

Transpower Going Forward

ENA AGM Hamilton

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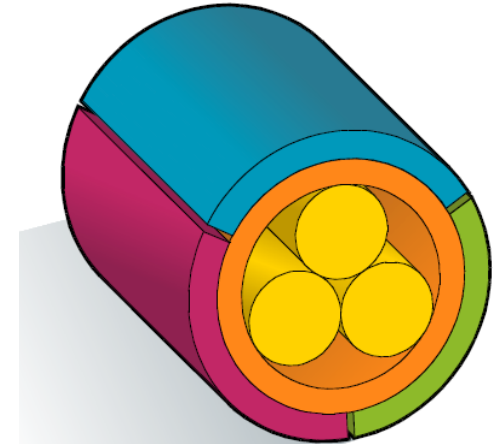
Chief Engineer

TRANSPOWER



Our Vision

- **Respect** from our customers, stakeholders and communities
- **Performance** from our people
- **Excellence** in our operations



Challenges

- Building the projects
- Safety review
- Asset management strategies
- Greater development/advancement of our people
- Implementation of the Strata Review
- Implementation of the Ministerial Review
- Landowner relationships
- Taking leadership role through innovation and technology



KPIs 2009/2010

KPI	2009/10 Measure	2009/10 Target	2008/09 Performance
Safety	Fatalities or injuries causing permanent disability	Zero	Zero
	Medical treatment injuries	<21	33
Stakeholder Satisfaction	Average of three ratings scored in stakeholder survey	>81%	78%
Project Delivery	Attainment of milestones for key projects	>80% on time and to budget. No project with major time or cost overruns	50%
Network Reliability	Number of unplanned events	<15 greater than 0.05 SM ≤ 4 greater than 1 SM	18
Operating Cost	Total operating costs (excluding HVDC reserve costs and EC Levies)	Equal to or less than the Board approved budget (\$251m)	NA



Leading through Innovation and Technology

- Building new assets/refurbishing or replacing old assets is only one part of the solution.
- Technology is a key component and will enable us to achieve much more from the grid
- Future grids will be smarter, more flexible and we'll be able to get more out of our assets - increased grid reliability and security



The challenge

- Implement initiatives that improve the existing power system as a whole
- Draw on synergies between Grid Owner and System Operator
- Identify projects that can be implemented within 5 years



Approach

- Link to T 2040 and other strategies
- Be consistent with Grid Code
 - Measured pace on primary plant
 - Confident steps on secondary plant
 - Bold steps if payback is high and risks can be managed
 - Adopt recognised practices and technologies



High Level Workstreams

- Get most out of existing network
- Manage power system operation to deliver lowest market prices
- Enable enhanced customer demand participation
- Work streams
 - Many initiatives are interdependent,
 - Are enabled by various platforms (e.g. MSP, TNP)
 - Will need to be prioritised based on resource availability.
 - Dates are years in which initiative is expected to be completed
 - To be presented on integrated schedule



Get most out of existing network

- Work Management
 - Develop 5 year integrated work and outage plan for 2012 reset
 - Implement revised Maintenance Contractor arrangements (2009/10)
 - Ensure maintenance practice consistency (e.g. live line working) (2009/10)
 - “In house” detailed work documents (“How to” information) (2010/11)
- Grid Assets
 - Enhanced Line Ratings
 - Shoulder spring/autumn (May 2010)
 - Variable rating in a specific region for short period of time (2011)
 - Dynamic rating trial and case study (2011/12)
 - Conductor Technology
 - Complete evaluation of high temperature conductors (2010). Two shortlisted conductors are Al Conductor Steel Supported (ACSS) and GAP (similar to ACSS) conductor based on performance and cost
 - Roll out new conductor family including new operating procedures (2010)
 - Asset Performance
 - Develop decision support system to interrogate existing information (SCADA, Asset Data etc) to provide simplified access to historical and real time information (2010/11)



Get most out of existing network

- On-line Monitoring
 - Incorporate on-line plant condition monitoring requirements into switchgear and transformers purchase specifications (2009)
 - Retrofit capability to selected equipment at a number of key sites (2011/12)
- Metering and Power Quality
 - Install new revenue meters with power quality capability at 2 sites (2010)
 - Replace revenue meters at 100 meters per year (2010 onwards)
- Simplifying Interfaces
 - Refine switchboard boundaries and customer interfaces (2010)
- Network Design
 - Grid Code station configurations (2010)
 - Strategy for new primary plant (2010)
- Substation Management System
 - Implement SMS and remote engineering access to 2 existing and 2 new sites (2010)
 - Implement 10 sites per year focusing initially on strategic substations (2010 onwards) and extend site monitoring capability at fibre enabled sites



Get most out of existing network

- Voltage Management
 - Implement Islington/Bromley regional power controller (2010)
 - Implement Auckland wide area regional power controller (2011/12)
 - Investigate and develop new power system voltage management tool (2012)
- Power Electronics
 - Identify future potential of power electronics technologies (e.g. 3rd HVDC terminal in SI) (2010)
 - Investigate flow control and fault limiting devices (2010)
- Resilience to HILP events
 - Implement program through minor upgrades to increase ability to withstand major unexpected failures (2010)
 - AUFLS review (2010)



Coordinate power system operation to deliver lowest market prices

- Enable least cost of Ancillary Services
 - AGC trial (2010/11)
 - Once HVDC controls upgraded
 - National IR market (2012/13)
 - National frequency keeping market (2012/13)
- Automate Control during System Events
 - Lower South Island SPS (2009)
 - Automatic control of generation, circuits and demands in response to system event (including use of SPSs) (2010)
 - Modelling of remedial action schemes that reconfigure grid (2013)
- Improve Wind Forecasting
 - Intermittent generation forecasting (2011)



Enable enhanced customer demand participation

- Enable Demand Side Participation in the Market
 - DSP trial (2010)
 - DSP in MSP with price based bids (2010/11)
- Integrate information from consumer, market and operator
 - Access to SCADA data for Upper SI customers to control their load (2009)
 - Roll out to other connected parties (2009/10)
 - Integrated real time data exchange (2009/10)
 - Inter network control capability trial (2013)
- Improved Demand Forecasting
 - Trial of artificial intelligence ½ hour demand forecasting (2010)
 - Implement in real time (2011)
- Smart grids
 - Smart grid trial (2010)

