



TransGrid

Electricity Network Performance Report 2013/14

October 2014

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Introduction

This Electricity Network Performance Report has been prepared by TransGrid to fulfil the requirements of the Electricity Network Operator reporting regime and the *Electricity Supply (Safety and Network Management) Regulation 2008*.

This report outlines TransGrid's performance in meeting its NSW regulatory objectives for the 2013/14 Financial Year.

1. Profile

1.1 Overview

TransGrid is Australia's largest electricity transmission company with its network comprising some 12,800 kilometres of high voltage transmission line and underground cables, as well as 97 substations and switching stations.

TransGrid is responsible for planning and developing the NSW transmission system to meet the requirements of customers within NSW and the ACT, and to facilitate operation of the National Electricity Market.

The TransGrid network operates at voltage levels of 500, 330, 220 and 132 kilo volts (kV). TransGrid's substations and power station switchyards are located on land owned by TransGrid. Transmission lines are generally constructed on easements acquired across private or public land.

TransGrid has staff strategically based at locations throughout NSW. They are responsible for day-to-day operations and maintenance activities,

as well as emergency response.

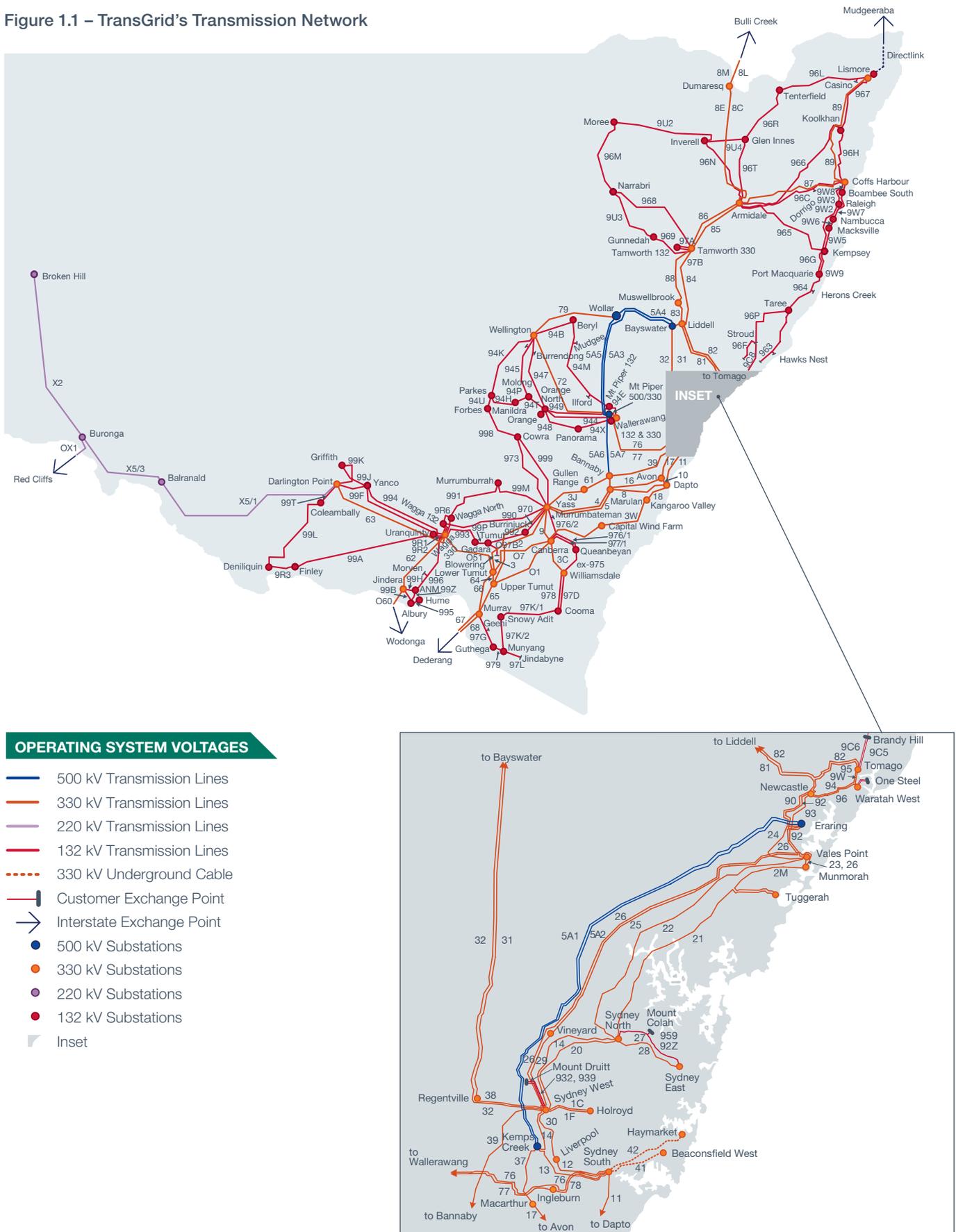
The main administrative office is located at 180 Thomas Street, Sydney. Field staffs are co-ordinated from major depots located in Tamworth, Newcastle, Orange, Western Sydney, Yass and Wagga Wagga.

Table 1.1 – Network Operator Statistics

	Number at end of 2012/13	Number at end of 2013/14
Customer Numbers (Total)	15	15
Maximum Demand (Aggregated System MW)	13,946	12,100
Energy Received to Year End (GWh)	65,579	62,000
System Loss Factor (%)	1.43	2
High Voltage Overhead (km)	12,704	12,878
High Voltage Underground (km)	47	51
Substation (Number)	94	96
Structures (Number)	37,400	37,650
Poles (Number)	39,016	39,120
Employees (Full Time Equivalent Number)	1069	1057
Contractors (Full Time Equivalent Number)	156	172

1. Profile

Figure 1.1 – TransGrid’s Transmission Network



OPERATING SYSTEM VOLTAGES

- 500 kV Transmission Lines
- 330 kV Transmission Lines
- 220 kV Transmission Lines
- 132 kV Transmission Lines
- - - 330 kV Underground Cable
- T Customer Exchange Point
- ➔ Interstate Exchange Point
- 500 kV Substations
- 330 kV Substations
- 220 kV Substations
- 132 kV Substations
- Inset

1.2 Capital Works Program

TransGrid's capital works program is needed to ensure the NSW electricity transmission network continues to deliver secure, reliable and safe supply of electricity to businesses and consumers in the NSW and ACT. The capital works program is primarily driven by the need to augment the network as demand grows and the need to replace assets when an assessment of the risk of failure indicates they have reached the end of their serviceable life.

Between 2009 and 2014 TransGrid undertook more than 80 projects across NSW as part of a \$2 billion capital works program. For the 2013/14 financial year TransGrid's capital expenditure was \$588.2 million.

Table 1.2 shows TransGrid's capital expenditure in the last 5 financial years.

1.2.1 Recently Completed Projects

Supply to the Lower Mid North Coast Tomago to Stroud 132 kV Transmission Line

TransGrid and Essential Energy have increased the capacity of the transmission system supplying the Lower Mid North Coast to meet present limitations by constructing a new 132 kV transmission line between Tomago and Stroud. The work included a 132 kV connection to Ausgrid's Brandy Hill substation.

Wallerawang 132/66 kV Substation Replacement

Construction of the new Wallerawang 132/66 kV Substation was completed in May 2013. Transfers of the 132 kV and 66 kV transmission lines from their current connection at the old substation to the new substation site were completed in March 2014. Removal of the old substation is presently underway.

Reinforcement of Supply within the Sydney Inner Metropolitan Area

To relieve limitations within the Sydney inner metropolitan area, TransGrid and Ausgrid have established an additional cable link between Beaconsfield West and Haymarket 330/132 kV Substations. To meet potential longer-term requirements this link is constructed primarily as a 330 kV cable, initially operating at 132 kV, with some sections of 132 kV cable. These works were completed in July 2013.

Voltage Control in the Snowy Area

The National Transmission Network Development Plan 2012 identified a gap in the Network Support and Control of Ancillary Services (NSCAS) capability in NSW. TransGrid was successful in its tender to AEMO for the provision of these services in NSW. To meet the shortfall in voltage control ancillary services identified, TransGrid has installed a total of 6 x 181 MVar 362 kV shunt reactors at Murray Switching Station; and Yass 330/132 kV Substation. The installations were completed in May 2014.

Completed

Transformer Replacements

- > Condition based Replacement of three 30 MVA 132/66 kV transformers at Narrabri 136/66 substation with two 60 MVA units released from Coffs Harbour.
- > Condition based Replacement of No.1 and No.2 330/132 kV transformers at Wallerawang with two 375 MVA units.
- > Condition based replacement of one 375 MVA 330/132 kV transformer at Sydney East 330/132 kV Substation.
- > Condition based replacement of the No 3 132/66 kV transformer at Yass 132/66 kV substation.

Other Projects

- > In November 2013 TransGrid connected the first stage (166 MW) of Epuron's 240 MW wind farm near Gullen Range to a new switching station along the 61 Bannaby – Yass 330 kV transmission line.
- > Construction of one 132 kV switchbay at Wellington 330/132 kV substation for Essential Energy's supply to the Dubbo area.
- > Construction of additional 330 kV bus coupler circuit breakers at Sydney South, Sydney West and Newcastle substations.
- > Condition based replacement of secondary systems at Tumut 132/66 kV substation.

Table 1.2 – Capital works program trend

Year	Previous Years				Current Year
	2009/10	2010/11	2011/12	2012/13	2013/14
Capital works program (\$m)	428.7	378.6	384.4	547.3	588.2

2. Network Management

2.1 Overview

In the 2013/14 financial year TransGrid has commenced a number of new initiatives related to improving the management of the transmission network. These include:

- > TransGrid is currently moving towards certification for its asset management system under the ISO 50001 Asset Management standard. ISO 55001 is an internationally recognised framework setting out the requirements for good asset management practise. It also allows asset management performance to be objectively measured against a maturity scale, and to enable the targeting of improvement programs in those areas considered to give the best value. This initiative aims to formally recognise TransGrid's asset management capabilities and provide a framework for the continuing development of core asset management competencies.
- > Work has commenced on the development of an Electricity Network Safety Management System to meet the emerging requirements of the Electricity Supply (Safety and Network Management) Regulation 2014. This work is due to be completed in February 2015 to meet the timetable for introduction of this new Regulation.

2.2 Network Complaints

There were 31 complaints registered during 2013/14. This result is slightly lower than 2012/13 and is within the long term average for this measure. Natural fluctuations in the number of complaints can be expected due to the differing number and types of major capital projects being undertaken in each financial year.

The majority of complaints were associated with the major capital works program and primarily relate to:

- > Issues with impacts of construction such as noise, dust, restriction to business opening hours and other impacts (25 complaints).
- > Objections to specific project works, including consultation processes, compensation and visual amenity concerns (3 complaints).

Complaints are formally registered with TransGrid's Corporate Communications team and all attempts are made to address with the complainant. A summary of complaints and outcomes are provided to senior management at regular intervals to ensure a satisfactory response from the organisation.

Table 2.1 – Complaint Performance Data

Year	Previous Years				Current Year
	2009/10	2010/11	2011/12	2012/13	2013/14
Complaints Total	428.7	378.6	384.4	547.3	588.2
Complaints regarding Vegetation Management	1	1	0	1	2

3. Network Planning

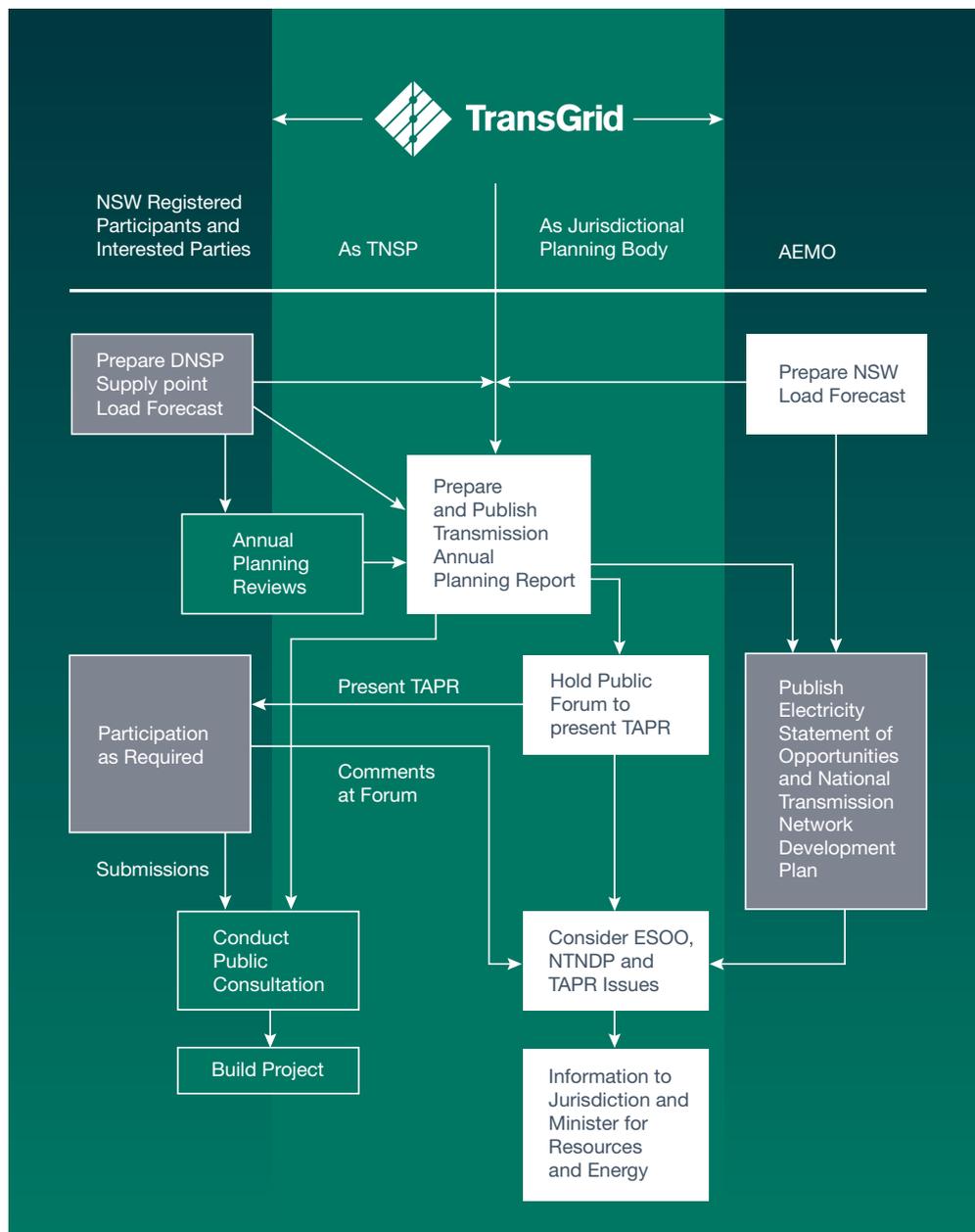
3.1 Overview

TransGrid carries out planning in accordance with its regulatory obligations under the National Electricity Rules (NER), Jurisdictional requirements and customer expectations. As the Jurisdictional Planning Body (JPB) for NSW, TransGrid works with the Australian Energy Market Operator (AEMO) to provide input to the Electricity Statement of Opportunities (ESOO) and National Transmission Network Development Plan.

As a registered Transmission Network Service Provider (TNSP) in the National Electricity Market (NEM), TransGrid is required to perform a yearly planning review and produce a Transmission Annual Planning Report (TAPR) with information relevant to supply demand balance, transmission network planning and distribution network planning.

The roles of AEMO, TransGrid and other parties in the planning process are set out in Figure 3.1.

Figure 3.1 – TransGrid’s Planning Roles



3. Network Planning

3.2 System Design Criteria (Planning Standards)

Under NSW legislation, TransGrid has responsibilities that include planning for future NSW transmission needs and interconnections with other networks. The NSW Government has specified the Transmission Network Design and Reliability Standard to be applied by TransGrid.

In addition, as a TNSP in the NEM, TransGrid is obliged to meet the requirements of Schedule 5.1 of the NER. In particular, TransGrid is obliged to meet the requirements of clause S5.1.2

The NER sets out the required processes for developing networks as well as minimum performance requirements of the network in a range of areas. These include contingency events, power transfer capability, power, voltage, and frequency quality, line ratings and protection systems. It also requires TransGrid to consult with AEMO, Registered Participants, and interested parties and to apply the AER's Regulatory Investment Test for Transmission (RIT-T) to development proposals.

In meeting these obligations TransGrid's approach to network planning is socially and economically based and is consistent with both the NER and the RIT-T. It includes consideration of non-network options such as demand side response (DSR) and demand management (DM) and/or embedded generation, as an integral part of the planning process. Joint planning with Distribution Network Service Providers (DNSPs), directly supplied industrial customers, generators and interstate TNSPs is carried out to ensure that the most economic options, whether network or non-network options, are identified and implemented to meet customer and community requirements.

In addition to meeting requirements imposed by the NER, environmental legislation and other statutory instruments, TransGrid is required by the NSW Government to plan and develop its transmission network on an "n-1" basis. That is, unless specifically agreed otherwise by TransGrid and the affected distribution network owner or directly connected end-use customer, there will be no loss of load (other than load which is interruptible or dispatchable) following the occurrence of a credible contingency on the network at any time. In fulfilling this obligation, TransGrid must recognise specific customer requirements as well as AEMO's role as system operator for the NEM.

TransGrid's planning obligations are also interlinked with the licence obligations placed on DNSPs in NSW. TransGrid must ensure that the system is adequately planned to enable their licence requirements to be met. For instance, if the mandatory DNSP license obligation is an "n-1, 1 minute" reliability standard for sub-transmission lines and zone substations supplying loads greater than or equal to specified minimums, eg 15 MVA in urban and non-urban areas, the requirement imposes a consequential obligation on TransGrid to provide a commensurate level of reliability in its network supplying the sub-transmission line or zone substation. In addition to adherence to NER and regulatory requirements, TransGrid's transmission planning approach takes into account the historical performance of the components of the NSW system, the sensitivity of loads to supply interruption and asset maintenance procedures. It has also been recognised that there is a need for an orderly development of the system taking into account the long-term requirements of the system to meet future load and generation developments.

3.3 Demand Management

The primary drivers for investment in new assets on the NSW transmission network are the need to replace ageing assets due to their condition and the need to augment capacity due to increases in peak demand. System constraints emerge where the maximum capability of existing assets is lower than required to meet demand on the network. These constraints are usually due to growth in demand, or in some cases a reduction in rating for ageing assets due to their condition. To relieve constraints, investments in new transmission assets may be required. However, if the peak demand can be managed, it is possible to reduce, defer or eliminate the need for new transmission investment and thereby reduce the costs and environmental impacts associated with construction of new assets.

During the assessment of options to address an emerging constraint, demand management is referred to as a non-network option. Non-network options can include load curtailment and dispatch of embedded generation or storage.

Definition of demand management

Demand management can broadly be thought of as any activity designed to change how consumers use electricity.

When TransGrid procures demand management as a non-network option it is typically as an agreement with a customer to reduce demand on the network at times of peak, through either:

- > Load curtailment, or
- > Dispatch of embedded generation or storage.

TransGrid will procure demand management as a non-network option where it is a cost effective solution to defer or avoid investment in the network, and so deliver benefits to consumers through lower transmission costs.

Consideration of demand management by TransGrid

TransGrid actively promotes these non-network opportunities by informing the market of constraints via the TAPR, external consultations, joint planning and reviews with distributors and joint sponsorship of research projects through the Demand Management Innovation Allowance.

TransGrid considers non-network options on equal footing with network options when planning its network augmentations and replacements. TransGrid's Transmission Annual Planning Report provides advance information to the market on the nature and location of emerging network constraints. This is intended to encourage interested parties to formulate and propose feasible non-network options to relieve emerging network constraints.

When TransGrid undertakes the Regulatory Investment Test for Transmission for particular network needs as required under the National Electricity Rules, it must to publish requirements for non-network options. For a non-network option to be considered during the evaluation and analysis process, it must be feasible and capable of being implemented in time to relieve the emerging constraint. The option can then be recommended and implemented if it satisfies the RIT-T.

Further detail about TransGrid's approach to demand management is available in Chapter Four of TransGrid's 2014 Transmission Annual Planning Report. Information about a current investigation into a non-network option in the inner Sydney metropolitan area is available at <http://yoursaytransgrid.com.au/powering-sydneys-future>.

On 24 September 2014 TransGrid hosted a forum on demand management innovation, with participants ranging from large energy users and network business employees to the Australian Energy Market Commission and local councils. On 25 September 2014 TransGrid engaged with stakeholders particularly on non-network options for the Powering Sydney's Future project.

Price signals for general demand management

TransGrid is a provider of bulk transmission network services and is best placed to facilitate 'bulk' demand management options. For instance, a monthly maximum demand charge on customers encourages the implementation of demand side response at the time of maximum demand on the transmission network.

Additionally, TransGrid can and does provide financial incentives via direct payments under network support contracts with wholesale suppliers of demand reductions such as larger end users or embedded generators or demand management aggregators, under the procurement of non-network options as described above. Contractual payments to smaller suppliers of demand management are now proving practical for TransGrid with the increasing number of demand management aggregators. The regulatory incentive framework is evolving to provide improved commercial incentives for TransGrid to engage in these activities.

4. Asset Management

4.1 Overview

TransGrid's Asset Management System has been developed based on "best practice" asset management guidance from internationally recognised sources, including the ISO 50000 document series, the Global Forum on Maintenance and Asset Management (GFMAM), the Institute of Asset Management (IAM) and Australia's Asset Management Council.

TransGrid is focused on delivering optimal and sustainable electricity transmission services, which provide the required safety, environmental and reliability performance at efficient costs over the asset lifecycle. Hence, the Asset Management System is designed to manage the assets to meet TransGrid's performance requirements and Corporate Objectives, whilst optimising the balance between risks and costs.

4.2 Technical Service Standards

The AER Service Target Performance Incentive Scheme sets out TransGrid's primary technical service standards. The measures are:

- > Reliability, based on the number of Energy Not Served (ENS) events.
- > Availability, based on transmission line, transformer, and reactive plant availability.
- > Average unplanned-outage duration.
- > Market impact of transmission congestion.

Further details of this scheme are available in the Service Target Performance Incentive Scheme Guideline published by the AER, available on its website: <http://www.aer.gov.au/node/8966>

4.3 Transmission Reliability

The availability of transmission lines, transformers and reactive plant were below target for the 2013/14 financial year. This is mainly because of TransGrid's large capital work program for transmission line rebuilds, pole replacements and transformer replacements. Also, a small number of reactive plant failure events have resulted in prolonged reactive plant outages.

Of TransGrid's 15 connected customers, 13 did not experience any unplanned outages causing loss of supply or interruption to generation. No interconnectors experienced an unplanned outage.

Table 4.1 – Transmission Asset Availability (%) Trend

	Years					
	Objective	2009/10	2010/11	2011/12	2012/13	2013/14
Transmission Lines	99.26%	98.17%	98.99%	99.08%	98.89%	98.98%
Transformers	98.61%	98.60%	98.43%	97.82%	97.59%	96.73%
Reactive Plant	99.12%	96.35%	95.71%	96.16%	96.13%	98.20%

Table 4.2 – Network Reliability Trend (Off Supply Event Numbers)

	Years					
	Objective	2009/10	2010/11	2011/12	2012/13	2013/14
Measure A >0.05 System Minutes Events	4	4	2	2	4	5
Measure B > 0.25 System Minutes Events	1	1	1	0	1	0

Table 4.3 – Outage (Un-Planned) Average Duration (Minutes) Trend

Objective	Years				
	2009/10	2010/11	2011/12	2012/13	2013/14
824	607	926	1688	1705	2030

The Average Unplanned Outage Duration is presently tracking at a relatively high level as a result of the occurrence of a small number of events, the nature of which has necessitated longer than average repair times. The root cause of these events has been reviewed and no particular trends or risks have been determined warranting corrective action.

Table 4.4 – Market Impact of Transmission Congestion (5 min dispatch periods)

Objective	Years				
	2009/10	2010/11	2011/12	2012/13	2013/14
2857	1770	822	315	1013	187

The Market impact events parameter for 2013/14 has been well below the proposed target due to a combination of good outage planning practise and generally lower system demands over the reporting period.

Table 4.5 – Connection Point Interruptions (Unplanned) Current Year

Connection Point Interruptions (Unplanned) Current Year		
Connection Point	Customer	Interruption Duration Total (Minutes)
300 Parkes – North Parkes 132 kV Line	Essential Energy	990
79C Griffith – Darlington Point 33 kV Line	Essential Energy	176
79F Griffith – Yenda 33 kV Line	Essential Energy	176
79J Griffith – Griffith Zone (Standby) 33 kV Line	Essential Energy	176
Macksville No.1 132/11 kV Transformer	Essential Energy	158
Macksville No.2 132/11 kV Transformer	Essential Energy	158
80U Beryl – Ulan 66 kV Line	Essential Energy	116
852 Beryl – Dunedoo 66 kV Line	Essential Energy	116
828 Mt Piper 132 – Portland tee BCSC 66 kV Line	Endeavour Energy	102
96L Lismore 330 – Tenterfield tee Casino 132 kV Line	Essential Energy	71
870 Tamworth 132 – Kootingal 66 kV Line	Essential Energy	55
803 Tamworth 132 – South Tamworth 66 kV Line	Essential Energy	55
873 Tamworth 132 – East Tamworth 66 kV Line	Essential Energy	55
874 Tamworth 132 – East Tamworth 66 kV Line	Essential Energy	55
80C Tamworth 132 – Goodard lane 66 kV Line	Essential Energy	55
813 Tamworth 132 – Currabubula 66 kV Line	Essential Energy	55
801 Tamworth 132 – Oxley Vale 66 kV Line	Essential Energy	55
806 Tamworth 132 – Goodard lane 66 kV Line	Essential Energy	55
804 Tamworth 132 – Nundle 66 kV Line	Essential Energy	55
964 Taree – Port Macquarie tee Herons Creek 132 kV Line	Essential Energy	41
850 Tumut – Talbingo tee Jounama Dam 66 kV line	Essential Energy	10
Orange North No.5 66/11 kV Transformer	Essential Energy	9

The connection point performance for the current reporting year is consistent with performance over the last 5 years.

Table 4.6 – Connection Point Numbers

Connection Point Numbers End Current Year	
Number of Connection Points (Total Number)	452 + 6 interconnectors

Note: for the purpose of connection point interruption reporting, the connection point numbers are defined as the number of individual supply points to all customers.

5. Network Safety

5.1 Overview

TransGrid's goal is zero injuries, occupational illnesses and incidents. Our first priority is the health, safety and wellbeing of our people, our contractors, visitors and the public. Our strategies are aimed at continually improving our performance and maintaining a major focus on risk management.

Our Health & Safety Management System is certified to Australian Standard AS/NZS 4801.

TransGrid's Health & Safety Management System is overseen by the Executive Health and Safety Committee which is chaired by the Managing Director and includes the Executive General Manager or senior management representative from each business unit. A Health and Safety Board Committee also meets quarterly to review TransGrid's health and safety incidents and risks. In addition, a number of key health and safety strategies and programs have been developed or conducted through the 2013/14 year including to;

- > move beyond simply focusing on legislative compliance. The Health, Safety and environmental behaviour of our people, at every level of the organisation, will underpin our desired health and safety culture;
- > reduce the number of high consequence incidents (HCIs);
- > minimise incidents through improving the safety and environmental focus for contractors working on either maintenance or construction projects; and
- > continue to implement a Wellbeing program and articulate the broader benefits as they relate to engagement.

Corporate Health and Safety Plan 2013/14

This Plan sets out TransGrid's objectives, targets and key strategies for the year and is the basis for the development of business unit Health and Safety Action Plans. Progress reports on each business unit's Action Plan are reviewed by the Executive Health and Safety Committee on a quarterly basis.

A Corporate Health and Safety Plan 2014/15 has been developed, communicated and cascaded through the business where Business Units develop their own unique health and safety plan and measures based on the Corporate Plan and the local health and safety risks.

Wellbeing

The TransGrid "Wellbeing" Program has the vision "to promote living a healthy, happy and productive life by making personal choices that contribute to a healthy and balanced lifestyle". The Program provides principles, policies and programs to support employees in the following areas:

- > Community Wellbeing is about being actively engaged with life and with other people. When we get involved in our community and give back to society, it benefits us as well as the recipients and our entire community. Community Wellbeing is about the positive sense of engagement you have with the area where you work and live.
- > Emotional Wellbeing is much more than being free of depression, anxiety, or other psychological issues. People who are emotionally healthy are in control of their emotions and their behaviour. They are able to handle life's challenges, build strong relationships, and recover from setbacks.
- > Physical Wellbeing is about making healthy choices. When we adopt healthy habits and make smart lifestyle choices about diet, exercise, and sleep, we feel better, have more energy, look better, and live longer. You don't have to be an elite athlete to achieve good physical health. Transgrid's offers a range of programs to assist you to make healthy choices.
- > Financial Wellbeing - can be viewed as the way in which an individual manages money daily. Positive financial Wellbeing involves the creation of precautionary savings and finances goals which lead to good wealth management and financial confidence.

Annual Safety Day

TransGrid's 19th annual Safety Day attracted more than 80 participants and hundreds more spectators to Regentville Substation on 22 August 2013. Safety Day featured the traditional fire fighting, first aid, risk assessment and wiring competitions and for the first time, a fitness challenge. TransGrid's Safety Day helps to reinforce TransGrid's emphasis on safety as the number one priority. The day helps to hone safety skills which positively influence a sustained safety culture in the workplace. It was also an opportunity to display and discuss issues relating to safety and wellbeing.

Schedule of Compliance Audits and Inspections

Compliance audits and inspections are conducted to ensure that procedures are implemented in accordance with legislative and organisational requirements. These include health and safety system audits, random unannounced safety compliance inspections, site conformance inspections, health and safety audits on construction and asset replacement projects, and maintenance activities. Non conformances identified in audits are reported and actions are tracked. The Executive team and Board members also visit worksites across TransGrid on a regular basis. Health and safety audit reports provided by internal and external auditors reflect a strong health and safety commitment, understanding and performance across TransGrid.

Participation in Industry Committees

TransGrid takes an active role in a number of industry and Australian Standards committees and working groups such as Energy Networks Association's Health, Safety and Environment Committee, Ministerial Council on Energy – Energy Supply Industry Safety Committee and the Department of Trade and Investment, and the Regional Infrastructure and Services NSW Industry Safety Steering Committee. Participation ensures that trends and expectations of legislators, industry and the community are understood and managed effectively.

5.2 Public Injuries

In the 2013/14 financial year there was one Major Reportable Safety incident where a member of the public was involved. This incident is detailed in section 5.4.

Table 5.1 – Public Injuries

Year	Previous Years				Current Year
	2009/10	2010/11	2011/12	2012/13	2013/14
Non-Fatal	0	0	0	0	0
Fatal	0	0	0	0	1
Total	0	0	0	0	1

5.3 Worker Injuries

The injuries reportable in this section are defined in the guidelines for the Significant Electricity Network Incidents (SENI) Scheme. These definitions changed during 2012, and so the reporting is based on the following guidelines.

Date of Incident	Number of injuries	Guideline
Prior to 1 May 2012	Serious Electricity Network Accident + Serious Electrical Accident	Significant Electricity Network Incidents Objectives, definitions and reporting requirements February 2011
After 1 May 2012	Reportable Safety Incidents	SENI Definitions and Reporting Requirements June 2012

The relatively large (when compared with historical figures) overall number of reportable safety incidents in the last two years is due to the change in reporting definitions.

Table 5.2 – Serious Electrical Network and Electrical Accident and Reportable Safety Incidents.

Year	Previous Years				Current Year	
	2009/10	2010/11	July 2011 – April 2012	July 2011 – April 2012	2012/13	2013/14
Workers	1	0	0	0	2	4
Contractors	1	2	1	0	4	6
Total	1	2	1	0	6	10

5.4 Major Incident Reports

On 13 March 2014 at 12.45 pm a member of the public climbed a double circuit 132 kV steel tower on the Wagga 132 to Wagga North 132 kV transmission line near Wagga Wagga. The man received an electrical shock and fell to the ground, dying at the scene. The incident occurred after the police pulled the man over following earlier reports his vehicle had been seen travelling at excessive speed. Whilst details were being obtained from the driver the man ran from the car to the nearby tower and climbed up, ignoring directions to climb down.

This incident met the SENI reporting major incident reporting criteria property and was reported to the DT&I in accordance with the requirements of the SENI scheme.

6. Bush Fire Risk Management

6.1 Bush Fire Risk Management Plan

TransGrid's Bush Fire Risk Management Plan is published on TransGrid's website as Chapter 4 of the Network Management Plan 2013-2018.

6.2 Bush Fire Risk Management Performance

TransGrid's network performed well during the 2013-14 reporting period. There were no incidents of fire ignited by network assets.

The table below summarises the performance outcomes, and compares these to the previous year's performance.

6.3 Preventative Programs

TransGrid's bushfire preventative program is centred on its routine easement maintenance. Inspection of transmission line hardware and accessories provides further confidence in the reliability of the system to not pose a bushfire ignition risk, and to remain safe during any bushfire occurrence in the area.

TransGrid has implemented a routine inspection program for vegetation in transmission line corridors using aerial LiDAR (Light Detection And Ranging) scanning of all lines over a three year period. Individual line inspection frequencies within this three year program are based upon vegetation growth patterns and climate areas. These inspections make sure that all vegetation is measured to the most accurate methods so that vegetation likely to encroach within electrical clearances to overhead lines under any operating circumstances is targeted for maintenance in appropriate timeframes.

6.4 Proactive Programs

TransGrid provides corresponding representation to Bush Fire Management Committees as detailed in Attachment 2 of document GD AS G2 006 – Administration of the Network Management Plan. When required, the meetings are attended by a regional representative providing advice on matters such as the impact proposed hazard reduction burns will have on TransGrid lines and recommendations are made on how to protect these assets prior to the commencement of a burn.

As part of TransGrid's Public Electrical Safety Awareness (PESA) plan (Chapter 3 of the Network Management Plan 2013-2018), a brochure has been provided to members of the Bush Fire Management Committees outlining the fire hazards associated with overhead power lines and vegetation, and safety guidelines to be observed during fire fighting in the vicinity of overhead power lines.

Table 6.1 – Bushfire risk management

Year	Previous Years				Current Year
	2009/10	2010/11	2011/12	2012/13	2013/14
Assets in bush fire prone areas checked by pre-summer inspection %	100%	100%	100%	100%	100%
Private lines in bush fire prone areas checked by pre-summer inspection %	N/A	N/A	N/A	N/A	N/A
Fire ignitions by network assets (Number)	1	0	0	2	0
Complaints from the public regarding preparation for the bush fire season (Number)	0	0	0	0	0

7. Public Electrical Safety Awareness

TransGrid's Public Electrical Safety Awareness Plan (PESAP) is based on a risk assessment of public safety issues associated with TransGrid's assets. The PESAP is made available to all employees on TransGrid's Intranet "The Wire" and to the public via TransGrid's external website, as Chapter 3 of the Network Management Plan 2013-2018.

The 2013/14 Action Plan for the implementation of the PESAP continued with the three specific focus areas from previous Plans: Relationship Management, Site Specific Issues and Community Interaction. Specific highlights for this year included:

- > Continuation of the BeSafeKidz electrical safety presentations to schools with TransGrid power lines in their property. These presentations provide basic electrical safety awareness information, as well as specific discussion relating to the power lines in the school property. In support of this, an advertisement relating to the BeSafeKidz program was placed in the 2014 Police Legacy Child Safety Handbook which is distributed throughout NSW Primary Schools.
- > Confirmation of the installation of no kite flying safety signage in public parklands and other areas where members of the public are likely to congregate.
- > The implementation of each specific strategy in the Action Plan is regularly reviewed by a working group of representatives from each Region and a report is provided to the Executive OHS Committee quarterly for review. Satisfactory progress on each strategy was noted during the 2013/14 reporting period.

In addition to regular inspections by field staff, random audits are conducted on all TransGrid substations at least once every two years by the OHS Advisors to monitor safety conformance and identify any public safety issues. Identified issues are managed via reports to the relevant managers of the sites and recorded in the Issues Management System as appropriate.

8. Power Line Crossings of Navigable Waterways

In accordance with Australian Standard AS 6947-2009, all crossings of navigable waterways by TransGrid infrastructure have had a risk assessment completed in conjunction with NSW Maritime. The outcomes of the risk assessments do not require any crossings to be reconstructed or modified, and signage is the appropriate risk mitigation measure.

In accordance with the NSW Maritime Power Line Crossings of Navigable Waterways Electricity Industry Code, the updated signage required by the above risk assessments is in place. The signs show the maximum allowable vessel height at each crossing.

Table 8.1 – Power Line Crossings of Navigable Waterways Summary

	Existing (Number)	New (Number)	Incidents (Number)	Crossings Reconstructed (Number)	Crossings Identified as Requiring Conversion to Submarine Crossings (Number)
Overhead Crossings	411	0	0	0	0
Submarine Crossings	0	0	0	0	0

Note: 1. Two crossings of the Clarence River near Grafton have crossing heights that are below the expected maximum vessel height initially notified by NSW Maritime. These two crossings are by one 132 kV transmission line, either side of an island in the Clarence River and have been in service at this location since the mid 1960s with no recorded incidents. Discussions have been held with NSW RMS, with the outcome being a revision of the maximum expected vessel heights to meet the 17m as marked on the new signage, with no further modification of the crossing required. RMS have not yet updated the boating maps with the revised information. A revision of this arrangement has been requested by RMS in 2018 to assess the river traffic and the suitability of the safety clearance of the crossing at that time.



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