Attachment 5.25

Overview of the Distribution Capacity Plans 2014–19 Regulatory Period

May 2014

Distribution Capacity Investment Overview

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Executive Summary

Context

As a distribution network service provider, Ausgrid is subject to a range of legislative and regulatory obligations. These cover service standards, safety, environmental compliance, network access and customer service.

Ausgrid is also required to efficiently provide a level of network capacity that allows electricity to be distributed reliably and safely during peak times, even if important assets are unavailable. Such network security requirements can differ across the network so Ausgrid forecasts local peak demand changes and assesses the ability of the network to comply at those times. If the assessment suggests there is insufficient capacity, efficient solutions are considered and capital expenditure plans are put in place. As all capacity expenditure is covered by economic regulation, these capital expenditure plans are assumed to be efficient.

Scope

The purpose of this document is to provide a high level overview of the capex Ausgrid is proposing to invest in the 2014-19 regulatory period, under the distribution plans. This document is part of Ausgrid's regulatory proposal and contains the proposed forecast capex for the distribution plans, with all financial numbers expressed in 2013/14 dollar terms.

The document should be read in conjunction with the other relevant attachments and documents provided in the 'supporting document' library of Ausgrid's regulatory proposal (support documents). These support documents are generally business-as-usual documents and Ausgrid has provided these for the main objective of demonstrating that its investment decisions are based on an efficient process. It must however be noted that these supporting documents have been prepared at a point in time and, therefore, reflects the forecast capex as at that time.

This document summarises Ausgrid's capital expenditure forecasts for augmenting the capacity of the distribution network (typically, 11kV and lower voltage assets connecting to customer premises) in the 2014–19 regulatory period. There are three separate but related expenditure models:[1]

- 11kV Model which forecasts investment in 11kV distribution assets
- Low Voltage (LV) Model which forecasts investment in distribution substations and low voltage distributor assets
- Customer Connections Model which forecasts investment in assets connecting customers to Ausgrid's network.

In each model, the majority of costs relate to capacity augmentation projects but they also include other minor costs for project facilitation works and project support costs.

Forecast expenditure for 2014-2019 period

[1] ID50068 11kV Model: Method & Outcomes of DND.
ID60868 Low Voltage capex model: Method and Outcomes (explanatory).
ID81882 Customer connections capex model: Method and Outcomes (explanatory).

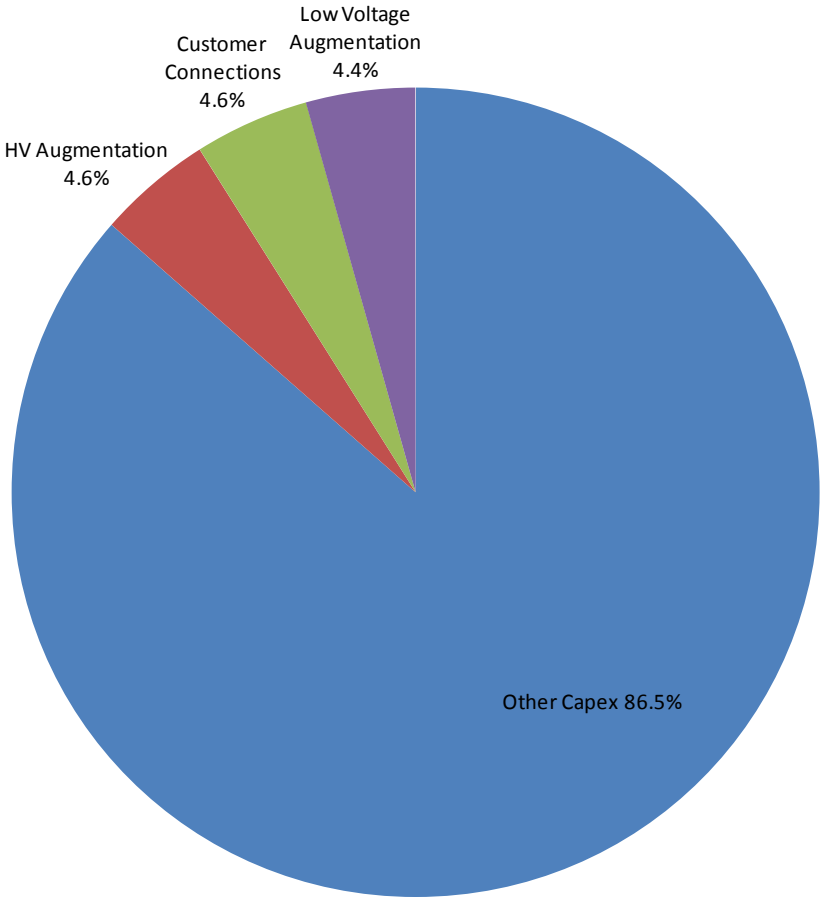
The capital expenditure forecast of $597.7 million for the 2014–19 regulatory period is significantly lower than the current regulatory period (by about $795 million) and this trend is common across all three investment programs.

Across all of its expenditure areas, Ausgrid has sought to minimise price pressures by investigating efficiency in scope and delivery of the forecast investments:

- 11kV Distribution investment is forecast to be 58 per cent lower than the current regulatory period. This reflects that investment related to a change in network security Licence Conditions is mostly complete. Pockets of higher demand growth do exist so this trend is not uniform across all areas.
- Low Voltage (LV) investment is 60 per cent lower than the current regulatory period. This is due to a significant backlog of overloaded assets being addressed and the refinement of our forecasting approach to the LV Plan as a result of outcomes experienced during the current regulatory period.
- Customer connections investment will be 53 per cent lower mainly due to a policy changes which classify a proportion of this expenditure to alternate control services and recovers these costs directly from customers seeking connection.

For context, Figure 1 shows the expenditures forecast by the Customer Connection Model, Low Voltage Model and 11kV Model are expected to contribute around 13.5% of Ausgrid's total capital expenditure in the forthcoming regulatory period.

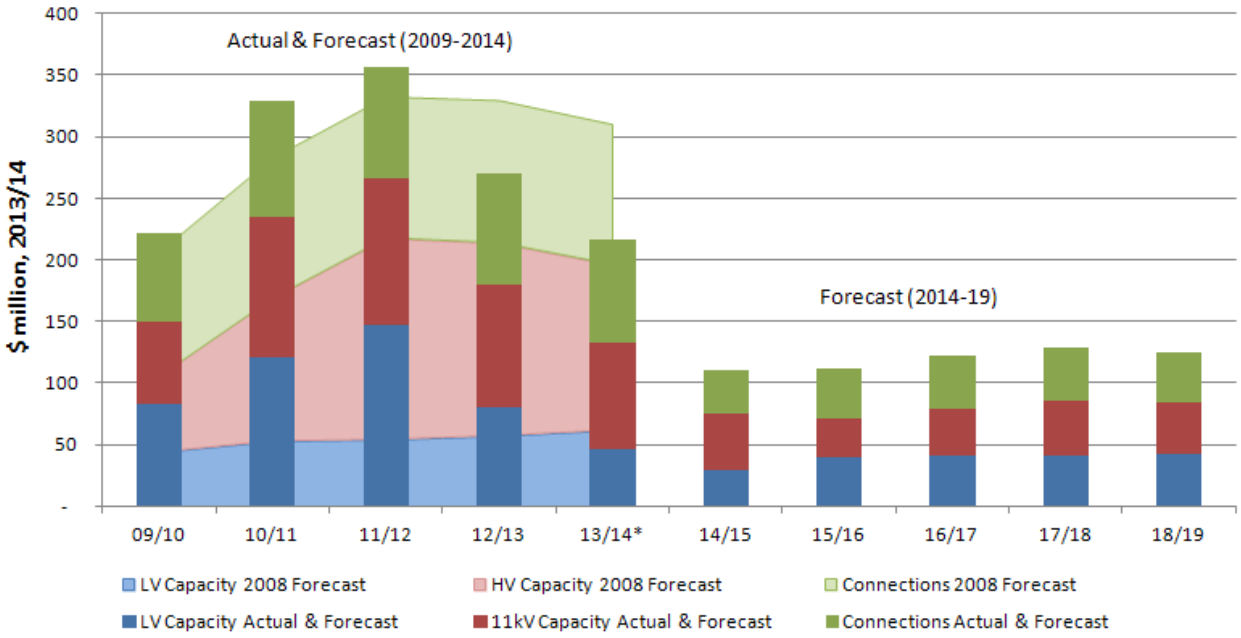
Figure 1: Overview of forecast capital expenditure in the 2014–19 regulatory period



Past expenditure for 2009-2014 period

Figure 2 shows actual capital expenditure on distribution capacity compared to the 2008 proposal forecast across the three programs. Actual capital expenditure ($1,394 million) was about 5 per cent (or $68 million) lower than forecast. Within each investment program, there were different variances against the forecast. While the impact of the 2008 global financial crisis on new customer connections was the main cause of the negative variances for Customer Connections, price impact and energy efficiencies have subdue overall demand growth in 11kV distribution investment.

Figure 2: Actual and forecast capital expenditure, 2009-14 and 2014-19



Note: Actual 2009-14 includes a forecast for 13/14.

1 Context

1.1 Scope

The purpose of this document is to provide a high level overview of the capex Ausgrid is proposing to invest in the 2014-19 regulatory period, under the distribution plans. This document is part of Ausgrid's regulatory proposal and contains the proposed forecast capex for the distribution plans, with all financial numbers expressed in 2013/14 dollar terms.

The document should be read in conjunction with the other relevant attachments and documents provided in the 'supporting document' library of Ausgrid's regulatory proposal (support documents). These supporting documents are a combination of forecasting methodologies and business-as-usual documents. Ausgrid has provided these business-as-usual documents with the main objective of demonstrating that its investment decisions are based on a well defined process which seeks to ensure efficient outcomes. It must however be noted that these supporting documents have been prepared at a point in time and, therefore, reflect the forecast capex as at that time.

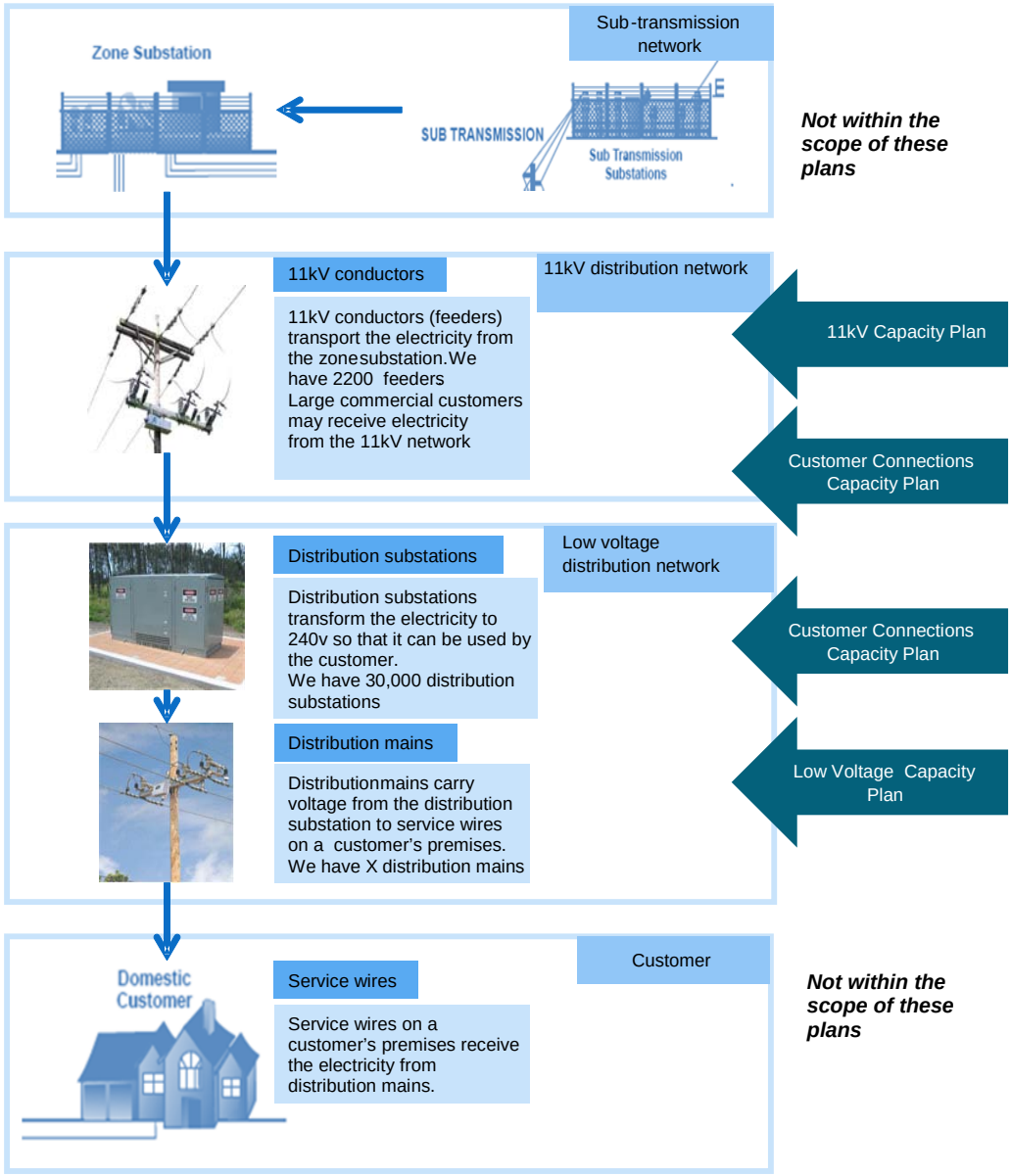
In this document, Ausgrid's capital expenditure forecasts for augmenting the distribution network capacity in the 2014–19 regulatory period have been summarised. It explains the interaction between the 11kV Model, LV Model and Customer Connection Model and the treatment of potential cost overlaps between the models.

In the context of this document and the three related models:

- ***capital expenditure forecasts*** relate to capacity augmentation; asset replacement expenditure is excluded
- ***the distribution network*** includes the meshed network downstream of the low voltage (normally at 11kV) side of sub-transmission zone substations as far as, but excluding, the service wires on the low voltage side of distribution transformers. Assets on the customer side of network connections are excluded.

The relevant parts of the network and the coverage of the three models is shown diagrammatically in Figure 3.

Figure 3: Relationship between distribution network assets and the capacity augmentation models



1.2 Why does Ausgrid need to invest?

Ausgrid is subject to a range of legislative and regulatory obligations relating to its role as a distribution network service provider in New South Wales. As well as specifying various service standards, these obligations cover areas such as economic regulation, safety, environmental compliance, network access provision and customer interactions.

An important part of this legislative and regulatory framework relates to the provision of sufficient network capacity to ensure that electricity is distributed reliably and safely during peak times, even if important assets are unavailable due to credible contingencies.[2] Ausgrid's network planning activities therefore assess the capacity of the network at forecast future peak times to assess whether its obligations can be met. If the planning assessment suggests there is insufficient capacity, efficient solutions are proposed and evaluated and capital investment plans are put in place. As all capacity expenditure is covered by economic regulation, these capital investment plans must be efficient.

The capital expenditure forecasts described in this document are all related to network capacity augmentation driven by localised increasing peak demand and new customer connections. The augmentation can occur through the construction of new distribution network assets or by increasing the network capacity at an existing location.

1.3 What drives distribution capacity investment?

In forecasting distribution augmentation expenditure, Ausgrid considers the relevant investment drivers so that investment solutions can be tailored and costs are recovered in accordance with regulatory arrangements. For the purpose of forecasting expenditure, Ausgrid considers the investment drivers are:

- ***Customer connections*** – new customer connections often increase the demand on the network so that capacity augmentation is required. Above a specified capacity threshold, customers make a contribution to the costs of the augmentation. However, if additional connections are expected in an area, it can be efficient for Ausgrid to augment the shared network capacity greater than is immediately required. The portion of connection-related augmentation cost *not* recovered directly from connecting customers is considered in the Customer Connections Model.

- ***Localised demand growth*** – this investment relates to increasing the capacity of shared 11kV and LV distribution assets in response to increases in localised demand from existing and new customers. This investment is separate to that directly related to the connection of individual customers.

- ***Local network capacities*** - the existing available capacity of specific parts of the network is also an important driver of capacity augmentation investment.

Separating the expenditure forecasts based on the abovementioned drivers means that connecting customers can be charged directly for augmentation costs they cause while other augmentation costs can be recovered from all customers via Standard Control Services.

[2] The impact of credible contingency events which may lead to outages of important assets is assessed during network planning. A credible contingency is an outage event which is considered likely enough for planning to take account of it occurring at peak times. Depending on the operative planning standard and the expected the impact on supply resulting from a credible contingency event, there may be a need to provide sufficient back-up capacity (redundancy) so that the credible contingency event does not cause a loss of supply.

1.4 What costs are included?

The capital expenditure forecasts developed by the three models are comprised of the following cost elements:

- Project costs relating to the capacity augmentation, including assets and other materials, labour for installation and contractor costs where relevant.
- Other minor capital works of low materiality which indirectly facilitate augmentation such as network fault level management, load surveying or integration of new assets with protection and control systems.
- Support costs relating to activities facilitating the capital expenditure including, for example, network planning, switching and network data management. These costs are forecast separately and are proportionally allocated to each of the three models.[3]

1.5 Distribution capacity investment models

Ausgrid has developed separate but related investment plans from three distribution capacity investment models. The models are designed to allow a logical alignment with the distribution network composition, the relevant investment drivers and cost recovery requirements:

- The 11kV Model is aligned to 11kV distribution capacity investment required due to load growth in the existing customer base.[4]
- The LV Model is aligned to distribution substation and low voltage distributor capacity investment required due to load growth in the existing customer base.[5]
- The Customer Connections Model is aligned to capacity investment related to load growth related to new connections to the low voltage and the 11kV network.[6]

This separation also allows Ausgrid to tailor its forecasting methods and modelling approaches to the specific circumstances and to also address areas of potential cost/expenditure overlap. Key attributes of the three models are summarised in Table 1.

3 ID00070 Capitalised Wages – GIS data operation, system control and network planning.
4 ID50068 11kV Model: Method & Outcomes of DND.
5 ID60868 Low Voltage capex model: Method and Outcomes (explanatory).
6 ID81882 Customer connections capex model: Method and Outcomes (explanatory).

Table 1: Key attributes of the three distribution capacity investment models

Plan	Attributes
11kV Model	**Activity scope** – capacity augmentation of the 11kV distribution network driven by peak load growth. **Asset scope** – 11kV feeders, which distribute electricity from zone substations to distribution substations. **Forecasting approach** – A detailed forecast is included for the first 2-3 years for known augmentation requirements. The forecast for later years of the 2014–19 regulatory period is developed using an approach which models augmentation expenditure on an 'ideal network topology' as a target state and an observed relationship between load density and network requirements. Historical unit costs are also used. **Potential overlap(s) and their treatment** – Customer connections related capacity investments were identified in this approach but were specifically excluded from this forecast. Appropriate adjustments are also made to recognise the synergies with distribution investments associated with the Area Plans.
LV model	**Activity scope** – capacity augmentation of the low voltage network driven by localised peak load growth. **Asset scope –** low voltage network assets such as distribution mains and distribution substations **Forecasting approach** – A 'top down' modelling approach based on the expected volume of Low Voltage distribution assets that will exceed their specified capacity (i.e. become overloaded) due to demand growth. Volumes of overloads are based on historical numbers of overloads and unit costs are based on past projects reflective of the intended planning approach next period. **Potential overlap(s) and their treatment –** Customer connections related capacity investments have been excluded from this forecast. 11kV connection works driven by this plan are included in unit costs and are excluded from the 11kV Model forecast. Potential overlaps with replacement by using historical projects for unit costs has been reviewed and found to be non-existent or immaterial.
Customer Connections Model	**Activity scope** – shared capacity augmentation driven by customer connections which cannot be recovered directly from the new connecting customers. This includes when capacity can be efficiently augmented if further connection activity is expected in an area. **Asset scope** – new distribution substations and LV mains and, less frequently, 11kV mains reconfigurations for larger customer connections. Sub-transmission connections are modelled forecast separately on an individual project basis within the area plans for major projects. **Forecasting approach** – A modelling approach based on adjusted historic unit costs for relevant project types and forecast volumes of new customer connections by project type in different geographic areas. A detailed planning forecast is not possible due to the reactive nature of customer connections projects. **Potential overlap(s) and their treatment** – The 11kV Model and LV Model forecasts exclude customer connections investments. Customer contribution rules are clearly set out in Ausgrid's Proposed Connection Policy for 1 July 2015.[7]

[7] ID34223 Proposed Connection Policy for 1 July 2015.

1.6 Context for investment in the 2014–19 regulatory period

A key focus of Ausgrid's proposal is to minimise network price increases experienced by its customers in the 2014–19 regulatory period. However, the investment forecasts are also subject to external influence because Ausgrid's obligations do not always provide a high degree of discretion in how it responds to network load growth. In order to maintain network security and performance levels, sufficient capacity is required. Nevertheless, in preparing its forecast, Ausgrid has considered project scope and cost efficiencies that may be achieved.

Other external factors which will impact capital expenditure over the 2014–19 regulatory period are:

- Increased economic confidence – In the previous regulatory period, business and consumer sentiment dropped significantly due to the 2008 global financial crisis and the volume of new connections were lower than expected as a result. Economic forecasts are now more positive and new customer connection numbers and network peak load are expected to increase.

- Areas of high customer and demand growth – There is a wide variation in load and customer growth rates across Ausgrid's network and the need for capital expenditure in some areas of the network will be higher than in others.

- Recent regulatory reform in relation to customer connections and cost recovery (included in the National Energy Customer Framework (NECF) which commenced in NSW on 1 July 2013) means that a lower proportion of connection-related expenditure falls within the scope of the models compared to in previous years. Partly as a result of this, the expenditure forecast for distribution capacity investment is lower than in previous years.

- Changes in licence conditions mean that expenditure is now only required to maintain compliance rather than move towards a higher network security standard in some areas for some assets.

1.7 Capital expenditure actuals and the forecast for 2014–19

As noted above, the capital expenditure in distribution network capacity in the forthcoming regulatory period is expected to be significantly lower than the 2009–2014 total investment and the reduction is observed in all three distribution network capacity models. However, the reasons for the reduction are different in each model and there are areas in Ausgrid's network where higher load growth is expected to drive higher expenditure locally.

The remainder of this document summarises each of the distribution capacity investment models.

2 11kV Distribution Capacity Augmentation

2.1 Introduction

The 11kV distribution network conveys electricity from zone substations to distribution centres. These assets include 11kV overhead and underground mains (also known as feeders) and miscellaneous assets such as auto-transformers and 11kV switches. Ausgrid currently has around 2,200 11kV distribution feeders.

Ausgrid's 11kV Model forecasts capital expenditure to augment the network in the 2014–19 regulatory period in response to demand growth from new and existing customers. The proposed expenditure is Ausgrid's forecast of the efficient investment which facilitates compliance with the relevant service, safety and other obligations.

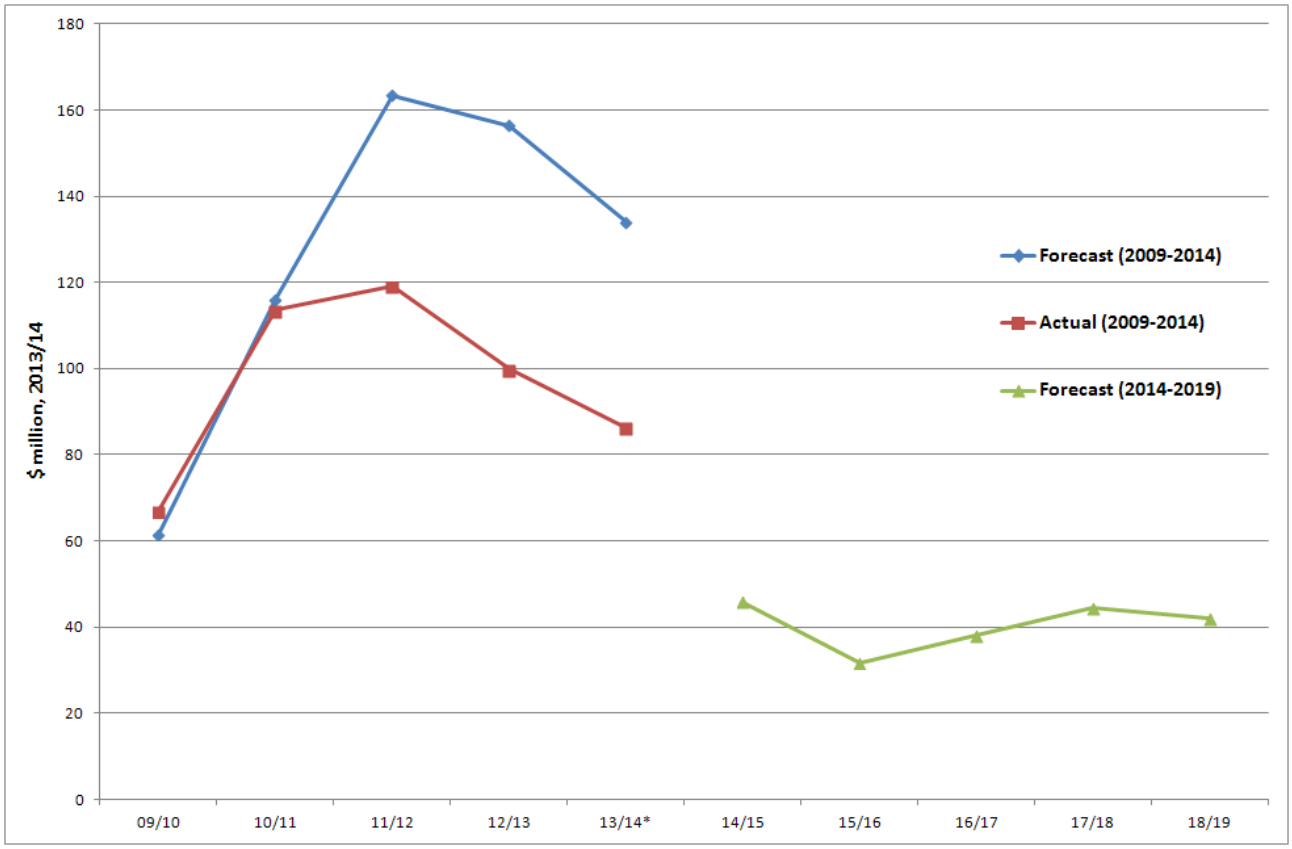
There is a small portion of program that is forecast using historical projection due to its uniqueness and is atypical to conventional augmentation assessment (this relates to 11kV augmentation in the CBD and other minor augmentations). The forecast capital expenditure excludes augmentation costs related to new customer connections because this is considered by the Customer Connections Model.

2.2 Expenditure in the current regulatory period

The expenditure in the 2009–14 regulatory period was higher than the previous regulatory period and is higher than forecast for the forthcoming regulatory period. This is due a step change in network security obligations which was brought into effect in December 2007 by changed Licence Conditions. The step change resulted in significant investment in the 2009–14 regulatory period and expenditure on committed projects will continue until 2015.

Whilst the forecast for the 2009–2014 regulatory period was high compared to historic expenditure levels, Figure 4 shows that forecast expenditure will return to a sustainable level. Other than lower than expected demand growth due to suppressed commercial and residential development following the 2008 global financial crisis, a significant reason explaining the variance is that, when Ausgrid sought to optimise its expenditure, fewer asset overloads were identified than had been forecast. In addition, increases in network charges and energy efficiency initiatives also dampened electricity demand.

Figure 4: Actual and forecast 11kV capital expenditure (2009–14 and 2014–19)



Note: * Actual 2009–14 includes a forecast for 13/14

2.3 Approach to forecasting

The capital expenditure forecast by the 11kV Model comprises:

- Capacity augmentation: installation of additional capacity and the rearrangement of the 11kV mains network to meet forecast demand of existing and new customers.
- Other works: distribution augmentation works driven by supply quality and fault level issues.
- Works in progress: this work is a continuation of upgrading of assets due to the December 2007 change in Licence Conditions. It is expected to be completed in FY2015.
- Support costs: activities required to support the 11kV distribution network capital expenditure. There are three components: planning, forecasting and compliance; switching and control; and GIS data capture.

Capacity augmentation, the main subcategory of expenditure, has been forecast using both detailed planning analysis and Ausgrid's in-house model. It is not feasible to use detailed planning approaches to forecast the 11kV distribution network requirements over a 5–7 year planning period given the uncertainty associated with customer requirements in individual zone substation areas and the time required to undertake this analysis. As a result, a detailed planning approach[8] has been used to forecast the near-term requirement and a modelling approach has

[8] Distribution Planning Standard INV-STD-10036

been used for the longer-term requirement. As a final step, the potential for efficiencies in project scope or delivery costs expected in the 2014–19 regulatory control period has also been considered.

Other works costs, driven by fault levels and supply quality issues, were forecast using analysis of historical expenditure levels. These works are typically unrelated to growth driven augmentations.

Works in progress costs, which are related to finalisation of works associated with the 2007 change of the Licence Conditions, are based on detailed planning costs which have been reconciled with the model approach to forecasting expenditure requirements.[8]

Support costs, comprising Planning, Forecasting and Compliance; Switching and Control; and GIS Data Capture costs, have been separately forecast on an activity basis, after taking account of activity drivers.[9]

[9] ID00070 Capitalised Wages – GIS data operation, system control and network planning.

2.4 11kV Model forecast expenditure for the 2014–19 regulatory period

The 11kV Model capital expenditure forecast for the 2014–2019 regulatory period is set out in Table 2. Key points are:

- Forecast 11kV distribution capacity expenditure is lower than in the current regulatory period due to forecast lower demand growth and changed Licence Conditions effective from 1 July 2014.
- Modelled capacity expenditure has been adjusted downwards to address potential overlap with expenditure forecast by the Customer Connections Model.
- Other downward adjustments have been made to reflect work on the sub-transmission system will alleviate 11kV distribution capacity issues and therefore remove the need for some of the modeled expenditure.
- Support costs remain a small proportion of proposed 11kV distribution capital expenditure.

Table 2: Forecast capital expenditure for 11kV distribution capacity investment in 2014–19 ($k, 2013/14)

	14/15	15/16	16/17	17/18	18/19	Total
TOTAL – 11kV Model	**45,813**	**31,795**	**38,157**	**44,554**	**42,014**	**202,334**
• Capacity Augmentation[10]	4,416	25,087	29,839	36,885	33,802	130,029
• Project Specific Demand Management	-84	-415	-502	-598	-560	-2,160
• Other Works	2,201	747	2,034	1,088	1,596	7,666
• Work in Progress	32,478	0	26	0	0	32,504
• Support costs	6,804	6,376	6,760	7,179	7,177	34,295
Support cost: Planning, Forecasting and Compliance	*5,272*	*5,375*	*5,516*	*5,687*	*5,777*	27,626
Support cost: Switching and Control	*294*	*191*	*237*	*288*	*271*	1,280
Support cost: GIS Data Capture	*1,238*	*810*	*1,007*	*1,205*	*1,129*	5,389

[10] Excluding new customer connections and major projects that are separately identified under the Area Plans.

3 Low Voltage augmentation

3.1 Introduction

There are currently approximately 31,000 distribution substations and 50,000 low voltage distributors in Ausgrid's network. The LV Model forecasts capital expenditure to augment distribution substations and distribution mains driven by demand growth from new and existing customers. The forecast expenditures exclude those associated with connecting new customers.

Ausgrid's planning criteria and procedure for low voltage planning[11] explains when Ausgrid undertakes low voltage network augmentation. Low voltage network investment is made so that, with all equipment in service:

- the thermal capacity of the network is not exceeded during peak load;
- voltage levels[12] are maintained to all customers at all times; and
- power quality is received by customers in accordance with NS 238 Supply Quality.

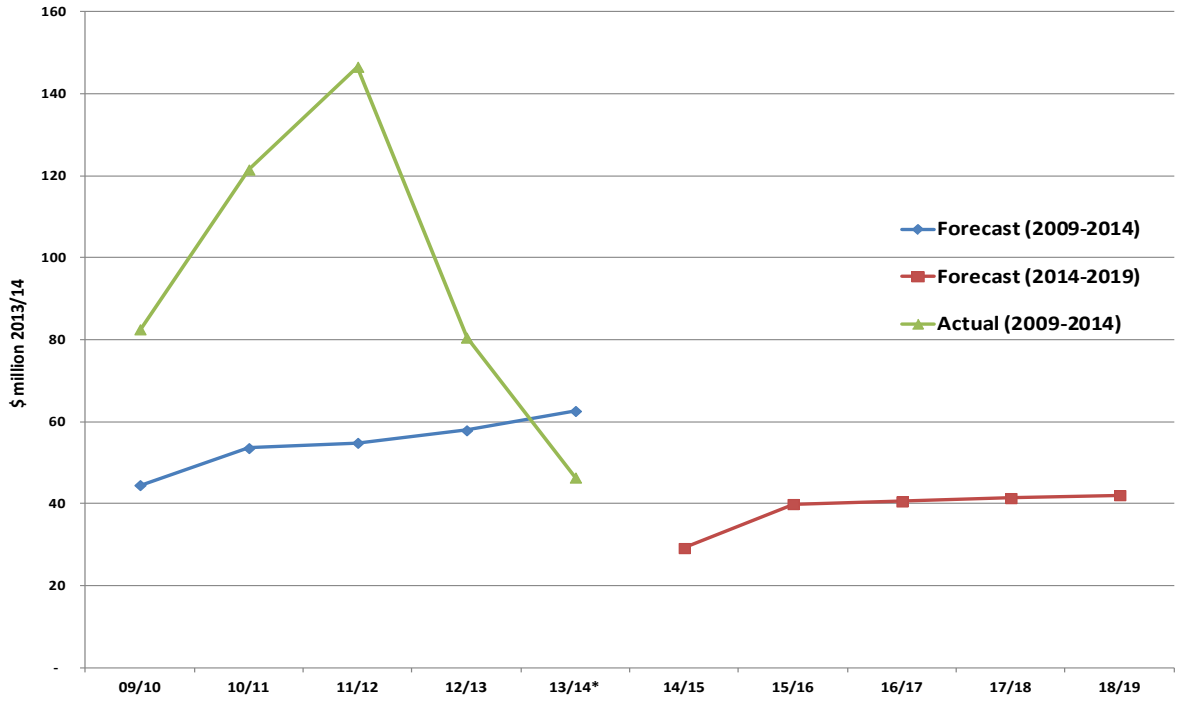
3.2 Expenditure in the current regulatory period

Figure 5 shows that actual expenditure in the 2009–14 regulatory period has been much higher than had been forecast. This is because of underestimation of unit costs in the previous submission and an over allocation in the forecast of work to rural regions of the network where the network is overhead and is augmented at lower cost. There was also a backlog of asset overloads existing in Ausgrid's low voltage network which were not identified until after the 2008 forecast had been developed. Their identification was largely the result of implementation of improved load surveying methods, and, once identified, these overloads had to be resolved in the current regulatory period. Therefore, Ausgrid commenced works to rectify the identified overloads in accordance with Ausgrid's low voltage planning standard. As a result of investment made in the current period, the backlog of unaddressed asset overloads coming into the period has but all been resolved and Ausgrid is now able to focus on addressing an underlying steady state of overloads.

[11] Ausgrid, Low Voltage (Interim) Planning Standard: INV-STD-10034

[12] Investment Standard - LV Network Voltage Range INV-STD-10015

Figure 5: Low Voltage capital expenditure (2009–14 and 2014–19)



Note: * Actual 2009-14 includes a forecast for 13/14.

In addition, Ausgrid applied an integrated planning approach in the current regulatory period so that other local network issues, such as asset replacement and reliability, were considered when addressing overload issues in an area. Therefore, some expenditure allocated to low voltage investment addressed network needs identified under other programs and at a lower overall cost through project synergies. Non financial benefits of using an integrated planning approach this period included less disruption to communities by limiting the amount of road closures, excavation and supply outages required to undertake works.

3.3 Approach to forecasting

The forecasting methods used in the LV Model take account of the materiality of costs. That is, a more sophisticated method, based on observed trends and better quality data, has been used to forecast expenditure on low voltage distributor overloads, distribution substation overloads and transitional distributor overloads which, together, comprise the major share (approximately 82%) of proposed low voltage network investment. In summary:

- Unit costs for typical project types are calculated by region based on historical project costs and scopes of work.
- Volumes of distribution substation overloads, low voltage distributor overloads and transitional distributor overloads are forecast and allocated to project types (i.e. network augmentation solutions that resolve overloads) based on the same historical project profile used to calculate unit costs.
- The unit costs and volumes, by project type and region, are then used to forecast low voltage network expenditure.

The forecasting methodology applied to the remaining 18 per cent of LV Plan expenditure is also based on historical project costs, volumes of activity and expenditure trends.

3.4 Forecast expenditure for the 2014–19 regulatory period

The LV Model forecast expenditure is set out in Table 3. As a result of the investment in the current regulatory period, low voltage network expenditure is forecast to be much lower in the 2014–19 regulatory period as shown in Figure 3.

Table 3: Forecast expenditure for the 2014–19 regulatory period ($k, 2013/14)

	14/15	15/16	16/17	17/18	18/19	Total
TOTAL – LV Model	**29,175**	**39,908**	**40,558**	**41,364**	**42,082**	**193,087**
• Low voltage distributor overloads	15,703	15,900	16,109	16,355	16,604	80,670
• Distribution substation overloads	7,305	7,402	7,486	7,585	7,683	37,460
• Transitional distributor overloads	0	9,833	9,962	10,116	10,272	40,183
• Planning and investigations	2,776	2,946	3,101	3,318	3,447	15,589
• Load survey	2,117	2,147	2,186	2,231	2,277	10,957
• Small pole substation projects (<100kVA)	170	173	175	178	181	877
• Support costs	1,103	1,509	1,540	1,582	1,619	7,352
Switching and control	*212*	*287*	*293*	*305*	*314*	1,411
GIS data capture	*892*	*1,221*	*1,247*	*1,277*	*1,305*	5,942

4 New Customer Connections

4.1 Introduction

New customer connections often require augmentation of the shared network and, where additional customer connections are anticipated, it is efficient to undertake additional augmentation beyond that required for the particular new connection. Ausgrid's Customer Connections Model forecasts capital expenditure for Ausgrid funded new customer connections capacity augmentation in the 2014–19 regulatory period. It considers the new customer connections expenditure which is recovered via Standard Control Services and excludes costs recovered directly from new connecting customers. The capacity augmentation expenditure, and other related costs which are not directly attributable to a particular new customer connection, are recovered from all network users.

In accordance with Ausgrid's Proposed Connection Policy for 1 July 2015[13], new customer connections larger than a specified threshold will require the customers to contribute to any required network augmentation. Following implementation of the NECF in NSW on 1 July 2013, a lower proportion of new customer connections expenditure falls within the scope of the Customer Connections Model than in previous years.

4.2 Expenditure in the current regulatory period

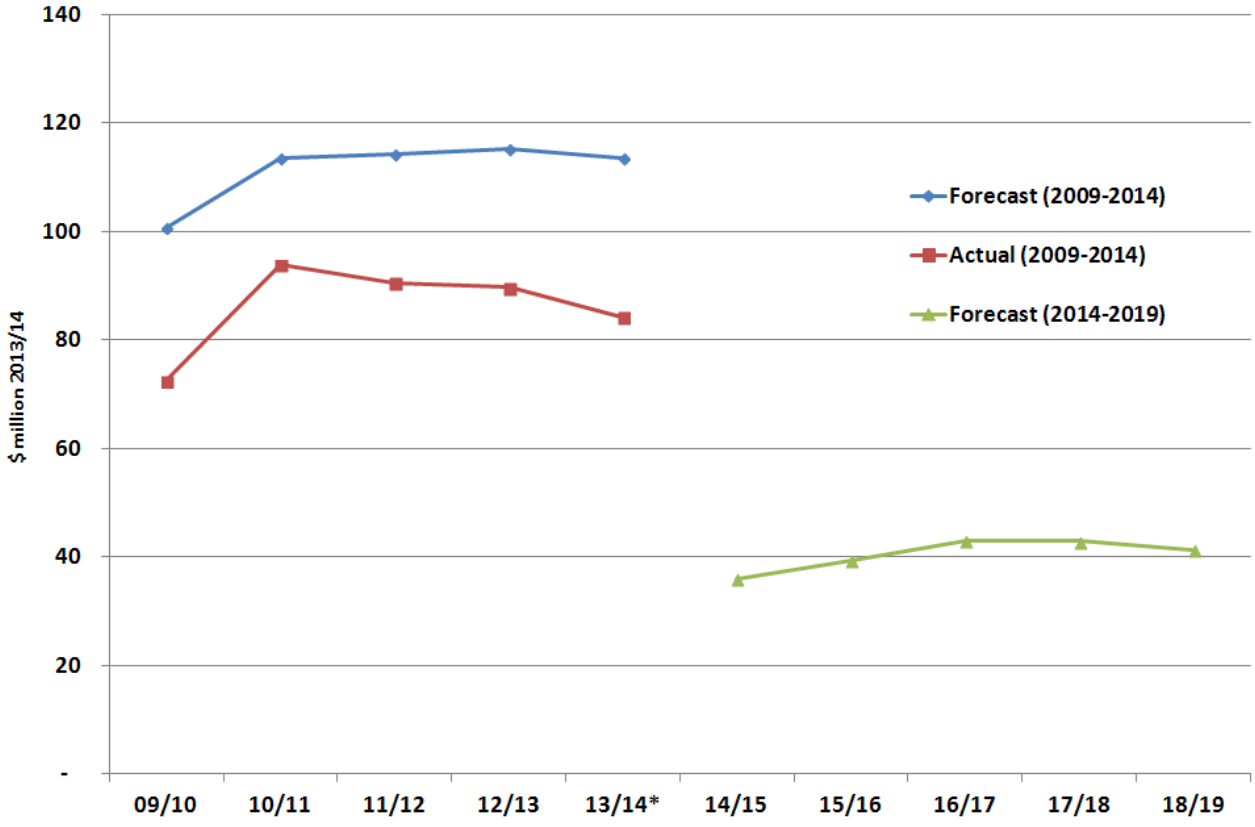
Figure 6 shows that, in the 2009–14 regulatory period, capital expenditure for new customer connections was less than originally forecast by $127 million (23%). This was primarily due to significantly reduced residential and commercial development activity as a result of uncertainty and lower than anticipated growth related to the 2008 global financial crisis. Over the 2009–14 regulatory period, the number of new customer connections is expected to be around 22,300 (26%) less than the 86,655 new customer connections forecast in 2008.

Figure 6 also shows the forecast expenditure for the 2014–19 regulatory period. While the annual number of new customer connections is expected to increase again with a resurgence in building activity as a result of favourable economic conditions[14], the continuing lower new customer connections expenditure forecast from 2015 onwards is largely driven by the implementation of the NECF and Ausgrid's Proposed Connection Policy for 1 July 2015.

[13] ID34223 Proposed Connection Policy for 1 July 2015.

[14] Supported by independent forecasts of building commencements in NSW BIS Shrapnel - NSW Building in Australia 2013 – 2028 and the NSW Department of Planning.

Figure 6: Actual and forecast customer connections capital expenditure (2009–14 and 2014–19)



Note: * Actual 2009-14 includes a forecast for 13/14.

4.3 Approach to forecasting

Ausgrid's Customer Connections Model considers the following costs:

- Augmentation of the 'shared' network as required for new commercial and residential customer connections.
- Activities required as part of the new customer connection such as, for example, inspections as required under the Electricity Supply Act (*NSW*) and design review[15]. These typically have individual values of $10,000 or less and are referred to as 'minor works'.
- Support costs arising from activities such as network switching and asset inspections.

Given that new customer connections activity is characterised by a high volume of projects of relatively low value, a high level modelling approach was developed to forecast the capital expenditure requirement. In summary:

- Residential and non-residential customer numbers were forecast via the consideration of various proxies.
- Historical connection projects were analysed to estimate average costs and volumes by project type, geographical area and recorded costs.
- Expenditure was forecast on the basis of forecast connection volumes and average project costs by customer type and region.

[15] Network Management Plan June 2012 - Chapter 2 Customer Installation Safety Plan

- Minor works costs have been forecast on the basis of average costs from the 2009–14 regulatory period and the forecast connection volume described above.
- Support costs have been forecast separately on an activity basis, after taking account of activity drivers. [16]

4.4 Forecast expenditure for the 2014-19 regulatory period

Table 4 sets out the Customer Connections Model forecast capital expenditure for the 2009–14 regulatory period. There is a significant reduction from the 2009–2014 regulatory period because of the implementation of the NECF and Ausgrid's Proposed Connection Policy for 1 July 2015.

Table 4: Customer connections forecast capital expenditure ($k, 2013/14)

	14/15	15/16	16/17	17/18	18/19	Total
TOTAL – Customer Connections Model	**35,913**	**39,402**	**42,911**	**42,848**	**41,232**	**202,306**
• Commercial Connections	20,358	22,058	24,596	24,018	22,543	113,574
• Residential Connections	5,900	7,263	7,975	8,121	7,777	37,035
• Minor Works	7,762	8,050	8,149	8,485	8,718	41,164
Distribution Easements	*2,343*	*2,343*	*2,343*	*2,343*	*2,343*	*11,715*
Customer Installation & Inspection	*2,373*	*2,406*	*2,450*	*2,501*	*2,552*	*12,282*
Customer Connection < $50k	*2,310*	*2,555*	*2,597*	*2,757*	*2,921*	*13,140*
Ausgrid Funded Capital expenditure (CIA95A) < $50k	*736*	*746*	*759*	*885*	*902*	*4,028*
• Support Costs	1,893	2,031	2,190	2,224	2,194	10,533
Switching and Control	*363*	*387*	*417*	*428*	*425*	*2,021*
GIS Data Capture	*1,530*	*1,644*	*1,773*	*1,796*	*1,769*	*8,513*

[16] ID00070 Capitalised Wages – GIS data operation, system control and network planning.