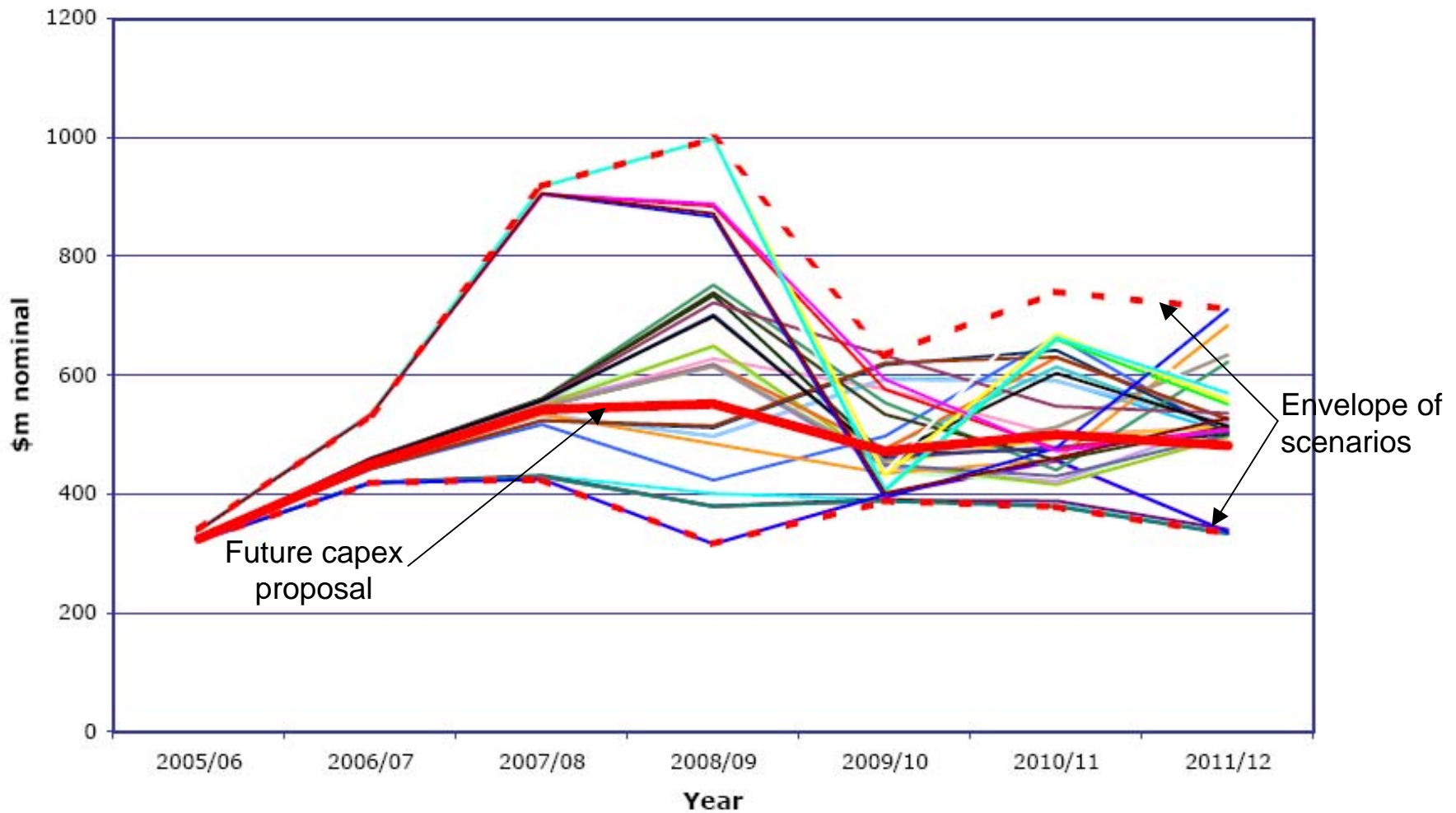
How is the capex forecast?

- Replacement capex – based on condition assessments, triggered by either age or ongoing condition monitoring
- New investments 40 to 50 years ago means replacement arises from 2007 onwards
- Examples include the old 132kV lines in NQ and substations around central Queensland

Forecast capital expenditure - replacement



Scenario capital expenditure - network

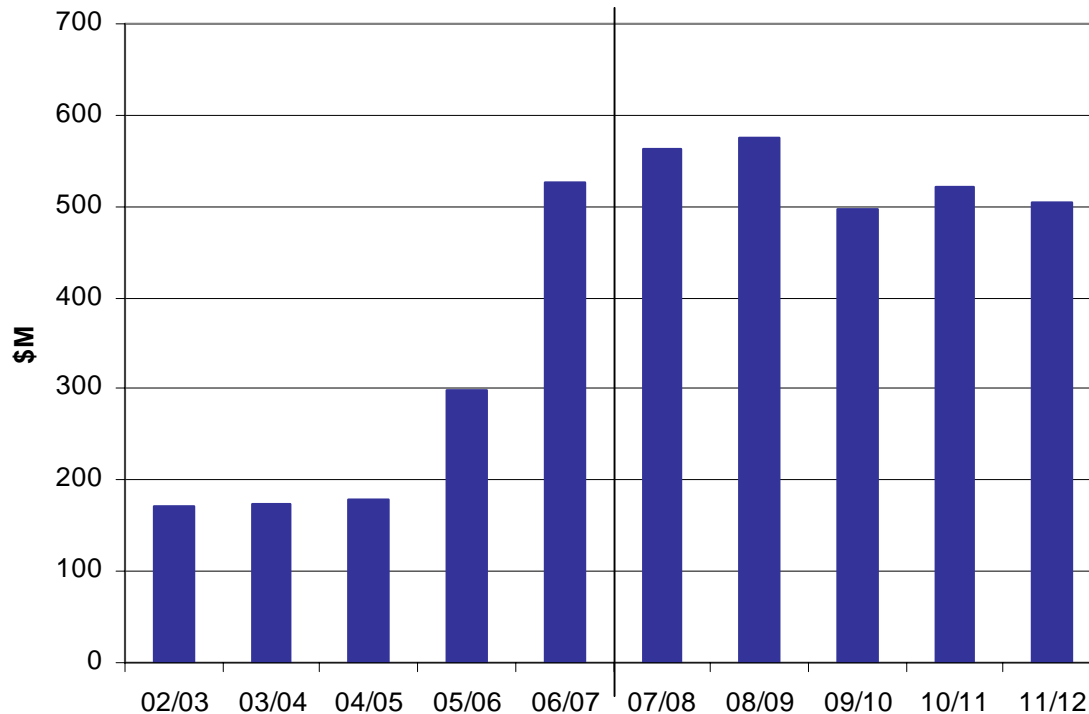


Forecast capital expenditure – contingent projects

- QNI upgrade – under evaluation with TransGrid
- Also for possible point loads not included in the demand forecast, eg. Desalination plants, industrial loads in Townsville or Bowen Basin or Ipswich, etc
- Regime proposed:
 - establish during the revenue determination that these are not included in the main ex ante allowance
 - AER evaluates once the nominated trigger occurs
 - A revenue adjustment is made for the remaining years of the revenue period.

Overall capex

- Substantially higher than previously
- Two elements – more work and higher input costs
- Delivering 2005/06 forecast already
- Proportionally similar to Energex and Ergon



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Deliverability

- 60% larger than current period in dollar terms – much less in physical work terms
- Initiatives already underway to achieve 2005/06 and 2006/07 capex requirements
 - ❑ Design standardisation
 - ❑ Program management
 - ❑ Supply chain management
 - ❑ Streamlined easement acquisition
 - ❑ Increased outsourcing
 - ❑ Increased internal staffing
 - ❑ Strengthened governance/management structures
 - ❑ Long term agreements with major construction contractors



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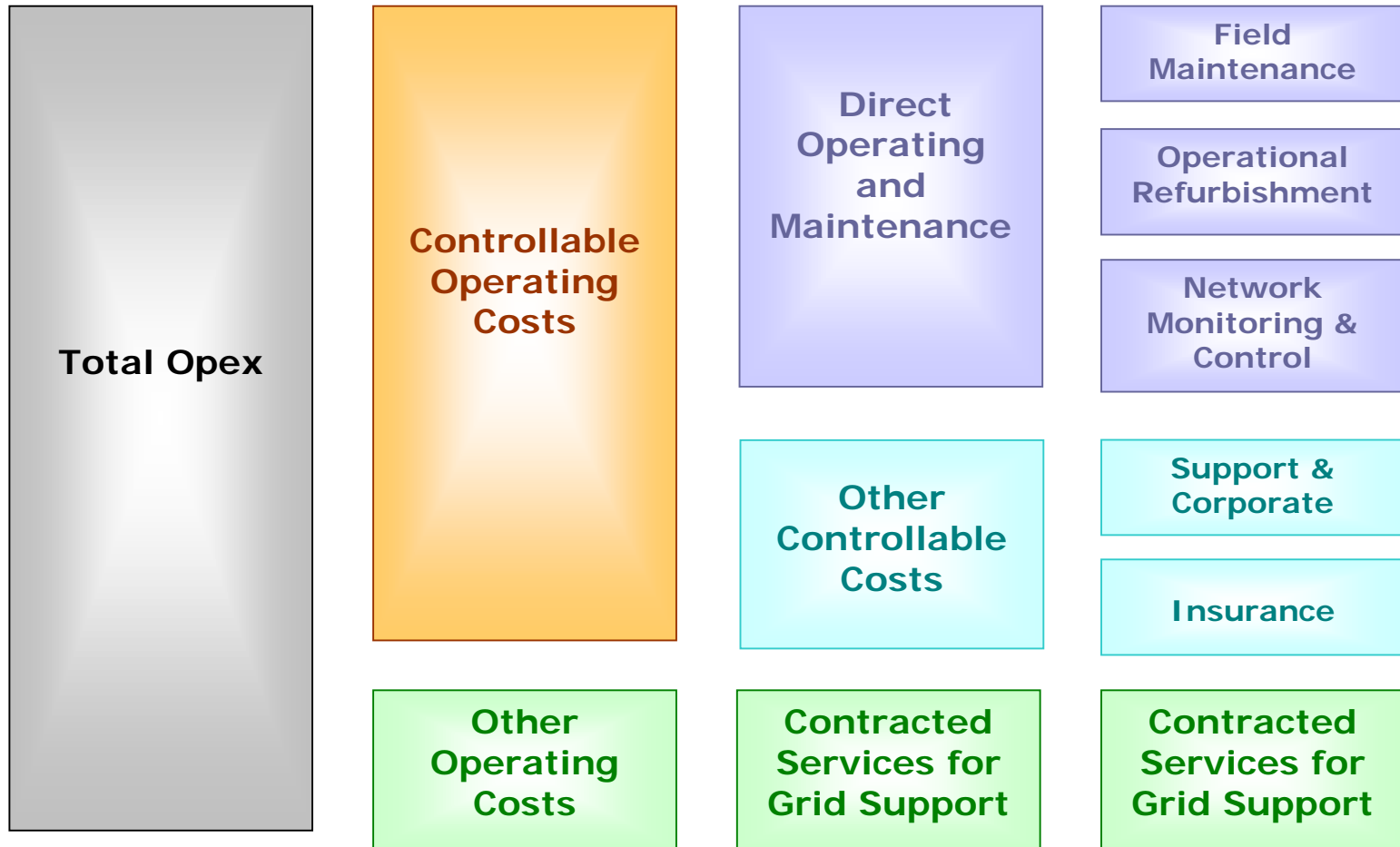
Grid support

- Costs of non-network solutions used to economically defer network augmentation
- Powerlink is the largest acquirer of grid support in the NEM (by far)
- Economics evaluated through Regulatory Test
- Proposed to have an allowance in revenue
- Pass through arrangement to cater for uncertainty due to exogenous factors (eg. Demand, rainfall, oil prices, etc)
- Evaluation simultaneously with capex ensures no “double counting”



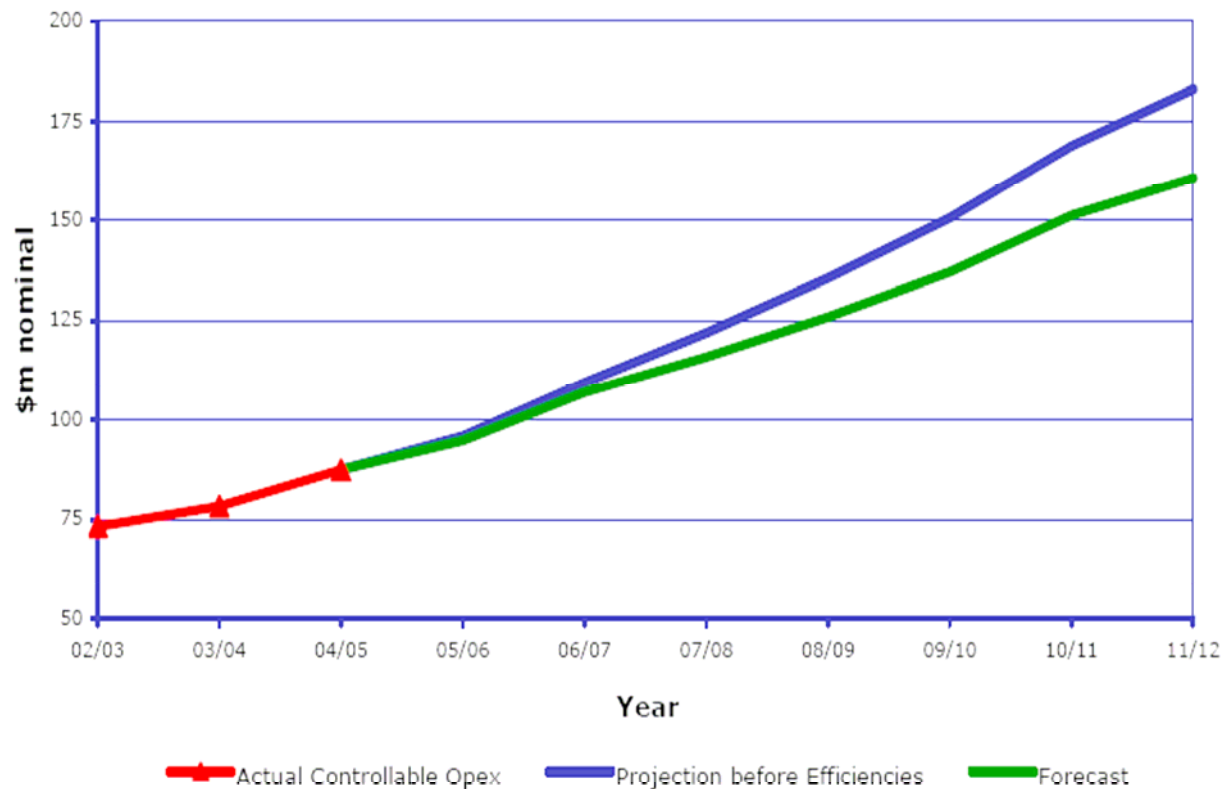
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How is the opex forecast ?



Operating expenditure - drivers

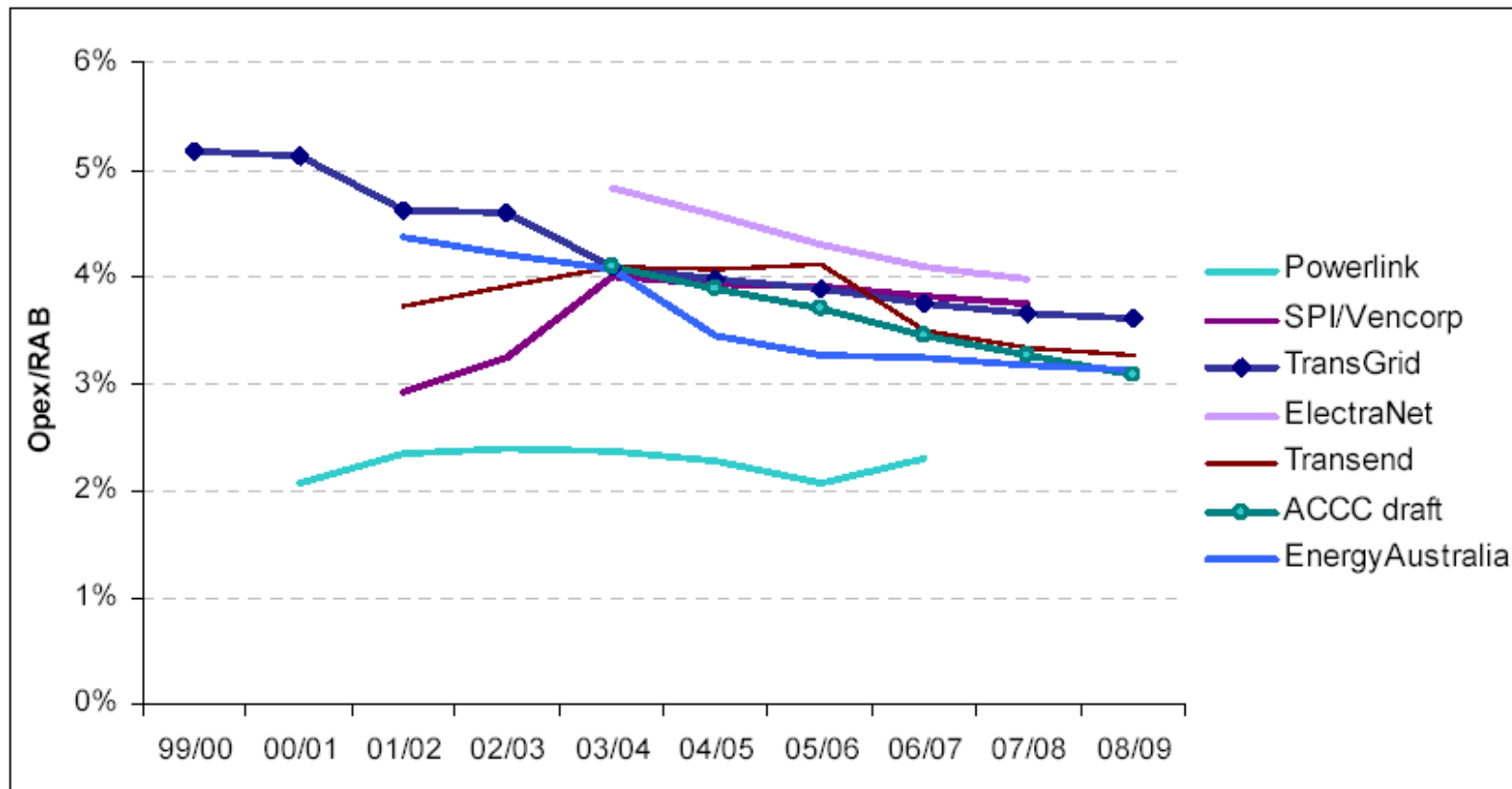
- Labour, Materials costs, larger network, increasing obligations (vegetation, etc)
- Offset by scale economies and efficiencies



How is the opex forecast ?

- Each component is separately forecast, based on the key cost drivers for that component
- Example – direct maintenance and operations : size of network to be maintained (increasing), labour, maintenance materials
- Observations – labour costs are increasing faster than CPI and Wage Cost Index (skills shortages, competition, parity); maintenance materials costs are increasing faster than CPI (metals-based, transportation/fuel cost)
- Legislation – vegetation guideline impacts + Electrical Safety Act + WH&S
- Resulting cost estimate is reduced by efficiencies : targeted programs and economies of scale (impacts more on corporate costs than direct costs)

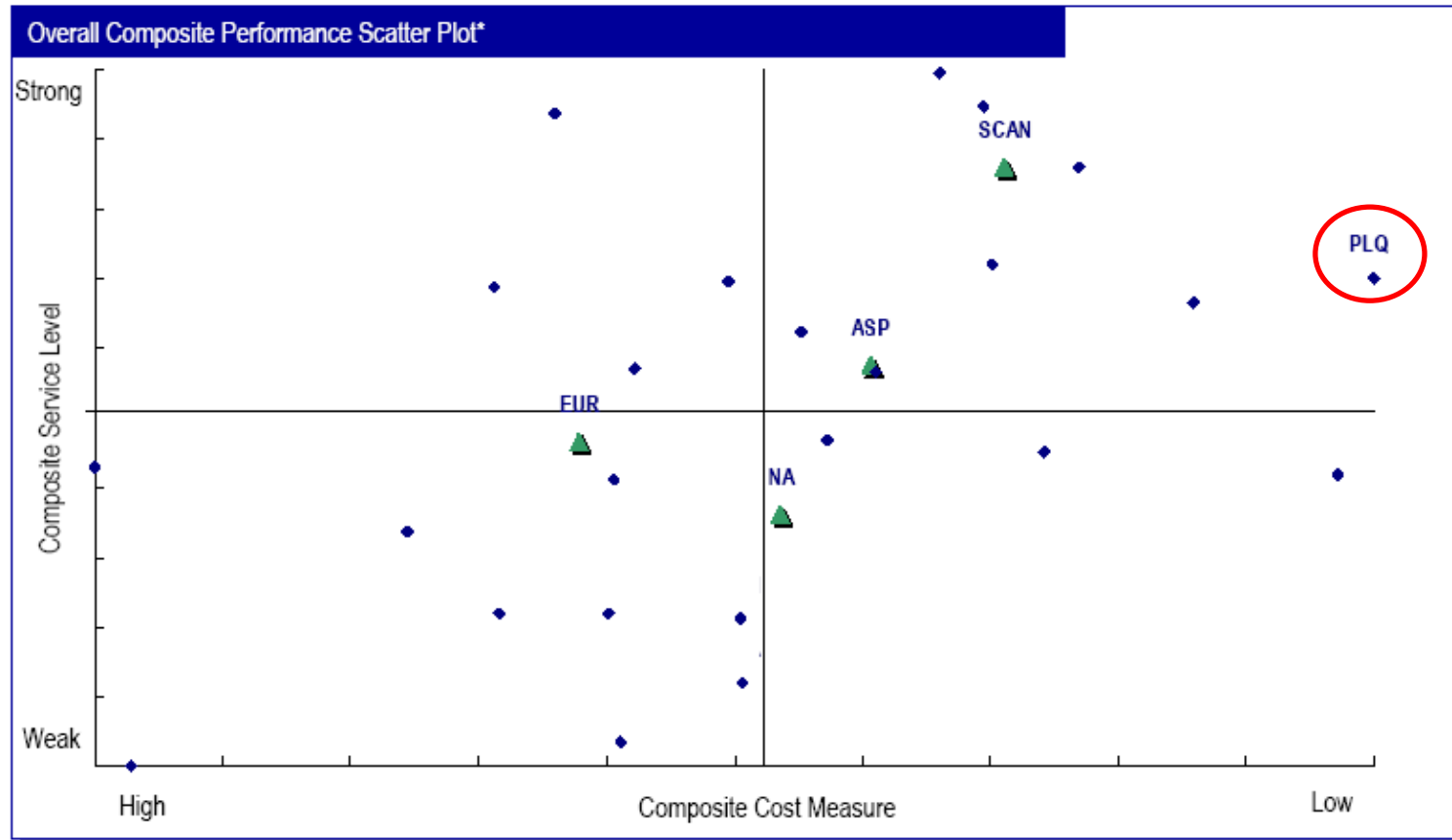
Comparison of TNSPs: Opex/RAB



From TransGrid draft decision: April 2004

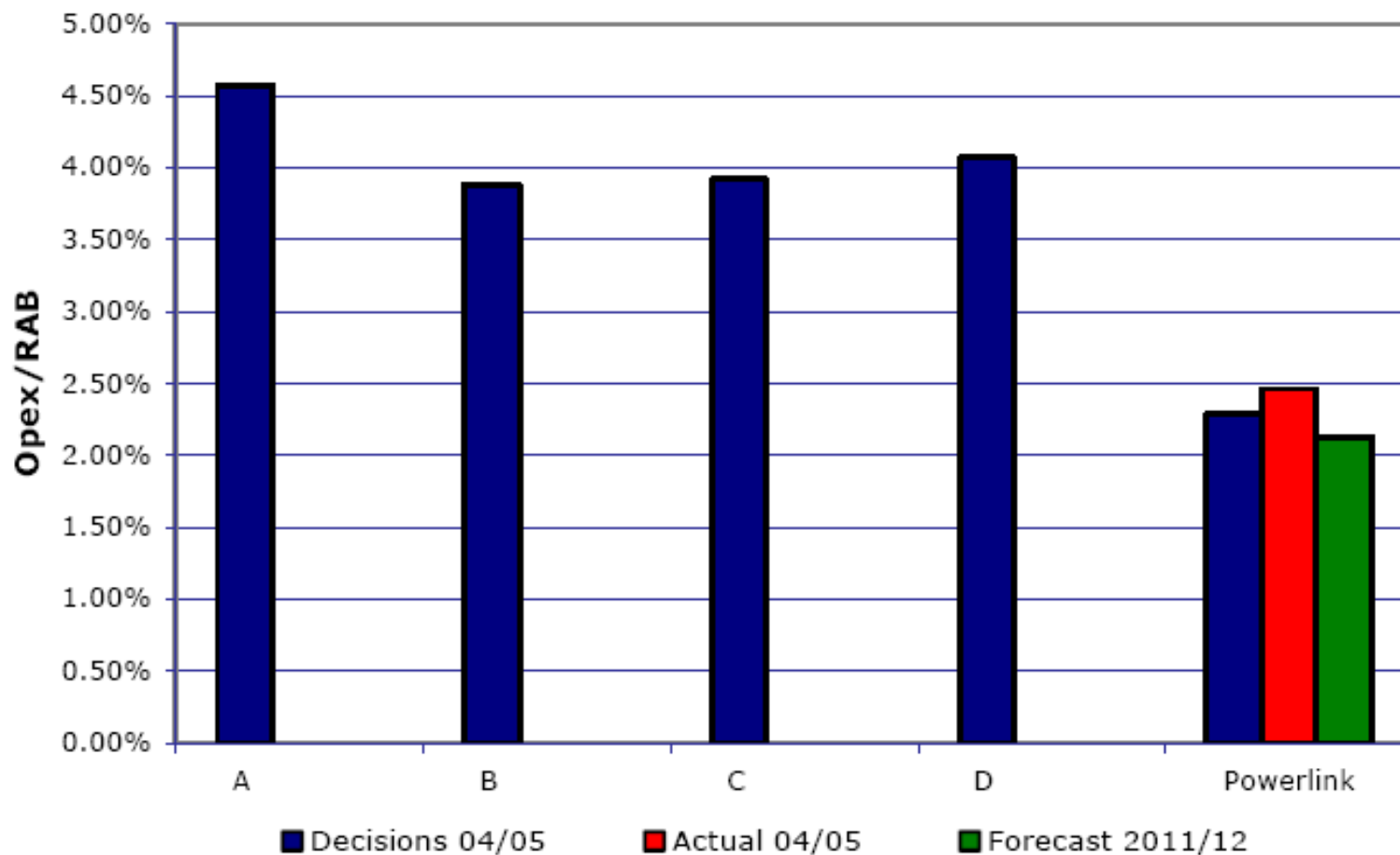
International benchmarking (ITOMS 2005)

Overall Composite Benchmark – Weighted Average



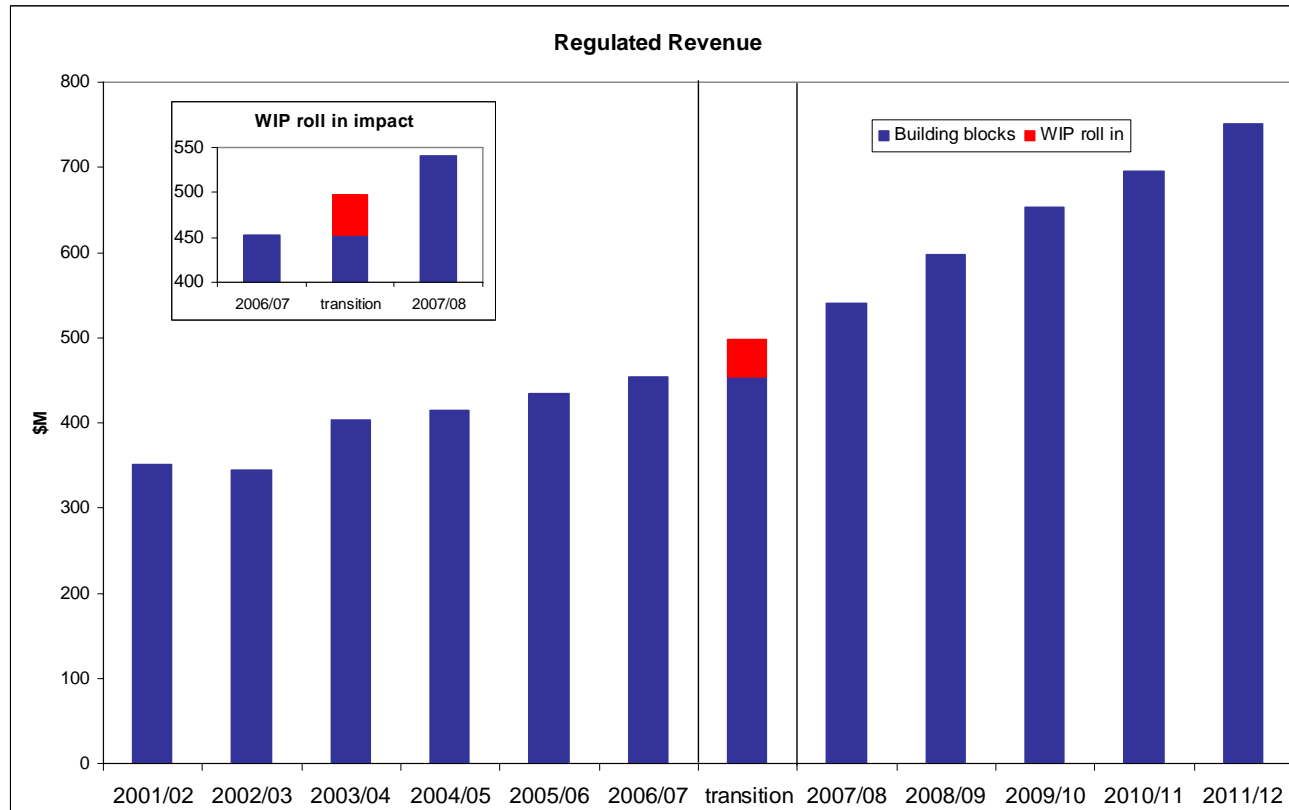
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Opex/RAB



Forecast revenue

- Unsmoothed MAR shows one-off impact of AER capex accounting change
- Other changes due to Powerlink's work program and the effect of higher input costs



Price impacts – average TUOS

- One-off increase of about 10% due to AER capex accounting change
- Trend increase of about 5.5% p.a. due to program of work and higher input costs
- Comparison – Queensland distribution network average DUOS is increasing at 7.5% p.a.
- Powerlink is operating in the same load growth environment and experiencing the same higher input costs
- Transmission prices are between 8% and 20% of total delivered cost (depending on connection level), the Powerlink impact is 0.5% to 1.1% on total delivered electricity price
- This equates to about \$3 per annum for an average consumer (\$737 bill)
- Reasonable price impact – under the circumstances

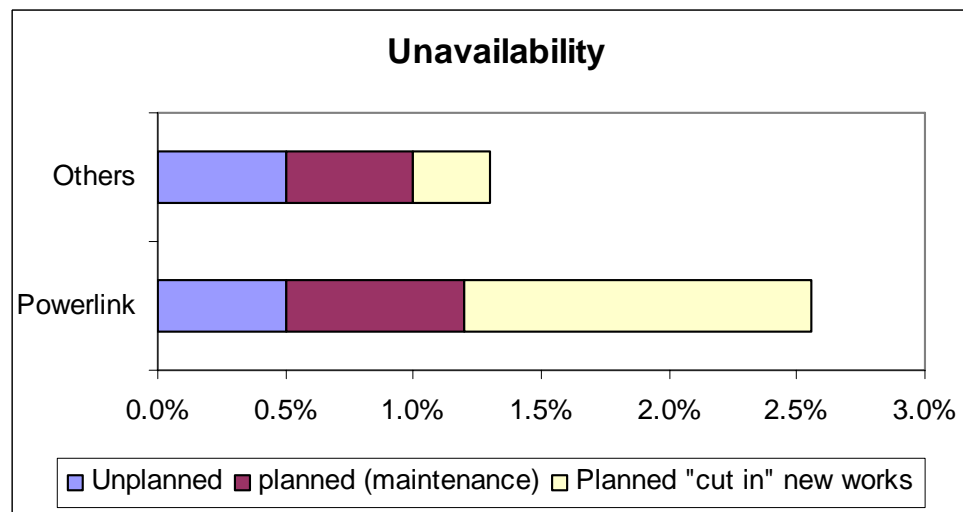
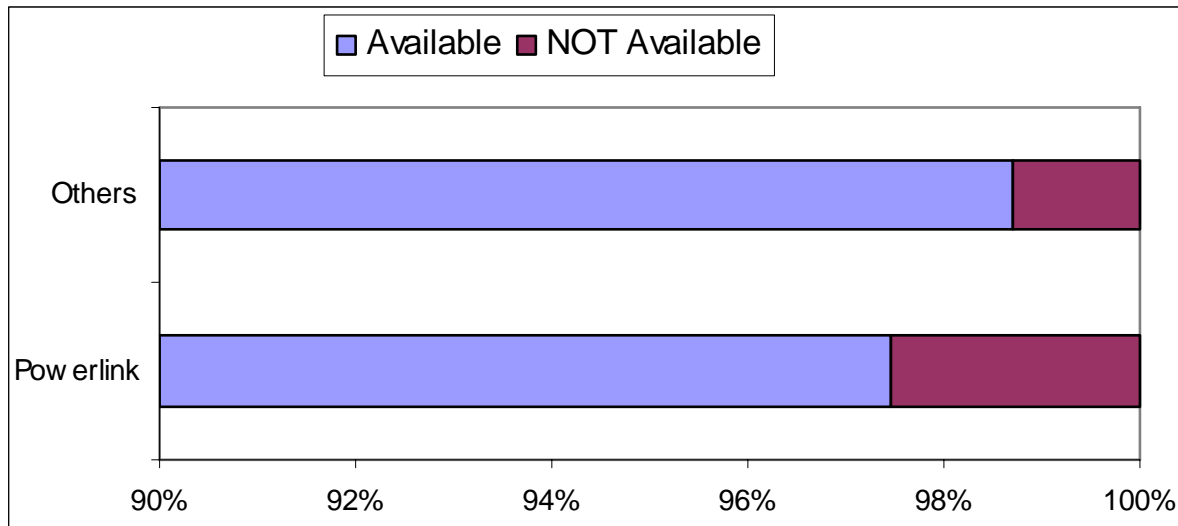
Service standards

- Circuit availability
 - Critical elements - the most critical parts having the most customer impact
 - Non-critical elements
 - Peak hours - when the network elements are of most value to customers

- Loss of supply
 - Small > 0.2 system minutes
 - Large > 1.0 system minutes

- Average forced outage duration

Understanding circuit availability



Summary

- Must meet mandated reliability standards
- Load growth – regulator needs to understand Queensland

“Access Economics has significantly upgraded its forecast for economic growth in Queensland in 2005/06 from 3.9% (September quarter outlook) to 5.1% (December outlook). At the same time, Access has downgraded its forecast for national economic growth, from 3.1% to 2.7%”

Government press release, Wednesday 25 January 2006



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Summary

- High input costs – regulator needs to understand today's environment
- Still the most efficient transmission business in the NEM!
- Price impact is modest – very reasonable in Queensland context – less than DNSPs but same environment

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