

Priority project name and ranking	Queensland – New South Wales Interconnector (Rank 1)
Priority project description	Changes to current transformer secondary ratios on 8C, 8E, 8L and 8M lines.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	31-Mar-15
Limit(s) addressed by priority project	The oscillatory stability limit on the QNi has resulted in an increase of the southbound transfer limit from 1078MW to 1200MW. Ratings of 8L, 8M 8C and 8E are currently limited to 1079MW due to current transformer secondary ratios. A change to current transformer secondary ratios would enable full use of the line's thermal capacity of 1200MVA, subjected to other constraints such as thermal constraints.
Initial limit value(s)	The rating of 8C & 8E and 8L & 8M lines are presently limited to 1097MVA(Contingent).
Target limit value(s)	The target rating of 8C & 8E and 8L & 8M lines are 1200MVA(Contingent).
Completion limit values	1200MVA of 8C & 8E and 8L & 8M has been achieved to allow full use of the lines' thermal capacity.
Estimated capital cost of priority project	\$0
Estimated operating cost of priority project	\$55,000
Capital expenditure to date	\$0
Operating expenditure to date	\$53,507
Priority project key milestones and dates	<ul style="list-style-type: none"> ● Project has been completed in March 2015
Priority project update/comments	<ul style="list-style-type: none"> ● Project delivery has been optimised to allow early realisation of market benefits.

Priority project name and ranking	67 & 68 Murray – Dederang 330kV Switchbays (Rank 2)
Priority project description	Replace wave traps, disconnectors and change CT ratios and protection settings on 67 & 68 line switchbays at Murray 330/132kV Substation.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	30/06/2016
Limit(s) addressed by priority project	Ausnet Services has installed dynamic line ratings on 67 & 68 lines that may provide a rating of up to 1486MVA under favourable conditions. A change in current transformer ratio and replacement of the terminal equipment's will allow the lines to achieve a rating of up to 1486 MVA under favourable conditions.
Initial limit value(s)	The rating of 67 and 68 lines are presently limited to 1015MVA(Contingent).
Target limit value(s)	The target rating of 67 and 68 lines are 1486MVA(Contingent)*
Completion limit values	The new contingent rating is 1429MVA.
Estimated capital cost of priority project	\$495,000
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$311,385
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> • Project has ben completed in June 2016
Priority project update/comments	<ul style="list-style-type: none"> • Project delivery has been optimised to allow early realisation of market benefits.

Priority project name and ranking	993 Line Protection & Metering Upgrade (Rank 3)
Priority project description	Replace the secondary systems panel for 993 Line at Wagga 330/132kV substation.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	31/03/2016
Limit(s) addressed by priority project	Constraint on 993 during contingency events, which may result in load shedding.
Initial limit value(s)	The rating of 993 line is presently limited to 114MVA(Contingent).
Target limit value(s)	The target rating of 993 line is 122MVA(Contingent).
Completion limit values	
Estimated capital cost of priority project	\$90,000
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$18,636
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> ● Project has been completed in March 2016
Priority project update/comments	<ul style="list-style-type: none"> ● Project delivery has been optimised to allow early realisation of market benefits. ● Project has been completed, but line rating advise confirming updated limit values has to be issued

Priority project name and ranking	DLR - 83 Liddell – Muswellbrook, 84 Liddell – Tamworth 330, 85 & 86 Tamworth 330 – Armidale & 88 Muswellbrook – Tamworth 330 330kV Lines (Rank 4)
Priority project description	Install dynamic line ratings based on real time weather data on 83, 84, 85, 86 and 88 330kV Lines.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	30/06/2016
Limit(s) addressed by priority project	Installation of dynamic line ratings will enable the lines to be operated at higher than their static thermal ratings under favourable conditions.
Initial limit value(s)	The rating of 83 line is presently limited to 1160MVA. The rating of 86 line is presently limited to 989MVA. The rating of 84, 85 and 88 lines are presently limited to 983MVA.
Target limit value(s)	Increased line ratings by approximately 20% at times during favourable conditions.
Completion limit values	
Estimated capital cost of priority project	\$2,150,000*
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$1,184,925
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> ● Project has been completed in June 2016
Priority project update/comments	<p>*Project has been combined with Dynamic Line Rating - Northern Region (Priority Rank 10) and Dynamic Line Rating - Tamworth (Priority Rank 14) for delivery to achieve efficiencies. This resulted in an overall cost reduction of circa \$250k to implement Dynamic Line Rating in Northern NSW.</p> <ul style="list-style-type: none"> ● Project delivery has been optimised to allow early realisation of market benefits. ● Project hardware has been installed. Data validation and verification is continuing

Priority project name and ranking	99P Line Protection & Metering Upgrade (Rank 5)
Priority project description	Changes to CT ratios at Gadara 132/66kV Substation.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	31/03/2016
Limit(s) addressed by priority project	Constraint on 99P during contingency events, which may result in load shedding.
Initial limit value(s)	The rating of 99P line is presently limited to 114MVA (Contingent).
Target limit value(s)	The target rating of 99P line is 128MVA (Contingent).
Completion limit values	
Estimated capital cost of priority project	\$0
Estimated operating cost of priority project	\$50,000
Capital expenditure to date	\$0
Operating expenditure to date	\$11,674
Priority project key milestones and dates	<ul style="list-style-type: none"> ● Project has been completed in March 2016
Priority project update/comments	<ul style="list-style-type: none"> ● Project delivery has been optimised to allow early realisation of market benefits. ● Project has been completed, but line rating advise confirming updated limit values has to be issued

Priority project name and ranking	DLR - 65 Murray – Upper Tumut & 66 Murray – Lower Tumut 330kV Lines (Rank 6)
Priority project description	Install dynamic line ratings based on real time weather data on 65 and 66 330kV Lines.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	30/09/2016
Limit(s) addressed by priority project	Installation of dynamic line ratings will enable the lines to be operated at higher than their static thermal ratings under favourable conditions.
Initial limit value(s)	The rating of 65 and 66 lines are presently limited to 715MVA.
Target limit value(s)	Increased line ratings by approximately 20% at times during favourable conditions.
Completion limit values	
Estimated capital cost of priority project	\$1,400,000*
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$740,516
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> ● Project has been completed in September 2016
Priority project update/comments	<p>*Project has been combined with Dynamic Line Rating - Yass, Marulan, Canberra, Bannaby, Sydney West (Priority Rank 13) for delivery to achieve efficiencies. This resulted in an overall cost reduction of circa \$600k to implement Dynamic Line Rating in Southern NSW.</p> <ul style="list-style-type: none"> ● Project hardware has been installed. Data validation and verification is continuing

Priority project name and ranking	Extension of Directlink Tripping Scheme (Rank 7)
Priority project description	Extend the Directlink emergency tripping scheme to include the transformers at Lismore 330/132kV Substation, 872B bay at Armidale 330/132kV Substation and 872A, 872B and 892A bays at Coffs Harbour 330/132kV Substation.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	18-Dec-15
Limit(s) addressed by priority project	NSW export on the Directlink interconnector during outages of a transformer at Lismore 330kV substation, 872B bay at Armidale or a 330kV bay at Coffs Harbour.
Initial limit value(s)	During outages of a transformer at Lismore 330kV Substation, 872B bay at Armidale or a 330kV bay at Coffs Harbour the NSW export on the Directlink interconnector is limited.
Target limit value(s)	The target is to obtain full use of line capacity of the Directlink Interconnector during outages of the Lismore transformers, 872B bay at Armidale or 872A, 872B and 892A bays at Coffs Harbour.
Completion limit values	Reduce market constraints upon Directlink by allowing full use of line capacity of the Directlink Interconnector during outages of the Lismore transformers, 872B bay at Armidale or 872A, 872B and 892A bays at Coffs Harbour.
Estimated capital cost of priority project	\$600,000
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$156,346
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> ● Tripping scheme have been implemented in SCADA in December 2015 ● The scheme went live in February 2016
Priority project update/comments	<ul style="list-style-type: none"> ● Project delivery has been optimised to allow early realisation of market benefits.

Priority project name and ranking	976 Line Configuration & Protection Changes (Rank 8)
Priority project description	Install disconnector at Yass 330/132kV Substation and change of protection settings at Canberra 330/132kV Substation, Yass 330/132kV Substation and Queanbeyan 132/66kV Substation.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	18-Jul-15
Limit(s) addressed by priority project	Enables firm supply of Queanbeyan load, prevents the need to manually close an on-load disconnector and avoids time consuming load transfers in Essential Energy's network.
Initial limit value(s)	The existing configuration requires the manual operation of disconnector during switching on line 976 or an outage of 976/1.
Target limit value(s)	Reduce likelihood of loss of supply to Queanbeyan and prevents the need for manual operation of disconnectors. Avoid load transfer in the Essential Energy Network
Completion limit values	Open point on 976 has been transferred to Yass substation, likelihood of loss of supply has been reduced, and manual operation of disconnectors during switching is no longer required.
Estimated capital cost of priority project	\$110,000
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$51,913
Operating expenditure to date	\$0
Priority project key milestones and dates	●Project has been completed in July 2015
Priority project update/comments	● Project has been completed, but line rating advise confirming updated limit values has to be issued

Priority project name and ranking	94E Mt Piper 132 – Wallerawang 132 Switchbays (Rank 9)
Priority project description	Replace interplant connections and change current transformer secondary ratios on the 94E Line switchbay at Wallerawang 330/132 kV Substation.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	31/01/2016
Limit(s) addressed by priority project	Constraints on 94E Line during multiple contingency events at times of high loads.
Initial limit value(s)	The rating of 94E line is presently limited to 285MVA(Contingent).
Target limit value(s)	The target rating of 94E line is 373MVA(Contingent).
Completion limit values	
Estimated capital cost of priority project	\$50,000
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$35,939
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> • Project finalised in January 2016
Priority project update/comments	<ul style="list-style-type: none"> • Project has been completed, AEMO has been advised, however, unclear if improvement target has been achieved as there are different ratings for different seasons.

Priority project name and ranking	DLR - Northern 132kV System (Rank 10)
Priority project description	Install dynamic line ratings based on real time weather data on 967, 96R, 96T and 966 132kV Lines.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	30/06/2016
Limit(s) addressed by priority project	Installation of dynamic line ratings will enable the lines to be operated at higher than their static thermal ratings under favourable conditions.
Initial limit value(s)	The rating of 967, 96R and 96T lines are presently limited to 136MVA. The rating of 966 line is presently limited to 121MVA.
Target limit value(s)	Increased line ratings by approximately 20% at times during favourable conditions.
Completion limit values	
Estimated capital cost of priority project	\$2,150,000*
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$1,184,925
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> ● Project has been completed in June 2016
Priority project update/comments	<p>*Project has been combined with Dynamic Line Rating - 83,84,85,86 and 88 (Priority Rank 4) and Dynamic Line Rating - Tamworth (Priority Rank 14) for delivery to achieve efficiencies. This resulted in an overall cost reduction of circa \$250k to implement Dynamic Line Rating in Northern NSW.</p> <ul style="list-style-type: none"> ● Project delivery has been optimised to allow early realisation of market benefits. ● Project hardware has been installed. Data validation and verification is continuing

Priority project name and ranking	DLR - Snowy – Yass & Canberra 330kV Lines (Rank 11)
Priority project description	Install dynamic line ratings based on real time weather data on 01, 2, 3 and 07 330kV Lines.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	30-Nov-15
Limit(s) addressed by priority project	Installation of dynamic line ratings will enable the lines to be operated at higher than their static thermal ratings under favourable conditions.
Initial limit value(s)	The rating of 01 and 2 lines are presently limited to 995MVA. The rating of 3 and 07 lines are presently limited to 1132MVA.
Target limit value(s)	Increased line ratings by approximately 20% at times during favourable conditions.
Completion limit values	
Estimated capital cost of priority project	\$1,210,000
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$718,595
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> • Project has been completed in November 2015
Priority project update/comments	<ul style="list-style-type: none"> • Project hardware has been installed. Data validation and verification is continuing

Priority project name and ranking	Northern Reactive Plant Control Scheme (Rank 12)
Priority project description	The installation of reactive controller on the Queensland - New South Wales Interconnector (QNI) to maintain the Armidale SVC at near zero output, as well as emergency switching capability for the reactive equipment at Dumaresq and Armidale 330/132kV Substations.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	29-Feb-16
Limit(s) addressed by priority project	Ensure adequate post contingent voltage control of the northern area
Initial limit value(s)	Failure to provide reactive support can impose market constraints when the SVC at Armidale is operating at its limit.
Target limit value(s)	Provision of adequate post contingent voltage control in the Northern area and reduce the need for operator intervention.
Completion limit values	Post contingent voltage control have been implemented
Estimated capital cost of priority project	\$418,000
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$142,872
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> • Project finalised in February 2016
Priority project update/comments	

Priority project name and ranking	DLR - 4 & 5 Yass – Marulan, 9 Yass – Canberra, 61 Yass – Bannaby & 39 Bannaby – Sydney West 330kV Lines (Rank 13)
Priority project description	Install dynamic line ratings based on real time weather data on 4, 5, 9, 61 and 39 Lines. Increase the height of transmission line conductor on 61 Line to achieve a 100 degrees C design temperature.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	30/09/2016
Limit(s) addressed by priority project	Installation of dynamic line ratings will enable the lines to be operated at higher than their static thermal ratings under favourable conditions.
Initial limit value(s)	The rating of 4 and 5 lines are presently limited to 880MVA. The rating of 9, 39 and 61 lines are presently limited to 995MVA.
Target limit value(s)	Increased line ratings by approximately 20% at times during favourable conditions. Uprate line 61's design temperature of 100°C.
Completion limit values	
Estimated capital cost of priority project	\$1,400,000*
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$740,516
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> • Project has been completed in September 2016
Priority project update/comments	<p>*Project has been combined with Dynamic Line Rating - Murray, Upper & Lower Tumut (Priority Rank 6) for delivery to achieve efficiencies. This resulted in an overall cost reduction of circa \$600k to implement Dynamic Line Rating in Northern NSW.</p> <ul style="list-style-type: none"> • Project hardware has been installed. Data validation and verification is continuing

Priority project name and ranking	DLR - 969 Tamworth 330 – Gunnedah 132kV Line (Rank 14)
Priority project description	Install dynamic line ratings based on real time weather data on 969 Line.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	30/06/2016
Limit(s) addressed by priority project	Installation of dynamic line ratings will enable the lines to be operated at higher than their static thermal ratings under favourable conditions.
Initial limit value(s)	The rating of 969 line is presently limited to 82MVA.
Target limit value(s)	Increased line ratings by approximately 20% at times during favourable conditions.
Completion limit values	
Estimated capital cost of priority project	\$2,150,000*
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$1,184,925
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> ● Project has been completed in June 2016
Priority project update/comments	<p>*Project has been combined with Dynamic Line Rating - Northern Region (Priority Rank 10) and Dynamic Line Rating - Tamworth (Priority Rank 14) for delivery to achieve efficiencies. This resulted in an overall cost reduction of circa \$250k to implement Dynamic Line Rating in Northern NSW.</p> <ul style="list-style-type: none"> ● Project delivery has been optimised to allow early realisation of market benefits. ● Project hardware has been installed. Data validation and verification is continuing

Priority project name and ranking	81 & 82 Liddell – Newcastle & Tomago Lines (Rank 15)
Priority project description	Replace interplant connections on 81 & 82 Line switchbays at Liddell and Newcastle, and replace wave traps and change current transformer secondary ratios at Liddell.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	
Limit(s) addressed by priority project	Constraints on 81&82 Lines at times of high load
Initial limit value(s)	The rating of 81 and 82 lines are presently limited to 1428MVA(Contingent).
Target limit value(s)	The target rating of 81 and 82 lines are 1646MVA(Contingent).
Completion limit values	
Estimated capital cost of priority project	\$1,380,000
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$1,029,587
Operating expenditure to date	
Priority project key milestones and dates	<ul style="list-style-type: none"> ●Detail Design completed May 2016 ●Site Works commenced September 2016 ●Completion of works scheduled for May 2017
Priority project update/comments	<ul style="list-style-type: none"> ● Liddell Power Station cancelled all programed outages until 2017. Next available outage to complete the works has project completion scheduled for May 2017

Priority project name and ranking	Beryl Capacitor Bank (Rank 16)
Priority project description	Install a new capacitor bank at Beryl 132kV Substation.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	21/12/2016
Limit(s) addressed by priority project	The installation of a capacitor bank at Beryl 132kV substation would increase the capacity available at the substation, deferring the construction of an additional supply to Beryl area.
Initial limit value(s)	The current capacity in the Beryl and Mudgee area is 91MW.
Target limit value(s)	With the provision of reactive support at Beryl substation the capacity will be increased by 6MW.
Completion limit values	
Estimated capital cost of priority project	\$2,150,000
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$1,548,115
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> ●Project completion was achieved December 2016
Priority project update/comments	<ul style="list-style-type: none"> ●Capacitor bank was placed in-service 21/12/2016. Availability for emergency switching is still to be established

Priority project name and ranking	TWFL - Snowy Lines (Rank 17)
Priority project description	Install travelling wave fault locators on the Snowy (01, 2, 3, 07, 64, 65, 66 and 97G) lines.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	
Limit(s) addressed by priority project	Response time to locate, inspect and if required, repair sustained faults reduced and time taken to restore transmission lines to service is reduced.
Initial limit value(s)	Extensive travel and inspection time required to locate faults on the Snowy (01, 2, 3, 07, 64, 65, 66 and 97G) lines.
Target limit value(s)	Reduction to the response time to locate, inspect and if required, repair faults on the Snowy (01, 2, 3, 07, 64, 65, 66 and 97G) lines.
Completion limit values	
Estimated capital cost of priority project	\$2300000*
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$1,239,129
Operating expenditure to date	\$0
Priority project key milestones and dates	●Project Completion has been scheduled for December 2017.
Priority project update/comments	*All TWFL projects under TransGrid's NCIPAP have been combined in order to achieve project delivery efficiencies. Where possible proposed works at each substation will be bundled with other major capital works. This has resulted in significant cost savings.

Priority project name and ranking	TWFL - North Western 132kV System (Rank 18)
Priority project description	Install travelling wave fault locators on the North Western (968, 969, 9U3 and 96M) lines.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	
Limit(s) addressed by priority project	Response time to locate, inspect and if required, repair sustained faults reduced and time taken to restore transmission lines to service is reduced.
Initial limit value(s)	Extensive travel and inspection time required to locate faults on the North Western (968, 969, 9U3 and 96M) lines.
Target limit value(s)	Reduction to the response time to locate, inspect and if required, repair faults on the North Western (968, 969, 9U3 and 96M) lines.
Completion limit values	
Estimated capital cost of priority project	\$2300000*
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$1,239,129
Operating expenditure to date	\$0
Priority project key milestones and dates	●Project Completion has been scheduled for December 2017.
Priority project update/comments	*All TWFL projects under TransGrid's NCIPAP have been combined in order to achieve project delivery efficiencies. Where possible proposed works at each substation will be bundled with other major capital works. This has resulted in significant cost savings.

Priority project name and ranking	TWFL - Northern 330kV Lines (Rank 19)
Priority project description	Install travelling wave fault locators on the Northern (83, 84, 88, 85&88 and 8C&8E) lines.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	
Limit(s) addressed by priority project	Response time to locate, inspect and if required, repair sustained faults reduced and time taken to restore transmission lines to service is reduced.
Initial limit value(s)	Extensive travel and inspection time required to locate faults on the Northern (83, 84, 88, 85&88 and 8C&8E) lines.
Target limit value(s)	Reduction to the response time to locate, inspect and if required, repair faults on the Northern (83, 84, 88, 85&88 and 8C&8E) lines.
Completion limit values	
Estimated capital cost of priority project	\$2300000*
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$1,239,129
Operating expenditure to date	\$0
Priority project key milestones and dates	●Project Completion has been scheduled for December 2017.
Priority project update/comments	*All TWFL projects under TransGrid's NCIPAP have been combined in order to achieve project delivery efficiencies. Where possible proposed works at each substation will be bundled with other major capital works. This has resulted in significant cost savings.

Priority project name and ranking	TWFL - Far North Coast 132kV System (Rank 20)
Priority project description	Install travelling wave fault locators on the Far North Coast (87, 89 and 96C) lines.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	
Limit(s) addressed by priority project	Response time to locate, inspect and if required, repair sustained faults reduced and time taken to restore transmission lines to service is reduced.
Initial limit value(s)	Extensive travel and inspection time required to locate faults on the Far North Coast (87, 89 and 96C) lines.
Target limit value(s)	Reduction to the response time to locate, inspect and if required, repair faults on the Far North Coast (87, 89 and 96C) lines.
Completion limit values	
Estimated capital cost of priority project	\$2300000*
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$1,239,129
Operating expenditure to date	\$0
Priority project key milestones and dates	●Project Completion has been scheduled for December 2017.
Priority project update/comments	*All TWFL projects under TransGrid's NCIPAP have been combined in order to achieve project delivery efficiencies. Where possible proposed works at each substation will be bundled with other major capital works. This has resulted in significant cost savings.

Priority project name and ranking	Point-on-Wave Switching for 132kV Capacitor Banks (Rank 21)
Priority project description	Replace standard 132kV circuit breakers with point-on-wave circuit breakers.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	
Limit(s) addressed by priority project	Transient distortion of supply voltage.
Initial limit value(s)	Transient distortion of supply voltage during capacitor switching causes damage to HV plant and equipment.
Target limit value(s)	Reduce transient distortion through the installation of point-on-wave switching on 3 capacitor banks.
Completion limit values	
Estimated capital cost of priority project	\$5126000*
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$2,601,193
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> ● Project Completion has been scheduled for January 2018 <p>*All Point on Wave Circuit Breaker replacement projects (132 & 66 kV) under TransGrid's NCIPAP have been combined in order to achieve project delivery efficiencies. Where possible proposed works at each substation will be bundled with other major capital works.</p>
Priority project update/comments	<ul style="list-style-type: none"> ● Detail design and procurement activities have commenced.

Priority project name and ranking	Point-on-Wave Switching for 66kV & Below Capacitor Banks (Rank 22)
Priority project description	Replace standard 66kV circuit breakers with point-on-wave circuit breakers.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	
Limit(s) addressed by priority project	Transient distortion of supply voltage.
Initial limit value(s)	Transient distortion of supply voltage during capacitor switching causes damage to HV plant and equipment.
Target limit value(s)	Reduce transient distortion through the installation of point-on-wave switching on 24 capacitor banks.
Completion limit values	
Estimated capital cost of priority project	\$5126000*
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$2,601,193
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> ● Project Completion has been scheduled for January 2018 <p>*All Point on Wave Circuit Breaker replacement projects (132 & 66 kV) under TransGrid's NCIPAP have been combined in order to achieve project delivery efficiencies. Where possible proposed works at each substation will be bundled with other major capital works.</p>
Priority project update/comments	<ul style="list-style-type: none"> ● Detail design and procurement activities have commenced.

Priority project name and ranking	Behaviour of Residential Solar During System Events (Rank 23)
Priority project description	Install high speed monitors on connection points with significant penetration of residential solar installations, and fault recorders at locations representative of various load types.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	
Limit(s) addressed by priority project	
Initial limit value(s)	Potential behaviour of residential solar generation during system events, that could exacerbate the effect of some system events.
Target limit value(s)	Realisation of the behaviour of residential solar generation during system events. Records will improve data availability for the calculation of load indices.
Completion limit values	
Estimated capital cost of priority project	\$1,850,000
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$723,148
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> ● Project completion has been scheduled in March 2017 ● In order to monitor the residential solar penetration and their behaviour during system events, it is proposed that additional high speed monitors be installed at the following sites to monitor the net substation loads. <ul style="list-style-type: none"> • Ingleburn • Liverpool • Macarthur • Tomago (132 kV load) • Vineyard • Williamsdale (feeders 97F and 97H) • Waratah West
Priority project update/comments	

Priority project name and ranking	TWFL - Southern 330kV Network (Rank 24)
Priority project description	Install travelling wave fault locators on the Southern (63 and 51) Lines.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	
Limit(s) addressed by priority project	Response time to locate, inspect and if required, repair sustained faults reduced and time taken to restore transmission lines to service is reduced.
Initial limit value(s)	Extensive travel and inspection time required to locate faults on the Southern (63 and 51) lines.
Target limit value(s)	Reduction to the response time to locate, inspect and if required, repair faults on the Southern (63 and 51) lines.
Completion limit values	
Estimated capital cost of priority project	\$2300000*
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$1,239,129
Operating expenditure to date	\$0
Priority project key milestones and dates	●Project Completion has been scheduled for December 2017.
Priority project update/comments	*All TWFL projects under TransGrid's NCIPAP have been combined in order to achieve project delivery efficiencies. Where possible proposed works at each substation will be bundled with other major capital works. This has resulted in significant cost savings.

Priority project name and ranking	TWFL - Western 220kV Network (Rank 25)
Priority project description	Install travelling wave fault locators on the Western (X5/1, X5/3 and X2) lines.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	
Limit(s) addressed by priority project	Response time to locate, inspect and if required, repair sustained faults reduced and time taken to restore transmission lines to service is reduced.
Initial limit value(s)	Extensive travel and inspection time required to locate faults on the Western (X5/1, X5/3 and X2) lines.
Target limit value(s)	Reduction to the response time to locate, inspect and if required, repair faults on the on the Western (X5/1, X5/3 and X2) lines.
Completion limit values	
Estimated capital cost of priority project	\$2300000*
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$1,239,129
Operating expenditure to date	\$0
Priority project key milestones and dates	●Project Completion has been scheduled for December 2017.
Priority project update/comments	*All TWFL projects under TransGrid's NCIPAP have been combined in order to achieve project delivery efficiencies. Where possible proposed works at each substation will be bundled with other major capital works. This has resulted in significant cost savings.

Priority project name and ranking	Remote Interrogation of Protection Relays (Rank 26)
Priority project description	Install remote interrogation of protection relays at 13 substations and commission production servers.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	1/12/2015
Limit(s) addressed by priority project	Protection relay fault information is presently stored at site, requiring a site visit to interrogate the data.
Initial limit value(s)	The existing protection relay fault information at Holroyd, Rookwood Road, Griffith, Wallerawang, Tomago, Williamsdale, Barnaby, Glen Innes, Wagga North, Uranquinty, Wollar, Mt Piper 500kV and Bayswater Substations is limited in that it is stored at site and requires site visits to access/interrogate.
Target limit value(s)	Ability to remotely interrogate protection relay information from the 13 Substations above and commission production servers.
Completion limit values	Remote interrogation of protection relay information from 13 substations are operational.
Estimated capital cost of priority project	\$675,000
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$622,800
Operating expenditure to date	\$0
Priority project key milestones and dates	Project has been completed as of December 2015
Priority project update/comments	

Priority project name and ranking	Communications to Albury, ANM & Hume Substations (Rank 27)
Priority project description	Installation and commissioning of high bandwidth communications network (UGFO) to Albury, ANM and Hume substations.
Co-ordinated project	No
Has the priority project been commenced ?	
Date of priority project completion	
Limit(s) addressed by priority project	
Initial limit value(s)	The communication link is slow and do not support SCADA or advanced protection schemes connections.
Target limit value(s)	The target limit is achieving commissioning of the communication link to Albury , ANM and Hume substations.
Completion limit values	
Estimated capital cost of priority project	\$3,940,000
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$2,384,881
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> ●Completion of Albury - Hume - January 2017 ●Project Completion has been scheduled in January 2017
Priority project update/comments	<ul style="list-style-type: none"> ●Underground fibre has been installed between Jindera to ANM & ANM to Albury ●9.5km of underground fibre installed between Albury - Hume

Priority project name and ranking	Energy Storage (Rank 28)
Priority project description	Install a pilot energy storage device in the Sydney area.
Co-ordinated project	No
Has the priority project been commenced ?	Yes
Date of priority project completion	
Limit(s) addressed by priority project	The trial of an energy storage device will enable its evaluation for future, larger scale application on the network.
Initial limit value(s)	The network is limited in the unpredictability of intermittent generation and constraints between generation areas and load centres at times of high load.
Target limit value(s)	Review of the storage technology and install pilot energy storage device to the network.
Completion limit values	
Estimated capital cost of priority project	\$4,900,000
Estimated operating cost of priority project	\$0
Capital expenditure to date	\$679,614
Operating expenditure to date	\$0
Priority project key milestones and dates	<ul style="list-style-type: none"> ● Project completion has been scheduled in February 2018
Priority project update/comments	<ul style="list-style-type: none"> ● Battery supplier has been identified and orders placed ● Locations to install the batter includes City of Sydney Depot Alexandria and University of NSW

Name and ranking of priority project to be removed

[insert name and ranking of priority project]

Priority project description

[insert priority project description – can be taken from the NCIPAP]

Limit addressed by priority project

[insert limit]

Initial limit value

[insert limit value from NCIPAP]

Target limit value

[insert priority project improvement target]

Reasons to undertake the project

[insert summary the reasons given in the NCIPAP for undertaking the project]

Reason for priority project removal

[insert the reasons why the priority project should be removed from the TNSP's NCIPAP. Take into account clause 5.4(a) of the STPIS.]

Name of replacement priority project	[insert project name]
Replacement priority project ranking	[insert proposed priority project ranking in NCIPAP. If the proposed ranking number will change whether another priority project in the NCIPAP will be in the top fifty or bottom fifty percentile of priority projects include reasons for why the replacement priority project should be ranked there]
Transmission circuit/injection point(s)	[insert transmission circuit/injection point limit(s) which the replacement priority project addresses]
Limit and reason for the limit	[insert description of the limit(s) and reason for the limit(s)]
Project description	[insert project description]
Initial limit	[insert the initial value(s) of the limit(s) and the dates at which the value(s) was recorded/measured]
Improvement target	[insert value(s) of the improvement target]
Estimated capital cost	
Estimated operating cost	
Consultation with AEMO	[include in this section whether the TNSP has consulted with AEMO in accordance with clause 5.4(e), (g). If there is any disagreement between the TNSP and AEMO in relation to the matters listed in clause 5.4(e) of the STPIS, the TNSP should outline the disagreement and the grounds for disagreement in this section]
Reason to include the replacement priority project	[insert reasons for including the proposed replacement priority project in the NCIPAP. Take into account the factors listed in clause 5.4(b) of the STPIS.]