Attachment 6.06

System control opex plan

May 2014

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1 Executive Summary

We forecast $101.725 million of opex for System Contro**l.** This document provides an overview of our proposed opex to support our distribution network in the 2014-19 period. In total, we propose total opex of $101.725 million over the period, comprised of the following operational activities:

- continue delivery of Ausgrid's 24x7 operational control and monitoring capability, managing the response to incidents on the network and providing coordinated access to Ausgrid's network

The total opex is provided in the table below:

Table 1

$M (FY 13/14Real)	2014-15	2015-16	2016-17	2017-18	2018-19	Total
System Control Operating expenditure	19.661	19.942	20.321	20.706	21.096	**101.725**

The focus of our **System Control** strategy for the 2014-19 period is to deliver its services to ensure safety to staff and the public for planned work and emergencies, keep equipment within ratings, strive to lower interruption times and achieve Ausgrid's licence conditions.

The proposed opex is 5.6 per cent different to the 2009-14 period. This increase reflects the continuance of business as usual operations, CPI, material and labour rate increases.

2 Introduction

The purpose of this document is to provide an overview of our forecast opex to meet our obligations in delivering System Control for the 2014-19 period. The introduction below provides background on the characteristics of our functional operations, and the reasons why we are required to undertake them to achieve the overall strategic objectives of Ausgrid.

System Control is responsible for the day to day operation of the Ausgrid network. This includes managing all aspects of switching on the network from the 132kV sub-transmission to distribution substation level for both planned work and in emergencies, as well as responding to operational alarms and signals from in-service equipment and directly liaising with the control rooms of other distribution and transmission authorities. System Control also coordinates emergency and incident management, including liaison with the State Emergency Operations Centre, outage and contingency planning and co-ordination for both planned work and network failures, including co-ordination of outages with other authorities. System Control manages the Outage Management System (OMS) and the Network System Diagrams.

The most recent trend of spending in relation to the allowance is expected to continue into the foreseeable future based on our current understanding of forecast work load and the fact that the functions provided by this group are essential to the ongoing safe and reliable operation of the Ausgrid network.

Objectives

The objectives of the System Control program are to:

- Manage the expected demand for standard control services over the 15-19 period.
- Comply with all applicable regulatory obligations or requirements associated with the provision of standard control services.
- Monitor and respond to operational alarms and signals from in-service equipment and respond to incidents on the network.
- Provide coordinated access to Ausgrid's network for maintenance, repairs and alterations.
- Maintain electrical supply security across the Ausgrid network.
- Operate the network so it does not impact the security of the National Grid.
- Operate the Network safely and within equipment limits.
- Maintain an accurate electrical network model for operations.
- Management of Ausgrid's operating authorities and limited operator training.
- Provide safe and adequate access to the network, respond to network incidents and coordinate safe and efficient repairs.
- Absorb the expected increase in customer connections and replacement related capital projects by reviewing practices and improving efficiency.

Scope of activities

Activities performed by System Control include:

- Monitoring the high voltage network 24/7 and responding to any failures and customer outages in a safe manner with reduced SAIDI.
- Coordinating access to the network for capital works, maintenance and repairs while maintaining network security.
- Maintaining the 'Distribution Management System' electrical conductivity model for use by operations and other staff via System Diagrams.
- Provide low voltage despatch functions and provide work to Ausgrid's Emergency Service Officers in a timely and efficient manner.
- Management of Ausgrid's operating authorities and limited operator training including field auditing and incident investigations
- Outage, emergency and incident management, including liaison with the State Emergency Operations Centre
- Management of the Outage Management System (OMS) and some other System Control specific applications
- Management of reliability data
- Involvement in the strategic direction of System Control

Requirement for activities

Ausgrid is committed to ensuring the safe operation of its network and gives priority to safety issues, including workplace and public safety, over all other aspects of network management.

Ausgrid's network planning balances the need to meet applicable legislative and regulatory requirements with our wider organisational objectives and business responsibilities, including meeting customer expectations of a reliable and safe

supply of electricity, managing safety, environmental and security risks associated with our network infrastructure, and managing the financial performance of the business.

To deliver these objectives, Ausgrid's System Control focuses on two key areas. These are:

1. Maintaining compliant infrastructure – Achieving this objective involves management of safety, environmental and infrastructure security risk in relation to Ausgrid's network. The various environmental, safety and asset security obligations applicable to Ausgrid's network, and to the services Ausgrid provides as an electricity distributor, have been taken into account in developing Ausgrid's network management strategies particularly chapters on network safety and reliability and customer installation safety plan. These include obligations under regulatory instruments including the Electricity Supply (Safety and Network Management) Regulation 2008.

2. Network performance – Overall network performance is impacted by the performance of individual assets, the number of new customer connections required, and the extent of any imbalance between demand for electricity and supply. The performance requirements for the network are determined by license regulations, thus Ausgrid must ensure appropriate internal and external visibility, communications and liaison during outage and emergency events, and accurate reliability data is available for internal and external reliability reporting.

In meeting these two objectives, Ausgrid targets its investment expenditure to ensure that network performance and compliance outcomes are achieved in a manner that is efficient and prudent, and in accordance with this Plan and all regulatory and other obligations applicable to Ausgrid as an electricity distributor. Ausgrid's network planning processes and asset management strategies reflect and support these objectives.

System control operate the network in a manner that satisfies our regulatory requirements through planning network outages in a way to reduce impact on customers while keeping the network secure and operating within ratings. Reporting of all system abnormalities to appropriate staff to operate equipment accordingly and rectify any network issues. Managing unplanned network outages in an efficient manner to minimise customer outage durations and performing load flow analysis to ensure system security.

System Control also manage the Network security risk by coordinating outages between different work groups while considering system loading over different seasons and the risk of impact from severe weather events. Assistance is also provided to field staff in planning work and writing outage requests to ensure the operation of the network is compliant with the Electrical Safety Rules thus ensuring safety of staff and the public. The management of fatigue issues associated with a shift work environment is also paramount for safety.

Operational constraints

The organisation faces the following operational constraints in delivery of these services.

- Requirement to monitor the Network on a 24/7 basis with widely varying workloads due to unplanned emergency interruptions.
- Volume of planned work is dictated by capital and maintenance activities and is highly variable with varying levels of complexity.
- Emergency work volumes are closely linked to extreme weather conditions and are extremely unpredictable.
- Changing customer requirements and regulations impacting expectations regarding planned interruptions
- Consideration to the impacts network configurations may have on the National Grid

3 Section 1: Outcomes last period

During the 2009-14 period, Ausgrid is expected to spend $96.31 million on System Control opex to deliver its objectives. The purpose of this section is to identify the outcomes of opex in the 2010-14 period and the reasons for variation to forecasts. Examination of previous expenditure can provide critical insights on the level of forecast opex, and the veracity of previous forecasting approaches.

3.1 Circumstances during 2009-14 period

The 2009-14 period witnessed delivery of a significant capital program to the Ausgrid network resulting in a larger portion of the forecast opex work being resolved with more significant capital projects. In the previous period much of the distribution work completed related more to maintaining the assets rather than augmenting and was driven by a depressed economic market resulting in a lower demand for customer connections. The 2009-14 period also delivered unforseen works associated with the Australian Federal Government's economic stimulus package in the areas of spot growth to the network from school developments under the Education Revolution program and the NSW Government's solar bonus scheme. These unforseen changes coupled with the significant capital program in the period required a shift of focus from the previous maintain strategy to new construction.

3.2 Opex outcomes during the 2009-14 period

During the period, Ausgrid incurred $96.31 million of opex in relation to System Control as shown in the tables below:

Table 2

$M (nominal)	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Operating Expenditure	17.771	19.215	21.203	18.682	19.439	**96.310**
Allowance	18.433	19.309	20.525	21.561	22.360	**102.189**
Variance to Allowance	-0.662	-0.094	0.678	-2.879	-2.921	**-5.879**

This System Control expenditure can be further broken down into the following cost categories:

Table 3

$M (nominal)	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Labour	16.206	17.418	18.052	16.910	17.604	**86.190**
Materials	0.020	0.080	0.107	0.043	0.044	**0.295**
Contracted Services	0.260	0.509	1.661	0.158	0.165	**2.980**
Labour Hire	0.166	0.380	0.975	0.123	0.128	**1.771**
Other	1.119	0.828	0.408	1.449	1.497	**5.073**
Total	**17.771**	**19.215**	**21.203**	**18.682**	**19.439**	**96.310**

The above expenditure is representative of the expenses of delivering non capitalised components of work associated with System Control.

3.3 Variations to allowance

During the 2009-14 period the opex allowance for this category is estimated to be underspent by $5.88 million. The main driver for this variance was the large capital program in project works that was undertaken during the 2009-14 regulatory period that resulted in a shift of opex labour to capex.

Section 5 of our proposal provides further information on how we have addressed these issues in developing our proposal for the 2014-19 period.

4 Section 2: 2014-19 System Control Strategy

Our focus for the 2014-19 period is to continue to maintain and operate the electricity network safely while delivering an adequate, reliable and cost effective electricity supply of appropriate quality. We will adhere to relevant legislation, standards and codes of practice to maintain a safe and reliable electricity network environment.The purpose of this section is to identify the key circumstances driving Ausgrid's System Control opex in the 2015-19 period. The forecast for the period is based on the opex from the 2012/13 year to set the base:

The focus of our opex strategy is to maintain compliance, reliability and continue to support network activities. At the same time we have sought to minimise price pressures on our customers to the full extent possible by prioritising prudent investment in capital.

The most recent trend of spending in relation to the allowance is expected to continue into the foreseeable future based on our current understanding of forecast work load and the fact that the functions provided by this group are essential to the ongoing safe and reliable operation of the Ausgrid network.

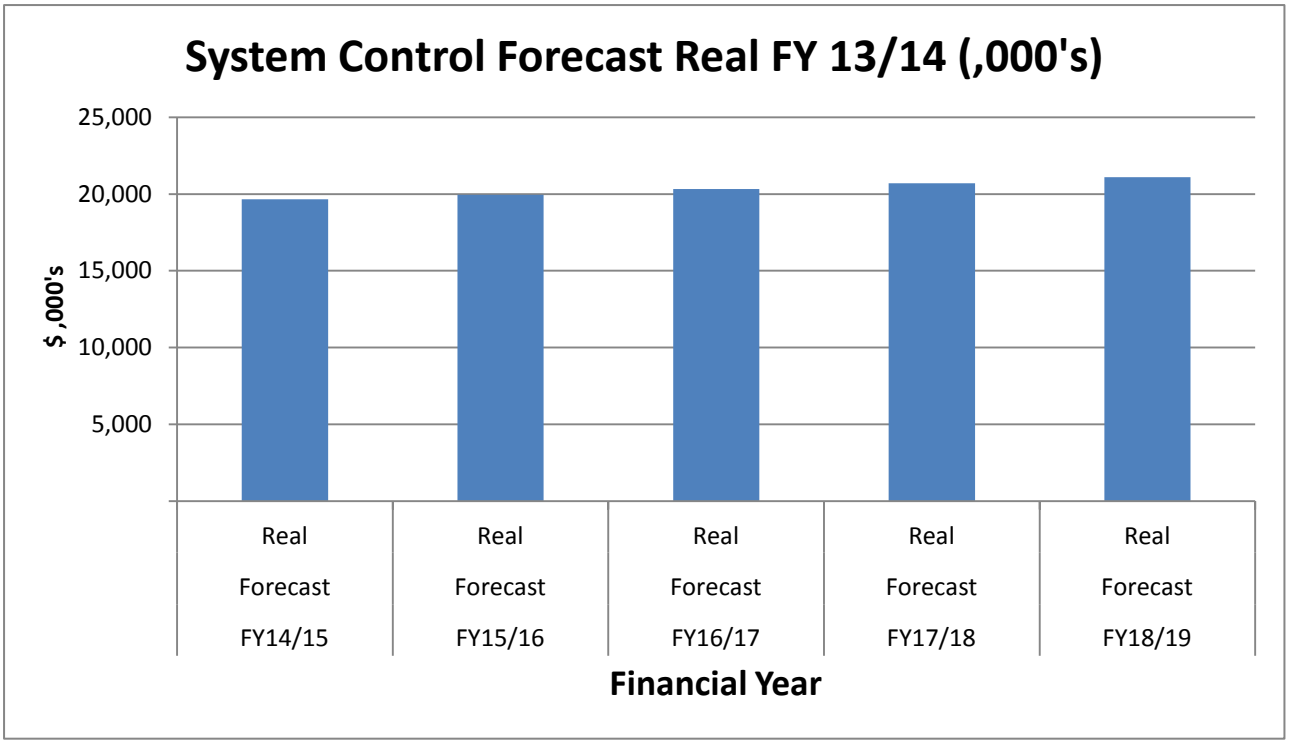

Figure 1

A key reason for this trend is that we have invested in capital programs that have reduced expenditure on opex in this category to meet statutory obligations. Note the proposal will hold System Control at Business as usual only increasing each year by CPI.

The focus of our opex strategy is to maintain compliance, reliability and continue to support network operational activities to deliver outcomes in particular functional areas.

4.1 Key circumstances during 2014-19 period

During the 2014-19 periods it is expected that the resource required for the activity of monitoring the network and providing safe access for work on electrical mains and apparatus will remain stable over the period. This is due to the ongoing requirement to monitor the network at all times and to provide sufficient safe access to the network to replace aging assets, commission new equipment and complete maintenance and repairs. All work conducted by system control must be executed with the highest regard for safety of personnel, the public and equipment.

Capital projects will be affected by lower demand and a constrained funding environment. However customer connections and replacement related capital works are expected to increase in the next regulatory period offsetting the

change from reduced project activity. Replacement works are more labour intensive for System Control than large 'green field' projects, so it is envisaged that System Control capital related works will increase in the 2014-19 period relative to 2012-13. Significant efficiency gains will need to be made by System Control to handle the increased capital work with restrained funding. Planned efficiencies include:-

- the better management of overtime
- restructure of rosters to maximise work output while managing fatigue
- better management of network outages to stagger switching times to facilitate larger job throughput.

4.2 Key operational drivers and variables

The key operational drivers for System Control are:-

1. The amount of damage and defects that occur on the network
2. The amount and complexity of planned outage requests
3. The changes to safety systems and the Electrical Safety Rules
4. Changing customer requirements and regulations impacting expectations regarding planned interruptions

5. Providing limited operator training and managing authorities on a needs basis.

4.3 Operational strategies

As a result of these circumstances and drivers the following strategy was developed:

- Maintain the current staffing levels so that System Control continues to provide safe and adequate access to the network, respond to network incidents and coordinate safe and efficient repairs

4.4 Relationship with capex program

Capital investment will reduce over the 2014-19 period, however replacement related capital projects in existing substations will create more work for System Control than large capital 'green field' projects. System control will continue with internal group efficiencies to absorb this extra workload. The OPEX expenditure is generally stable and driven by providing coordinated access to Ausgrid network for maintenance, repairs and alterations and providing 24/7 network monitoring and response.

5 Section 3: Forecast method

We have relied on a base year escalation model for the purpose of our approach in forecasting opex for the 2014-19 period. The purpose of this section is to provide an overview of the process we have used to derive the total opex forecast for System Control. In doing so, we have taken into account the business as usual operations carried forward from the 2010-14 period and the circumstances in the 2014-19 period as described in Section 2.

5.1 General approach

Ausgrid has developed a separate plan for System Control activities. The plans have largely relied on high level models rather than detailed bottom up forecasting. Our forecasting methods across the plans are based on robust assumptions.

A summary of our general method is set out below, with further information provided in supporting information that sets out the models in more detail.

Model approach

Ausgrid's System Control opex forecast is based on business as usual. That is, the financial modelling was based on underlying business as usual with factored escalation of labour from expected wage increase and other categories on a CPI basis.

Key assumptions

Our forecast methods are based on consistent and robust assumptions of the future. The key assumptions include:

- Cost escalation factors
  - Escalation of labour on expected wage increase
  - Escalation factor of CPI on other categories

6 Section 4: Forecast outcomes

We have forecast $101.725 million of opex for System Control. The purpose of this section is to provide a summary of the total opex proposed.

6.1 Summary of Opex

The tables below show the forecast opex for System Control broken down into the following cost categories.

Table 4

$M (Real 2013/14)	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Labour	17.821	18.099	18.473	18.853	19.237	**92.483**
Materials	0.128	0.130	0.132	0.134	0.137	**0.660**
Contracted Services	0.165	0.167	0.169	0.172	0.176	**0.849**
Labour Hire	0.044	0.044	0.044	0.044	0.044	**0.221**
Other	1.503	1.503	1.503	1.503	1.503	**7.513**
Total	**19.661**	**19.942**	**20.321**	**20.706**	**21.096**	**101.725**

This is split between Transmission and Distribution opex for System Control is as follows:

Table 5

$M (Real 2013/14)	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Transmission	**1.332**	**1.351**	**1.377**	**1.403**	**1.429**	**7.441**
Distribution	**18.329**	**18.591**	**18.945**	**19.303**	**19.667**	**94.835**
Total	**19.661**	**19.942**	**20.321**	**20.706**	**21.096**	**101.725**

The graph below shows comparison from 2009-14 to 2014-19 for System Control. The proposed opex is 5.6 per cent higher over the period than 2009-14. This is equivalent to a reduction of 0.08 per cent annualised, expressed in 2013/2014 dollar terms.

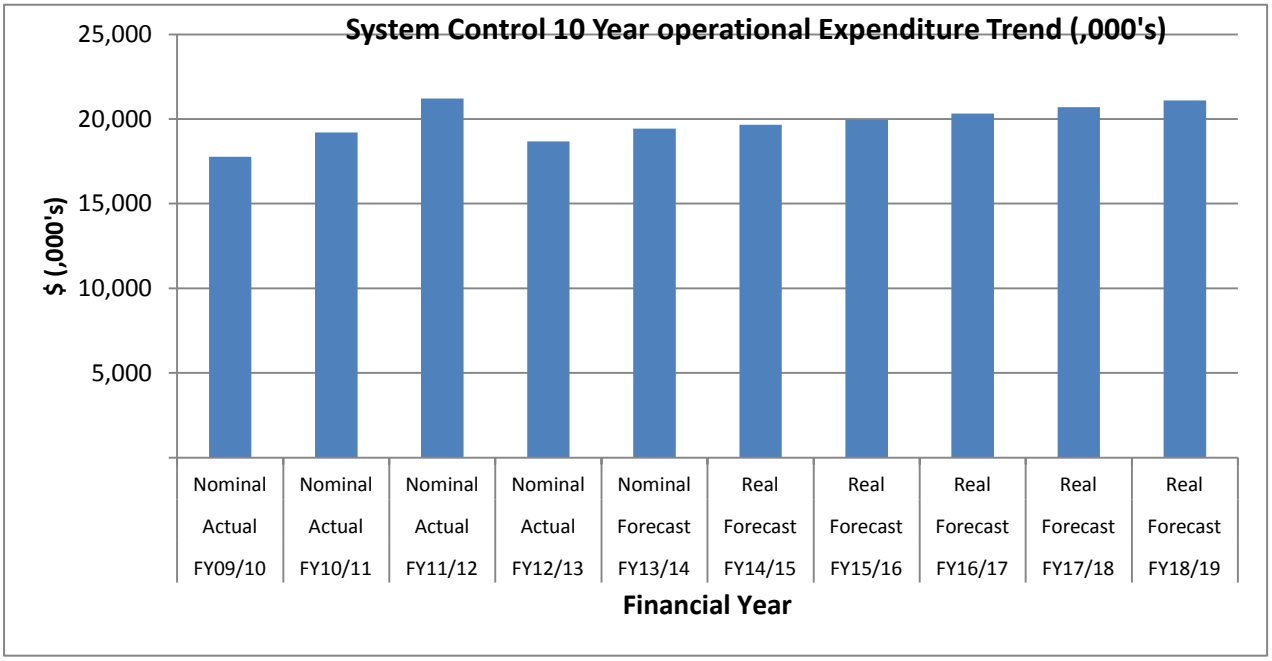

Figure 2

7 Section 5: High level review

The purpose of this section is to demonstrate that our proposed opex meets the opex objectives and criteria, with regard to the opex factors in the Rules.

7.1 Meeting the opex objectives

Our forecast opex of $101.725M is required to achieve the following objectives:

- Manage the expected demand for standard control services over the 2014-19 period.
- Comply with all applicable regulatory obligations or requirements associated with the provision of standard control services.
- Monitor and respond to operational alarms and signals from in-service equipment and respond to incidents on the network.
- Provide coordinated access to Ausgrid's network for maintenance, repairs and alterations.
- Maintain electrical supply security across the Ausgrid network.
- Operate the network so it does not impact the security of the National Grid.
- Operate the Network safely and within equipment limits.
- Maintain an accurate electrical network model for operations.
- Management of Ausgrid's operating authorities and limited operator training.
- Maintain the current staffing levels so that System Control continues to provide safe and adequate access to the network, respond to network incidents and coordinate safe and efficient repairs.

This forecast also represents expenditure that is properly allocated to standard control services in accordance with the principles and policies set out in Ausgrid's cost allocation method approved by the AER.

7.2 Meeting opex criteria

The Rules sets out the criteria that the AER must be satisfied before it can accept our proposed opex forecast. These criteria are that the proposed forecast opex must reasonably reflect the efficient cost of achieving the opex objectives, the prudent cost that a prudent operator would require to achieve the opex objectives and a realistic expectation of the demand forecast and cost inputs required to achieve the opex objectives.

The opex allowance for System Control during the 2009-14 period was underspent by $5.88 million or 5.75%. This was generally a result of the significant capital program and a generally milder weather pattern that resulted in fewer significant network incidents.

The System Control forecast trend for opex since 2009-10 is increasing and is generally constrained over the 10 year period slightly higher than CPI movement. The slightly higher average result is mainly due to the opex increases on 2011 and 2012 which is coincident with the ramping up of the capital program. This is equivalent to a reduction of 0.08 per cent annualised, expressed in 2013/2014 dollar terms.