ElectraNet Revenue Proposal

Public Forum

23 July 2012

Overview

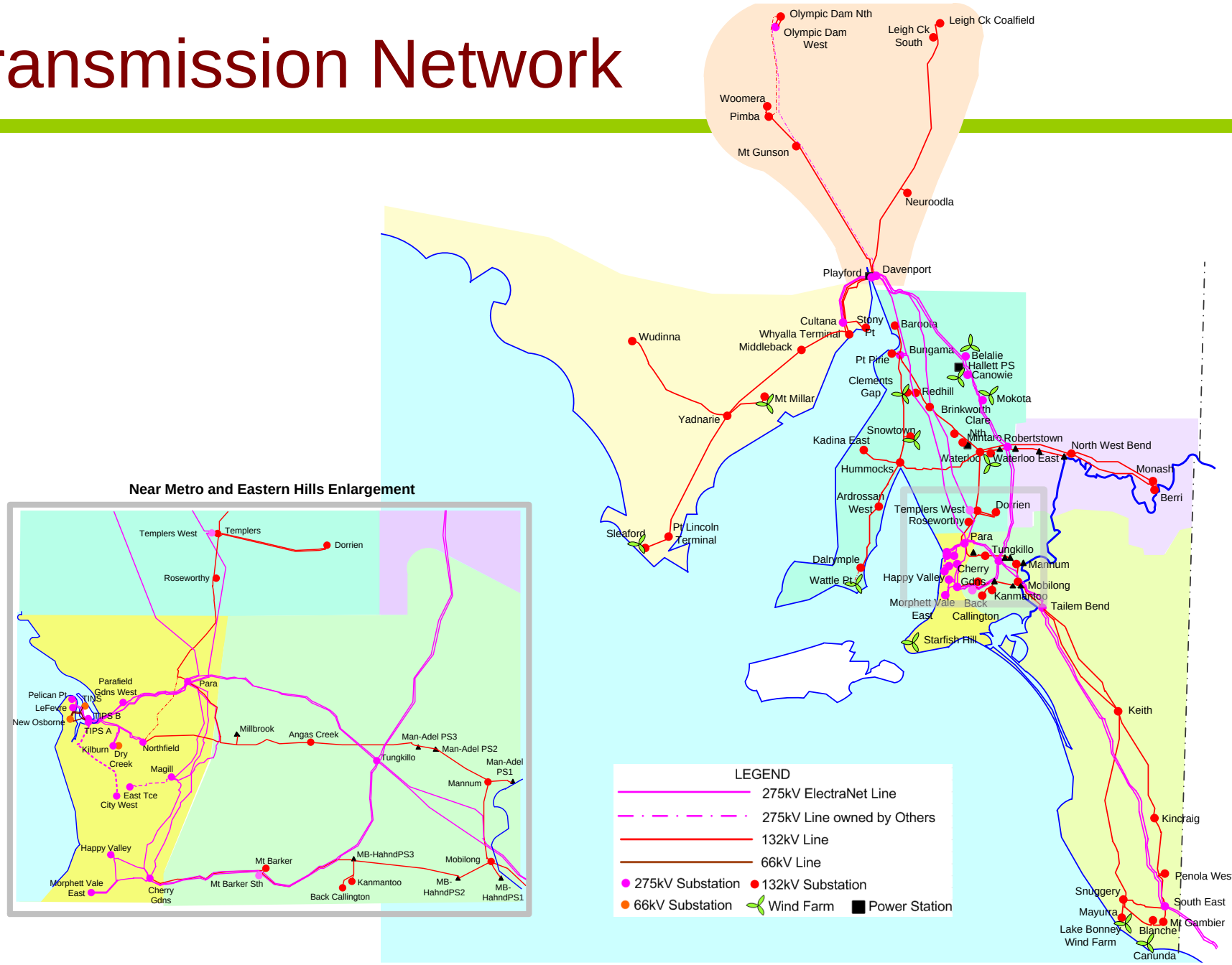
- ElectraNet recognises the community sensitivity to rising energy costs and has worked hard to deliver a responsible Revenue Proposal with minimal price impact
- Forecasts have been developed within a strategic framework supported by a clear Vision and Board-approved strategies
- Overall focus on risk-based approach to forecasts and lowest long-run cost solutions
- Capital investment program driven by essential high-risk asset replacement and transmission line refurbishment requirements and lower load-driven program (supported by AEMO)
- Asset management needs are driving operating expenditure forecasts based on asset condition and risk, and the drive to optimise network capability and prolong asset life

Outline

- Context
- Strategic framework
- Historic performance
- Expenditure Forecasts
- Conclusions

Context

Transmission Network



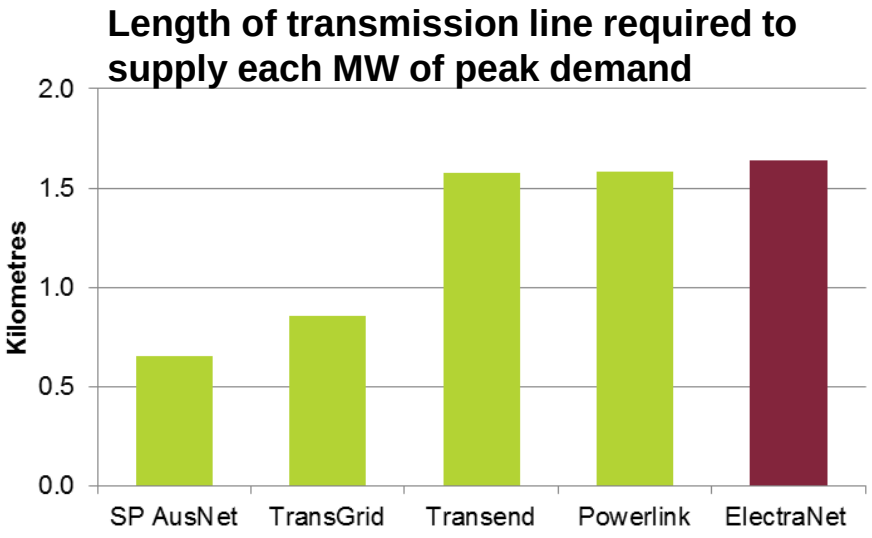
Key challenges

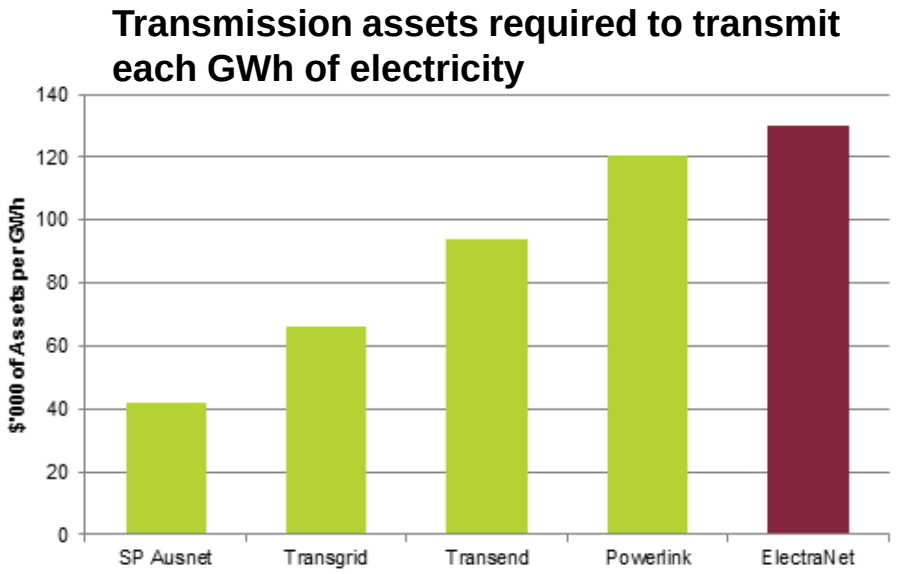
- **Changing environment** - increasing uncertainty given range of political, economic and technological factors
- **Safety** - managing bushfire risk and vegetation clearance requirements
- **Clean energy** - continued intermittent generation development
- **Mining sector expansion** - prospect of significant resource development
- **Labour costs** - increasing competition for skilled resources
- **Technological changes** - smarter technology, energy storage, new consumption patterns

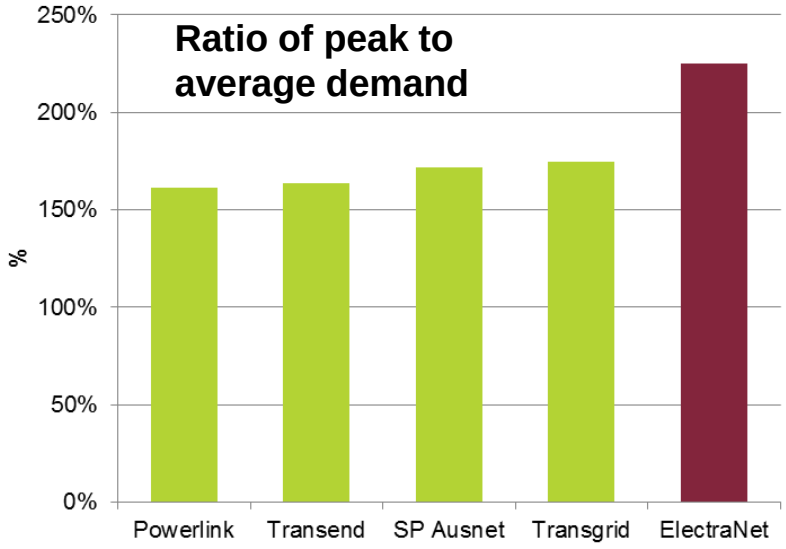
Key challenges (cont.)

- **Scale** – relatively small network limits scope for economies of scale
- **Customer density** – lowest energy density in the NEM reflecting small population and large geographic area (i.e. relatively more network required to supply each customer)
- **Load factor** – worst load factor in the NEM given ‘peaky’ load profile (i.e. relatively more capacity required to deliver each unit of energy)
- **Topology** – relatively more assets providing transmission services in SA (i.e. relatively larger number of substations and lower voltage assets that would typically be found in distribution systems)
- **Ageing network** – 32% of transformers and 42% of line assets will exceed nominal asset lives by end of next regulatory period (June 2018)
- **Asset condition** – detailed asset inspections are revealing significant challenges

Key challenges (cont.)







These challenges mean efficient costs in SA will be relatively higher than elsewhere

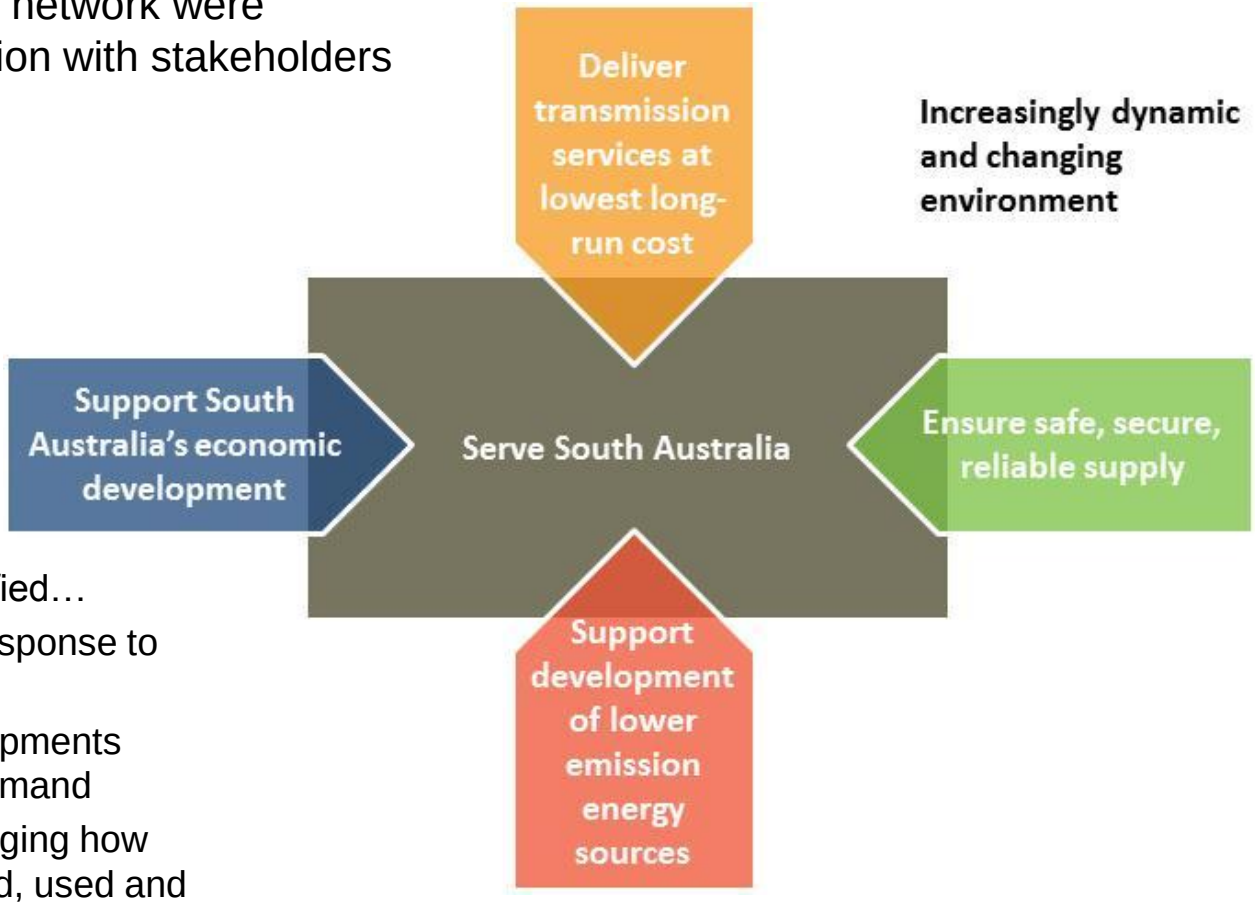
Strategic Framework

Network 2035 Vision

- Key vehicle for engagement with stakeholders
- Process commenced in 2010 with focus groups and environmental scan
- Draft Vision issued for consultation in 2011
- Stakeholder feedback taken into account in finalising the Vision
- Final Network 2035 Vision published April 2012
- Available at www.electranet.com.au

Network 2035 Vision (cont.)

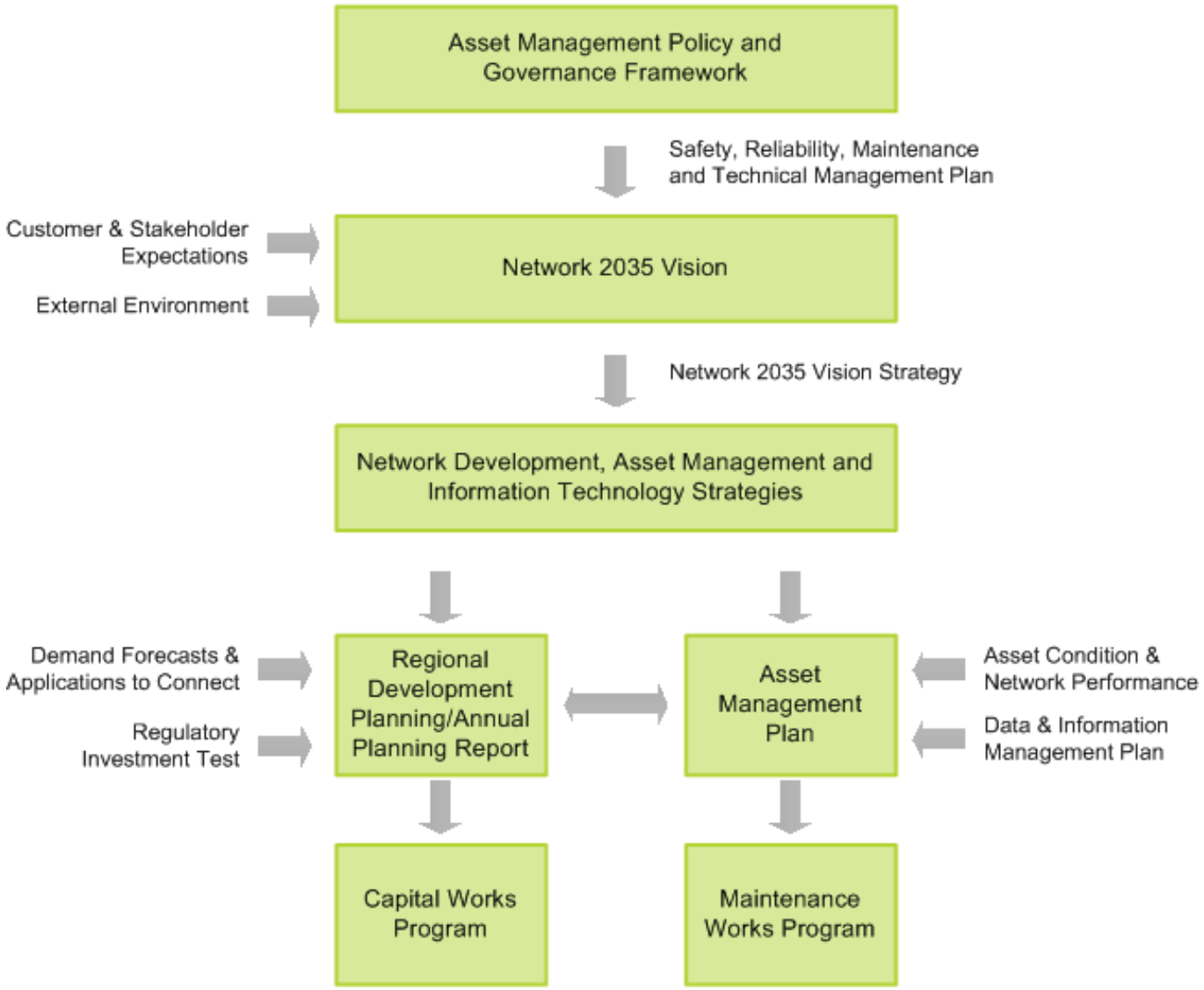
Objectives for future development of the electricity transmission network were developed in consultation with stakeholders



Key change drivers identified…

1. Government policy response to climate change
2. Mining-related developments creating increased demand
3. New technology changing how electricity is generated, used and stored
4. Ongoing regulatory reform in energy markets

Asset management planning framework



Historic Performance

Historic performance

- Changing network investment priorities managed within capex allowance (forecast to be within 1% of allowance) with variation in expenditure timing due to:
  - shift in driver date of various projects and approval delays
  - resourcing, delivery and financing challenges
- Opex overall in line with allowance:
  - cost savings primarily in corporate costs
  - higher maintenance costs including increased vegetation management requirements have eroded these savings
- Performance against service indicators exhibits overall trend of high performance

Capital Expenditure Forecast

SA planning arrangements

- ElectraNet responsible for transmission investment decision making and service delivery
- Reliability standards are set independently by the jurisdictional regulator ESCOSA in Electricity Transmission Code – set economically using probabilistic assessment and expressed deterministically
- AEMO provides independent planning oversight via services provided to the SA Government and more generally the NTNDP, joint planning and RIT-T processes
- AEMO State-wide demand forecast has been used to plan main grid augmentation (no ex-ante projects in forecast period)
- Distribution and customer connection point forecasts drive local augmentation

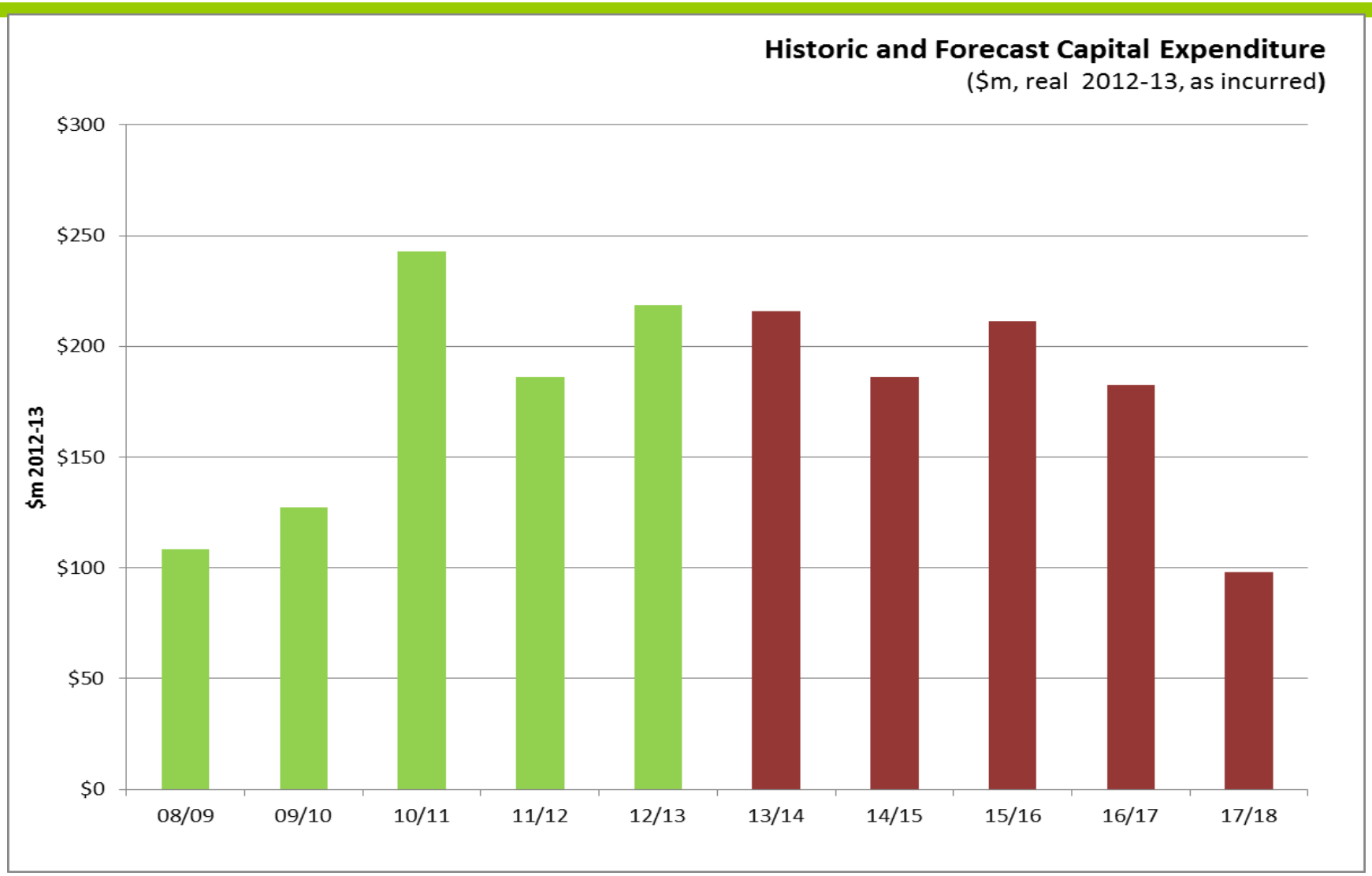
AEMO review

- SA Government asked AEMO to assess:
  - validity of augmentation capex projects
  - need and triggers for contingent projects
  - compliance with Electricity Transmission Code
- AEMO conclusions:
  - found for each augmentation that a need exists, the timing is appropriate and option proposed is reasonable
  - confirmed the consistency of the forecast with the NTNDP
  - confirmed compliance with the ETC
  - endorsed contingent project drivers and triggers
- Final Report published on AEMO website

Forecast capex drivers

- Ongoing peak demand growth driving reliability investment requirements (but much lower than in current period)
- Growing number of assets nearing end of technical life requiring replacement (based on asset condition and risk)
- Additional investment required to refurbish and extend the life of transmission lines based on asset condition and risk mitigation (to minimise long-run costs)
- Need for timely land and easement acquisition to meet future investment requirements

Capex forecast



Capex trends

- Shift in investment driver from demand to replacement, based on risk:

Category	Historic ($12-13)	Forecast ($12-13)	Explanation of significant variations
Augmentation	362	118	Reduction reflects no new large augmentations, uncertainty in major new loads (e.g. mining), and focus on small projects to defer major augmentation
Connection	126	133	No significant variation
Strategic land/ Easements	30	66	Significant increase driven by projected need for future transmission line projects
Replacement	237	398	Increased end of technical life investment in water pumping and other radial substations, telco assets and continuing network projects
Refurbishment	-	54	Line refit projects driven by asset condition and risk, extending asset life and avoiding full replacement
Security/Compliance	63	57	No significant variation
Inventory/Spares	16	18	No significant variation
Business IT	42	44	No significant variation
Buildings/Facilities	8	6	No significant variation
Total	**883**	**894**	

Asset replacement priorities

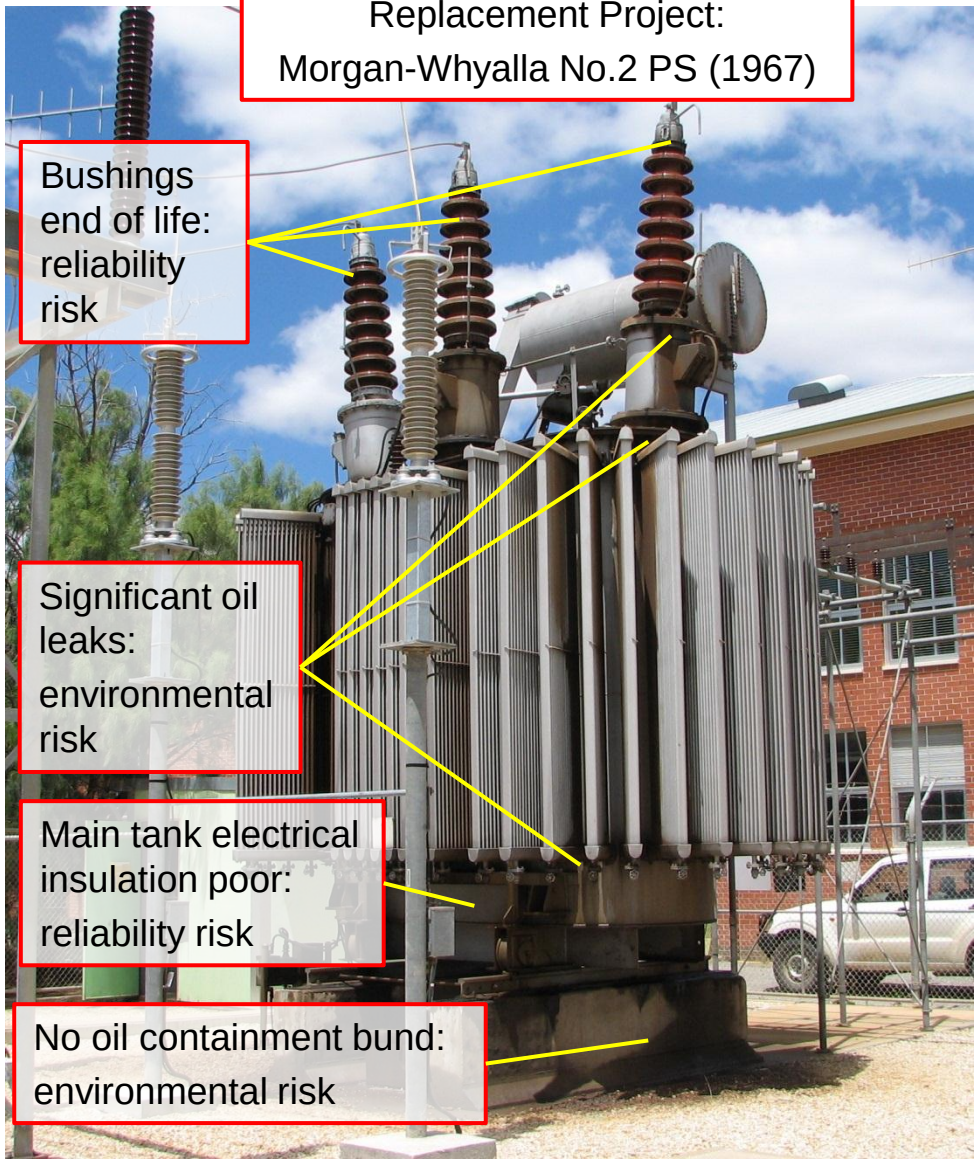
A number of factors are driving a significant increase in replacement requirements in the forecast period:

- Substations serving high risk water pumping station loads and small radial substation sites
- Other high priority substation component replacement works, including individual primary plant components and metering asset replacements
- Continuation of substation and secondary system replacements from current period
- Increase in telecommunication replacement projects driven by asset end of life criteria and service level requirements

Replacements are being driven by asset condition and assessed risk, not by age or value

Asset replacement projects

Replacement Project:
Morgan-Whyalla No.2 PS (1967)



Bushings end of life: reliability risk

Significant oil leaks: environmental risk

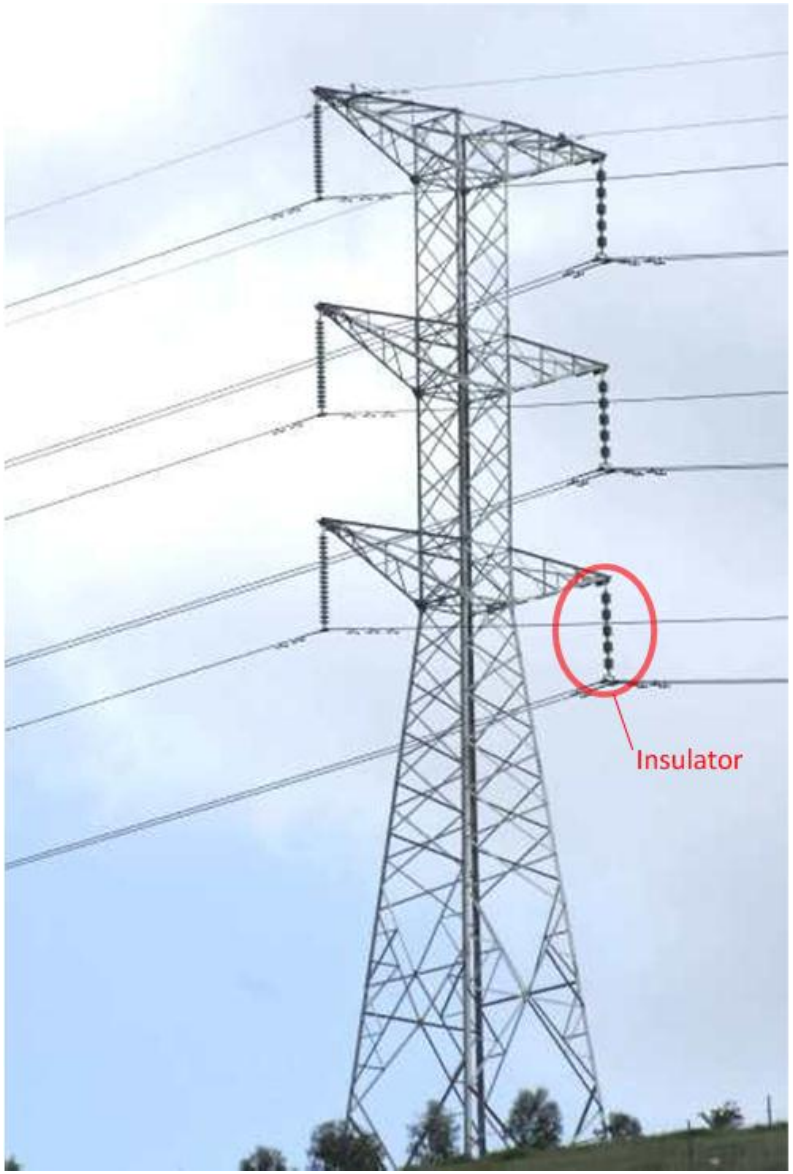
Main tank electrical insulation poor: reliability risk

No oil containment bund: environmental risk

Replacement Deferred:
Murray Bridge-Hahndorf No.3 (1971)

Corrosion (but manageable), no oil leaks, bushings ok, main tank electrical insulation degrading (but manageable).

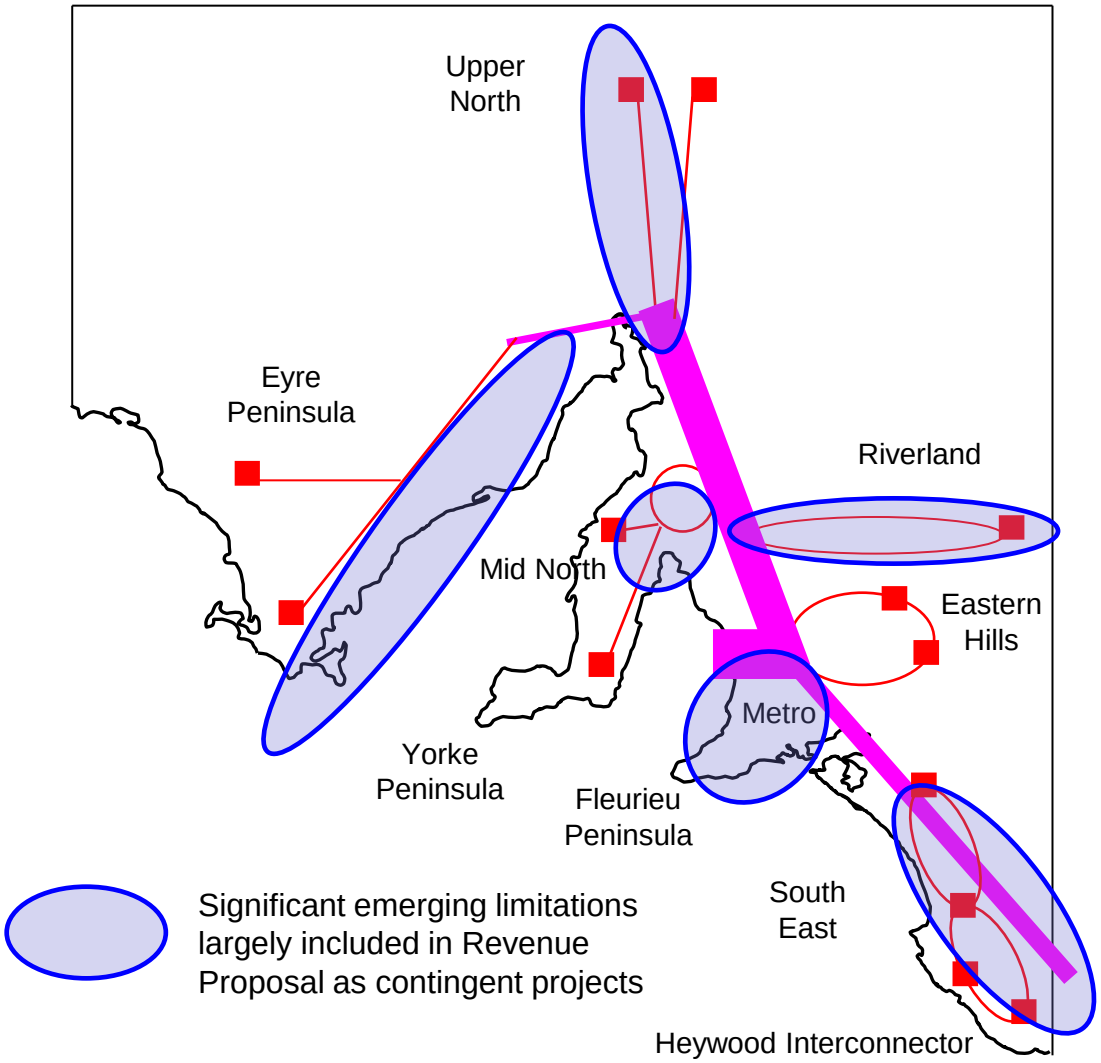
Line refit projects



- Replacement of line insulation (highlighted) which has reached end of life
- The other major components of the transmission line (tower, conductor, earth wire, and foundations) are in satisfactory condition
- Efficiently extends the useful life of the overall asset, and economically defers full asset replacement

Significant emerging network limitations

- Emerging network limitations are appearing at extremities of the network
  - Eyre Peninsula network limitations (2016-17)
  - Olympic Dam mining expansion (2016)
  - Yorke Peninsula line thermal rating (2018)
  - Fleurieu Peninsula – distribution network limitation (2020)
  - Riverland line thermal rating (2024)
  - Heywood Interconnector constraints impacting on market benefits (2016)



* timings are indicative only

Contingent projects

- Contingent projects used to manage uncertainty associated with emerging limitations (reduces risk to the customer and the business and avoids up front price impacts)

- Key drivers of contingent projects (21) comprise:
  - Unanticipated increases in demand (e.g. requests from DNSP for new connection point)
  - Investments to reduce congestion and deliver market benefit (e.g. Heywood Interconnection upgrade)
  - Uncertainty over project scope, timing and cost (e.g. Lower Eyre Peninsula)

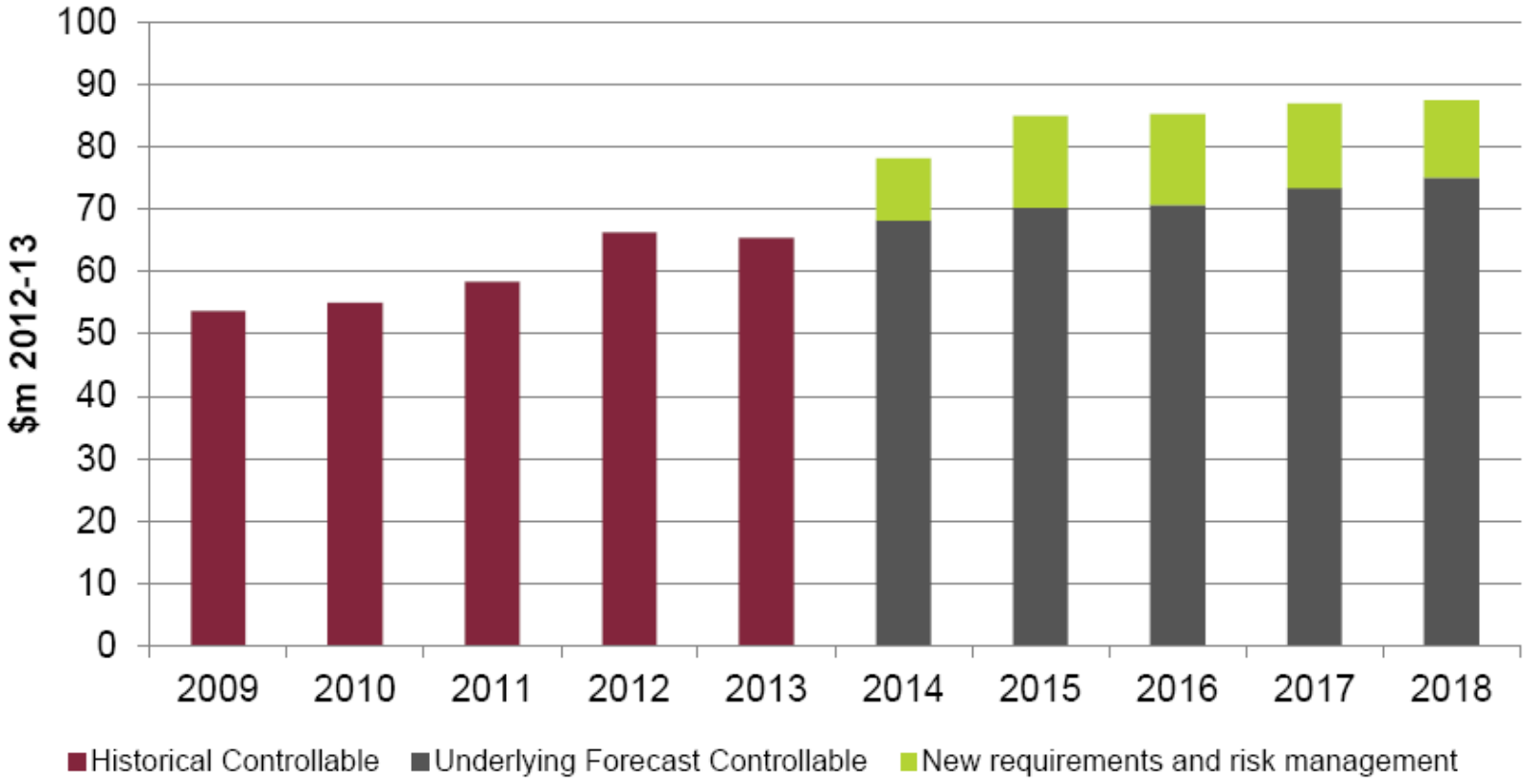
- Contingent projects triggered by major new mining loads would lead to increased overall energy consumption and be expected to reduce transmission network costs for remaining customers

Operating expenditure forecast

Opex drivers

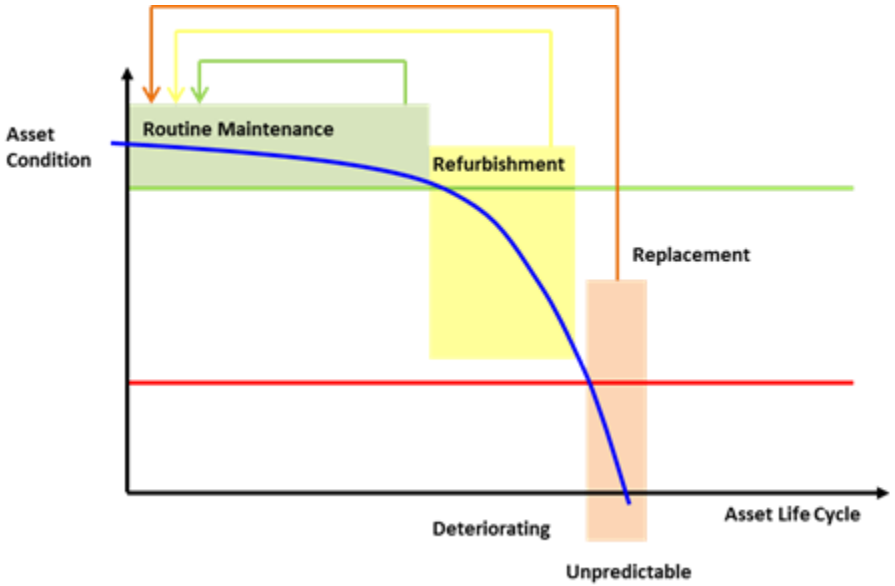
- Extending a good industry practice asset management framework to cover all assets and manage increased network risk revealed through asset condition assessment:
  - Increase in corrective maintenance requirements (particularly for line assets) to maintain reliability and manage immediate risks
  - Increase in operational refurbishment requirements to address high priority issues based on asset condition and risk
  - Network optimisation measures to release capacity and defer investment
- Asset growth requiring higher levels of operating expenditure (net of scale efficiencies)
- Real wages growth and related cost pressures and new regulatory obligations imposing additional costs on the business

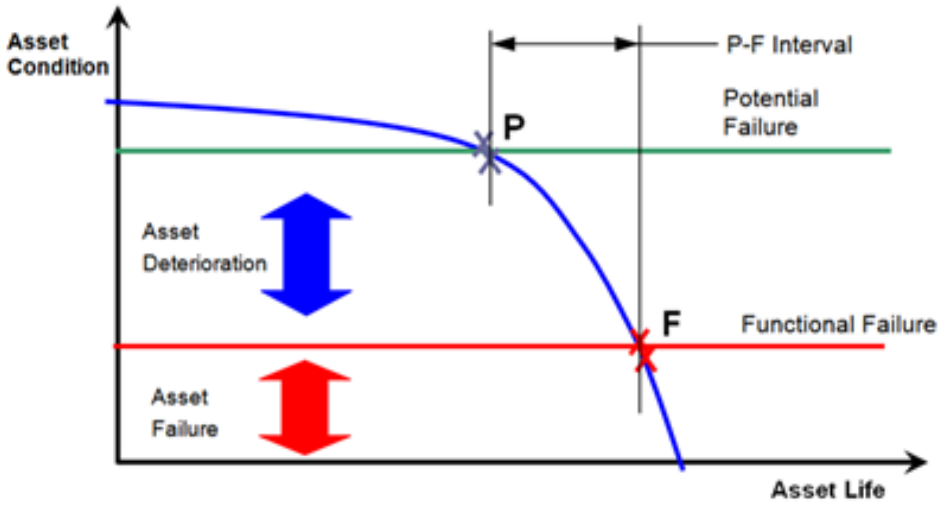
Opex forecast



New requirements and risk management - largely driven by increases in corrective maintenance, operational refurbishment (large equipment overhauls) and network optimisation expenditure requirements

Corrective maintenance





- Corrective action to address asset deterioration is based on understanding the P-F interval of each asset and the associated failure consequences
- A risk assessment of all reasonably expected failure modes and required response times has been developed based on historical performance and industry knowledge
- Generally corrective maintenance response is driven by short P-F interval failure modes associated with safety, environmental and operational risk

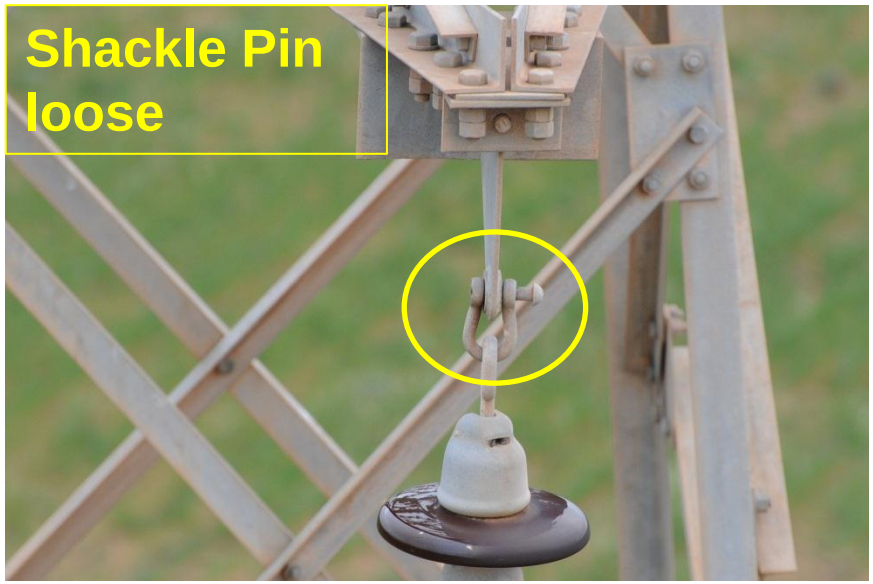
Corrective maintenance priorities

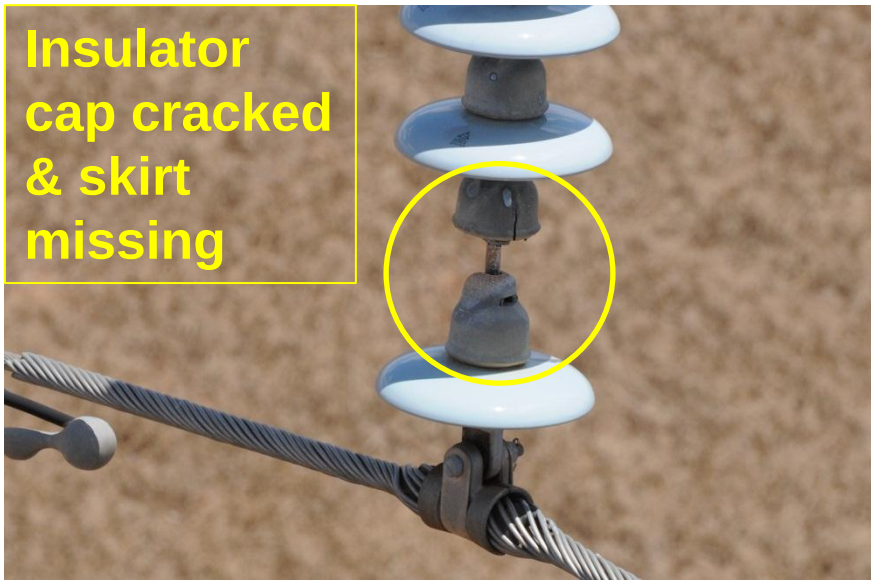
Requirement	Examples
Correction of failed assets	Broken insulator assemblies that could drop a line to the ground
Correction of assets that have functionally failed	Foundation cracking Missing or loose structure bolts
Correction of assets at material risk of failure	Tower corrosion Structure foundation erosion/ deterioration Wear and tear of line hardware supporting the conductor

Case Study

- Project: replacement of faulty cabinet heater components
- Cost: <$1k
- Failure consequence: condensation, corrosion and failure of circuit breaker
- Rectification cost: $100k-200k

Corrective maintenance





Each of these critical asset issues carries the risk of the line conductor dropping to the ground, creating a fire start and public safety risk – priority action is required when these issues are identified

Minimising corrective effort

- Applying “monitor and review” to low risk asset deterioration (no maintenance action taken other than ongoing inspection and review of condition over time)
- Group corrective action with routine maintenance where possible
- Group common asset refurbishment work into packages to reduce the unit cost of refurbishment
- Defer corrective action where assets will be replaced within the P-F interval

Operational refurbishment priorities

Requirement	Purpose	Examples
Condition assessment	Detailed assessment of asset condition and risk	Targeted line and substation condition assessment projects
Refurbishment projects	Works to address specific risks on high risk plant	Disconnector refurbishment Transformer oil containment Targeted line asset works
Asset overhauls	Undertaken mid-life to ensure asset performance to end of technical life	Gas insulation switchgear overhaul Drainage and building works
Asset decommissioning	Removal of high risk equipment not in use	Disused lines in urban areas Underground oil-filled cables
Network risk mitigation	Works to address network management risks	Aerial hazard marker ID to Australian standards

Case Study

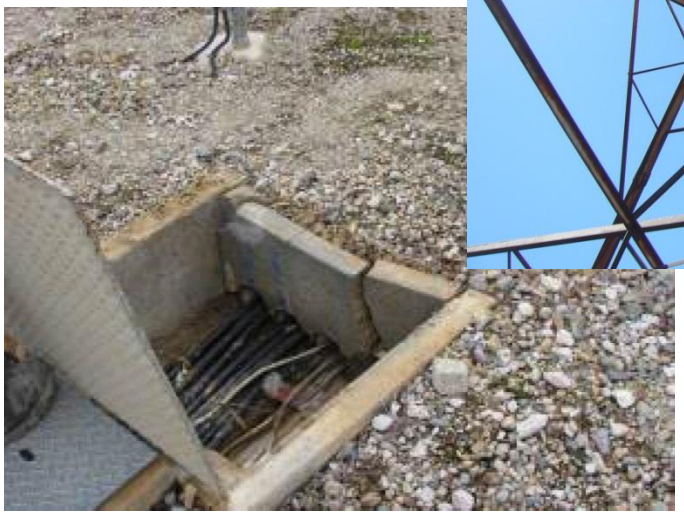
- Project: Major Building Refurbishment
- Cost: <$100k
- Failure consequence: structural failure with potential secondary asset damage, extended outages, replacement of building and secondary systems
- Rectification cost: $4-7m

Operational refurbishment projects

Building refurbishment to address various Work Health and Safety compliance issues (i.e. significant structural cracking due to footing subsidence)

Installation of oil containment bunds for specific power transformers to address environmental and fire containment risks

Operational refurbishment - Deferred



For the projects deferred, those assets have specific programs to monitor and manage individual asset risk

Medium risk projects deferred include:

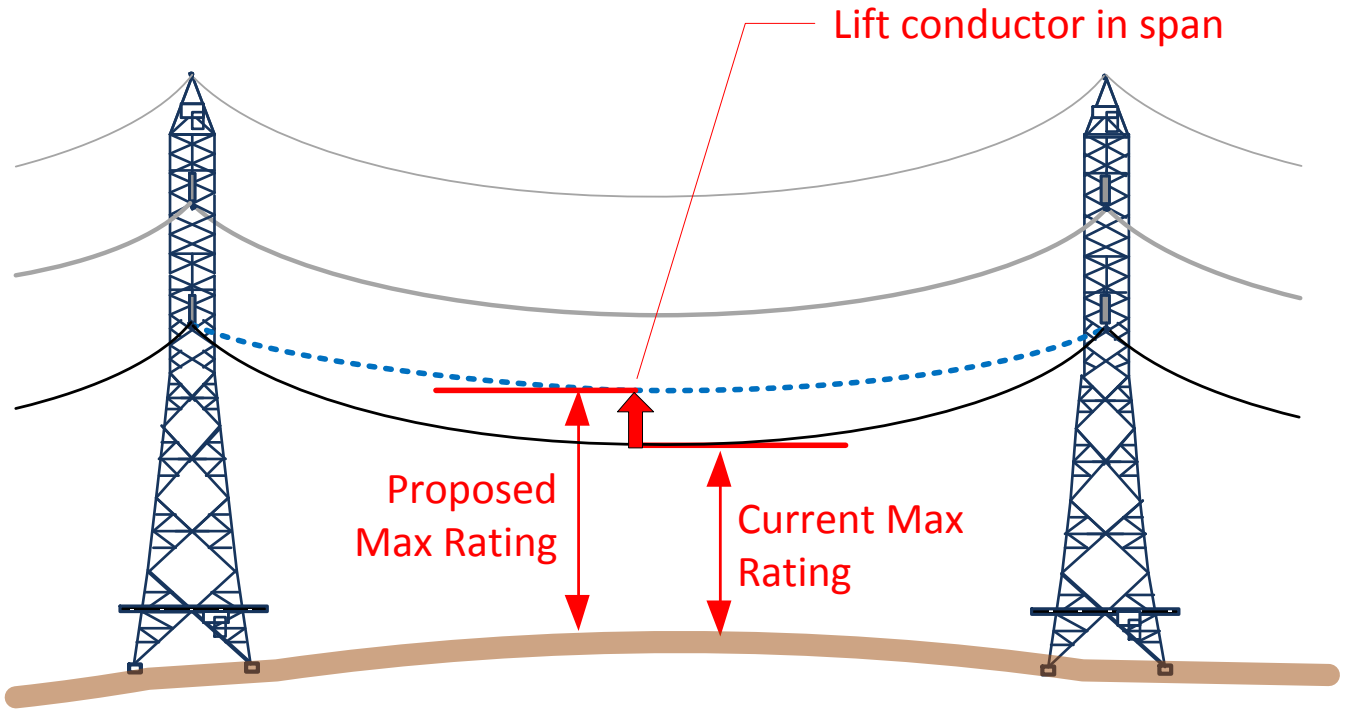
- Civil works (cable ducts, fencing & footings)
- Tower painting
- Asset removals

Network optimisation priorities

Purpose	Examples
Improvement in management of network power flows	Improving automation of voltage control schemes
Improvement in substation asset utilisation	Automating transformer dynamic ratings Minor works to remove ‘bottlenecks’: • Removal of obsolete wave traps • Changing protection and equipment settings
Improvement in transmission line asset utilisation	Improving the static / dynamic line rating process Ensuring line rating compliance using a risk-based approach on high impact assets: • Risk-based seasonal ratings • Civil solutions to improve clearance • Lifting of individual spans to improve clearance (e.g. re-tensioning, insulator rearrangement, tower raising, mid-span structures)

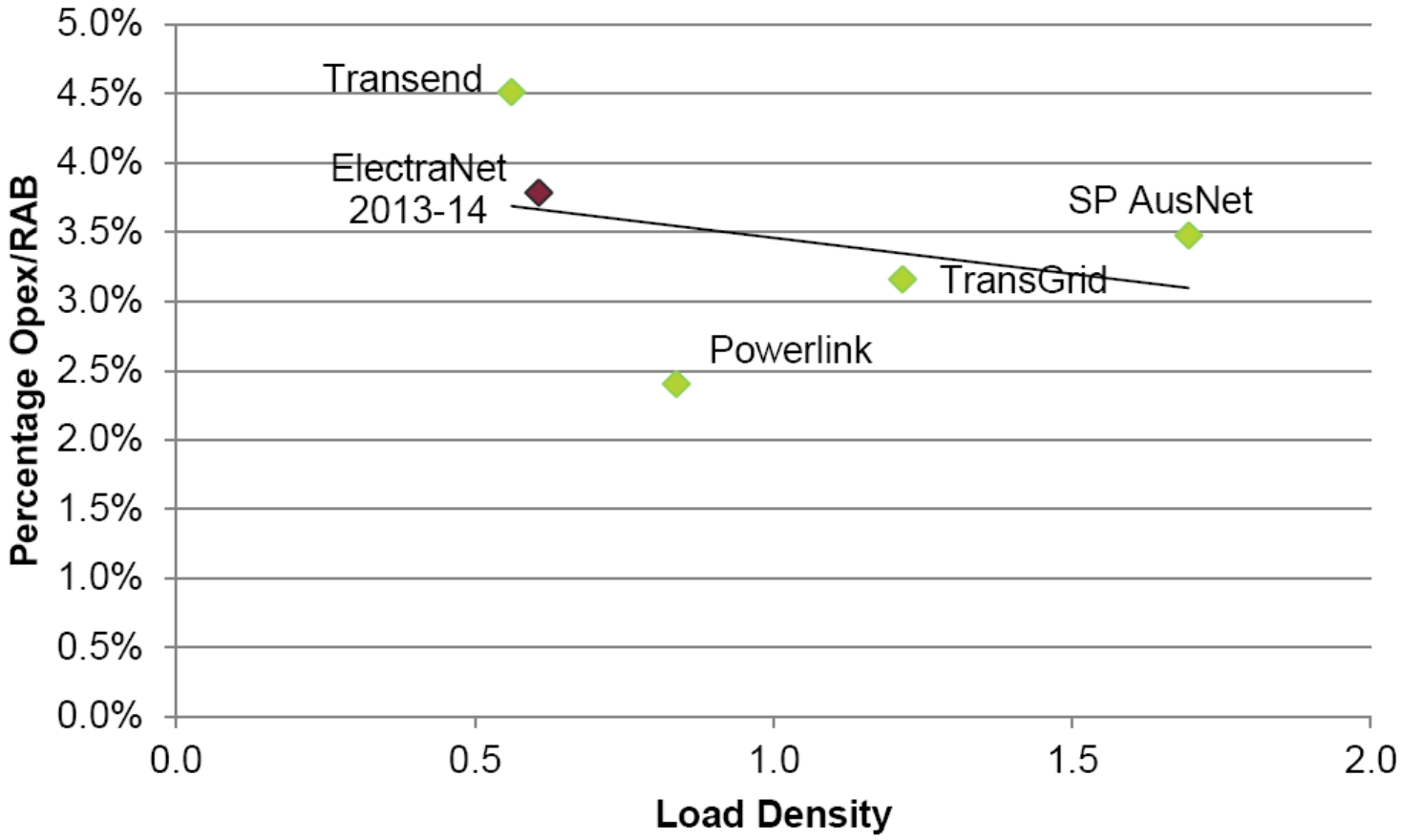
Network optimisation projects

Includes projects to actively manage line clearance compliance to release line capacity. This will defer the need for major line augmentation works further into the future.



Opex performance

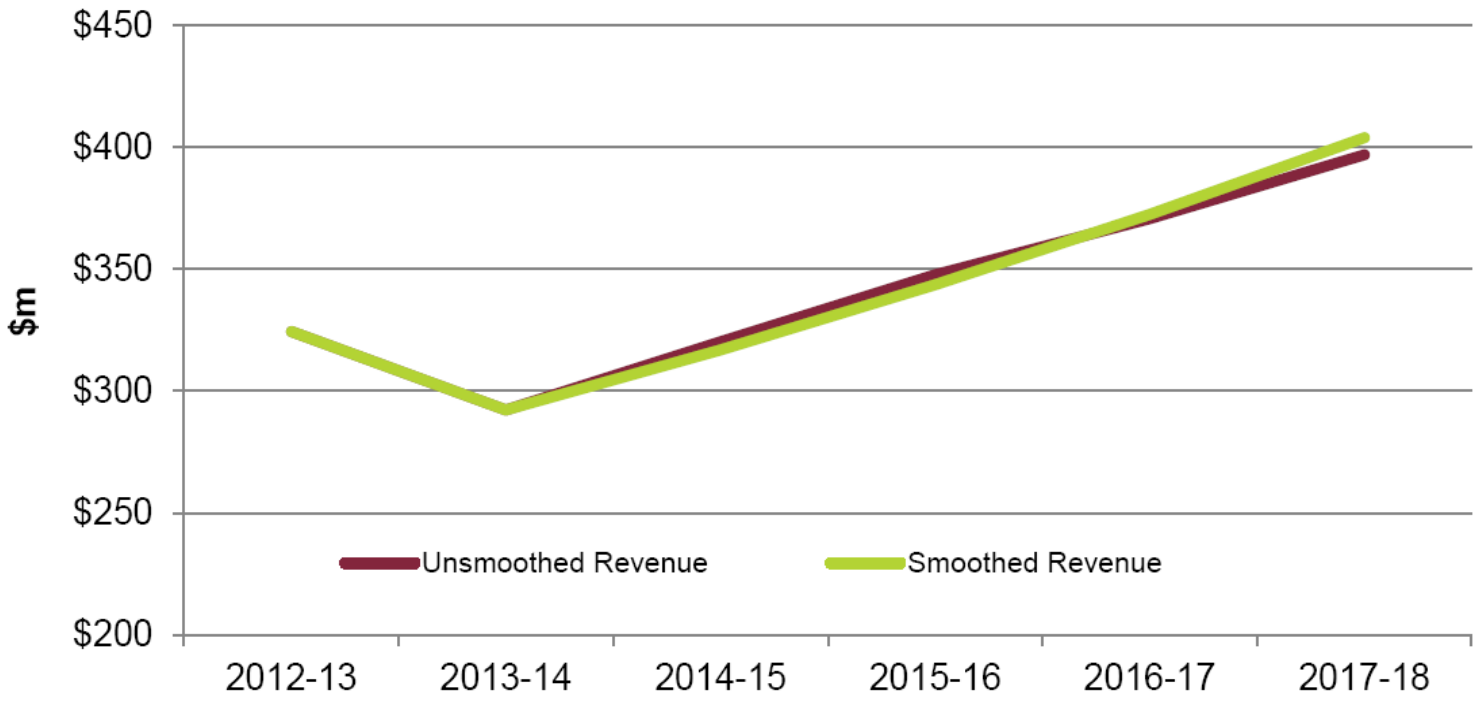
- Opex to RAB benchmark ratio remains comparable with like networks



Revenue forecast

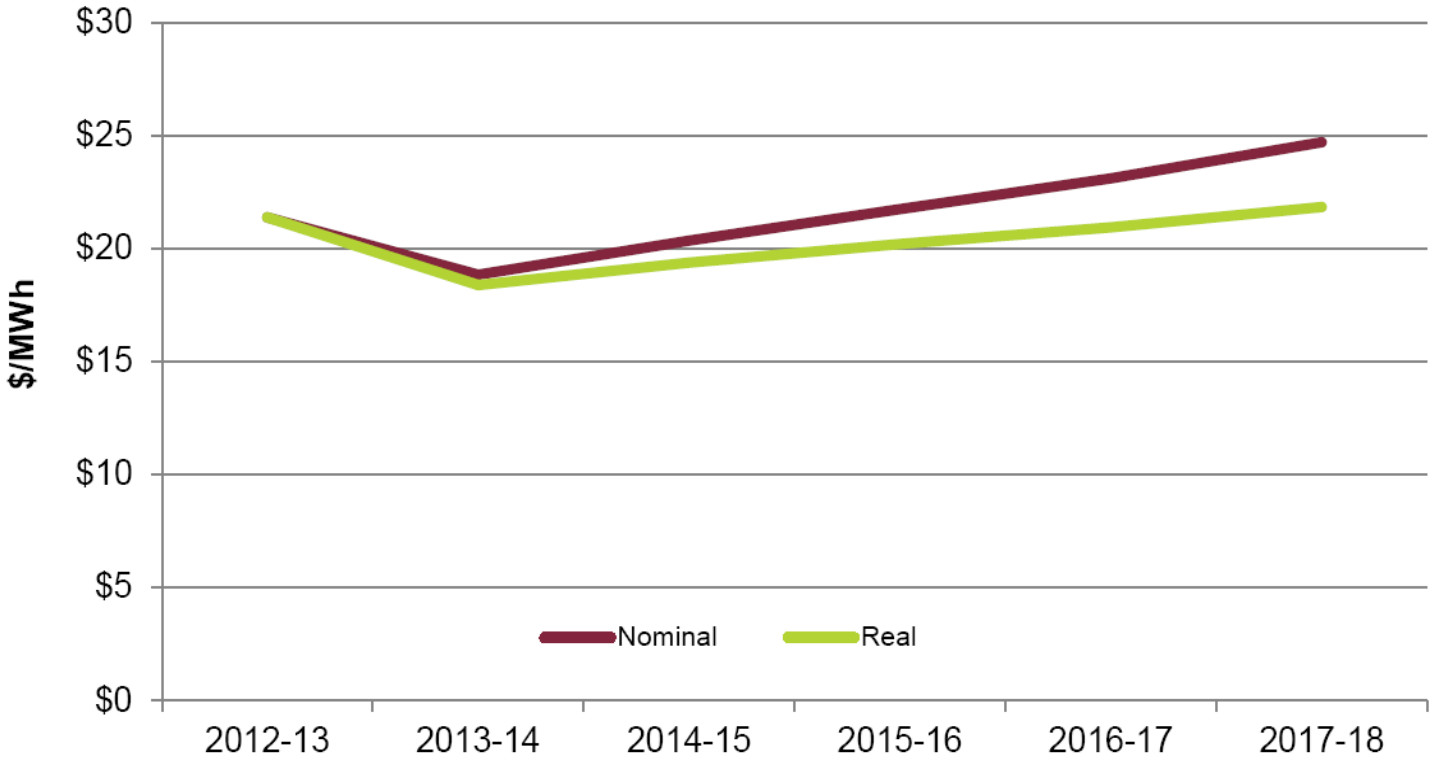
Revenue forecast

- No net increase in nominal revenue until 2015-16:



Customer impact

- Significant initial price reduction (14% in real terms)
- Overall increase in line with CPI:



Benefits to customers

- Safe, secure and reliable transmission services delivered at lowest long-run cost

- Achieved through integrated network development and long-term asset management planning:
  - deferral of major augmentations
  - alignment of replacement and augmentation projects
  - strategic purchase of land for efficient network development
  - use of contingent projects to reduce risks and price impact
  - optimised asset maintenance and replacement decisions
  - innovative solutions and technology to extend asset life
  - measures to improve network utilisation and performance

Pricing methodology

- Changes proposed to provide improved incentives for customers to manage load and reduce exposure to prices:
  - Enable temporary excursion above firm maximum demand
  - To be individually negotiated with customers in respective connection agreement
  - Suits major loads able to manage peak load reliably (e.g. on-site generation)
  - Provides price relief for customers in short-term
  - Defers augmentation in the long-term

Other components

- WACC assumptions
  - Risk Free Rate based on latest available information at time of lodgement
  - Debt Risk Premium based on approved AER methodology
- PI Scheme
  - Adjustments proposed to availability measures to reflect increasing complexity of capital works program
- Negotiating Framework
  - Improved disclosure provisions for commercial information

Conclusions

Conclusions

- ElectraNet recognises the community sensitivity to rising energy costs and has worked hard to deliver a responsible Revenue Proposal with minimal price impact
- Forecasts have been developed within a strategic framework supported by clear Vision and Board-approved strategies
- Overall focus on risk-based approach to forecasts and lowest long-run cost solutions
- Capital investment program driven by essential high-risk asset replacement and transmission line refurbishment requirements, and lower load-driven program (supported by AEMO)
- Asset management needs are driving operating expenditure forecasts based on asset condition and risk, and the drive to optimise network capability and prolong asset life
- Look forward to further engagement with AER and stakeholders