
Public version of final report to
Australian Energy Regulator

**Maximum demand forecasts for the Ergon Energy region
- update addendum**

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	I
1 INTRODUCTION	1
1.1 Background	1
1.2 Approach to the review of revised proposals	1
1.3 Process followed	2
1.4 Addendum report	2
2 NEW EVIDENCE AND INFORMATION PROVIDED BY THE DNSPS	3
2.1 Basis of the initial demand and capital expenditure (capex) forecasts	3
2.2 New information	3
3 EVALUATION OF NEW INFORMATION	6
3.1 Information and arguments considered	6
3.2 Basis of the revised Ergon Energy forecasts	6
3.3 Reconciliation between Ergon Energy and NIEIR	8
3.4 Consideration of the NIEIR December 2009 forecasts	10
3.5 Argument about MMA comments regarding Ergon Energy methodology	17
3.6 Consideration of Ergon Energy arguments about MMA forecasts	20
3.7 Overall conclusion about new evidence	25
4 UPDATED MMA FORECASTS	27
4.1 New factors taken into account	27
4.2 Updated indicative MMA forecast	27
4.3 Comparison of forecasts	27
APPENDIX A SELECTED ERGON ENERGY RESPONSES TO MMA AND AER QUESTIONS	29

LIST OF TABLES

Table 3-1	NIEIR 2009 forecast System MD, components and growth in MW	13
Table 3-2	Evans & Peck temperature sensitivity trend by region	25
Table 4-1	Updated MMA forecasts of Ergon Energy system MD, MW	27
Table 4-2	Comparison of several system MD forecasts for Ergon Energy, MW	28

LIST OF FIGURES

Figure 3-1 Sum of Ergon Energy’s RSMD forecasts, 2007, 2008, March 2009 and December 2009, MW _____ 7

Figure 3-2 Sum of NIEIR’s RSMD forecasts, 2007 and (new) 2009, MW _____ 8

Figure 3-3 Comparison of RSMDs of Ergon 2007, NIEIR 2007, Ergon 2009 and NIEIR 2009, MW _____ 9

Figure 3-4 Log System MD vs Log GSP, historic actual, Evans & Peck corrected and NIEIR 2009 forecast _____ 11

Figure 3-5 System MD growth contributions in MW _____ 13

Figure 3-6 Energy Sales forecast growth rate by sector, % _____ 14

Figure 3-7 Regional diversity factors in Ergon Energy and NIEIR 2009 forecasts and Ergon Energy 2007 Forecasts _____ 17

Figure 3-8 Historic Growth rate of Queensland GSP and Ergon GRP _____ 22

Figure 3-9 Ergon System MD from 1996 to 2009 vs ABS GSP _____ 23

Figure 3-10 NIEIR forecast growth rates from 2009 forecasts for Queensland GSP and Ergon Region GRP _____ 24

VERSION

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EXECUTIVE SUMMARY

Introduction

The Australian Energy Regulator (AER) is reviewing the revenue requirements for Queensland DNSPs. AER engaged McLennan Magasanik Associates (MMA) to assist it in reviewing the demand forecasts used by the DNSPs in formulating their original regulatory proposals and took MMA advice, provided in October 2009, into account in its draft determination in November 2009. In January 2010 the DNSPs submitted revised proposals and the AER has engaged MMA to review demand related issues in these revised proposals in accordance with the AER's terms of reference. This is the public version of MMA's final report to AER after removal of material identified as confidential.

New information provided by Ergon Energy

Ergon Energy has produced revised maximum demand forecasts which are largely unchanged in system maximum demand (MD) terms from the Ergon Energy 2007 forecasts on which it based its initial capex proposal. As a result the part of the capex proposal related to demand growth is essentially the same as the original based on the detailed Ergon Energy 2007 maximum demand forecasts¹.

In support of its revised proposal, Ergon Energy has provided a number of new forecast documents and materials including Ergon Energy 2009 forecasts, National Institute of Economic and Industry Research (NIEIR) 2009 forecasts and an Evans & Peck report. In addition, Ergon Energy provided argument about matters included in the MMA October 2009 report to AER:

- MMA comments regarding Ergon Energy forecasting methodologies
- Estimates and assumptions used in the indicative MMA forecasts provided.

MMA and the AER have also raised a number of questions about the revised proposals and associated materials and the Ergon Energy responses have been taken into account.

Different forecasts and measures examined

The initial Ergon Energy regulatory proposal was based on the Ergon 2007 forecasts. At the time Ergon Energy also provided its Ergon 2008 and Ergon March 2009 forecasts and NIEIR 2007 and 2008 demand forecasts as supporting material.

In its revised regulatory proposal Ergon Energy now appears to be proposing a revised demand forecast which combines its own Ergon 2009 and the NIEIR 2009 forecasts and is based on an assessment of system maximum demand. MMA considers the sum of regional maximum demands (referred to in the report as RSMD) a better measure of

¹ Unless otherwise stated, forecasts in this report refer to maximum demand forecasts.

forecast system capex requirements as it does not require assumptions to be made about regional diversity factors², and MMA has used this measure where possible.

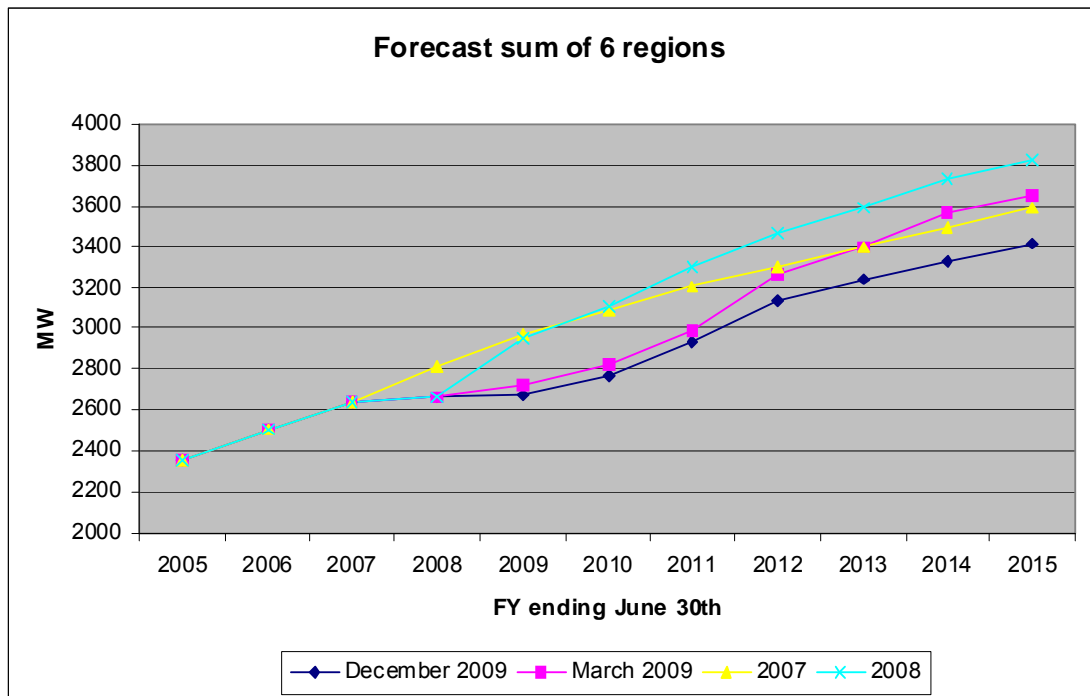
Comparison of different forecasts

Ergon Energy forecasts

Ergon Energy initially prepared its capital expenditure forecasts based on its own September 2007 forecasts. It then justified use of these forecasts by comparing them against its own 2008 and March 2009 forecasts. As the 2008 and March 2009 Ergon forecasts were greater than the 2007 forecasts, Ergon Energy argued that the 2007 forecasts and resulting capex forecasts were conservative and thus realistic.

Following the AER’s draft determination, Ergon Energy then prepared its own revised December 2009 forecast. The four RSMD forecasts are illustrated in Figure E1.

Figure E1 Sum of Ergon Energy’s six regions maximum demand forecasts, 2007, 2008, March 2009 and December 2009, MW



Source: Ergon Energy AR436, AR412, PL758c, RP 929c.

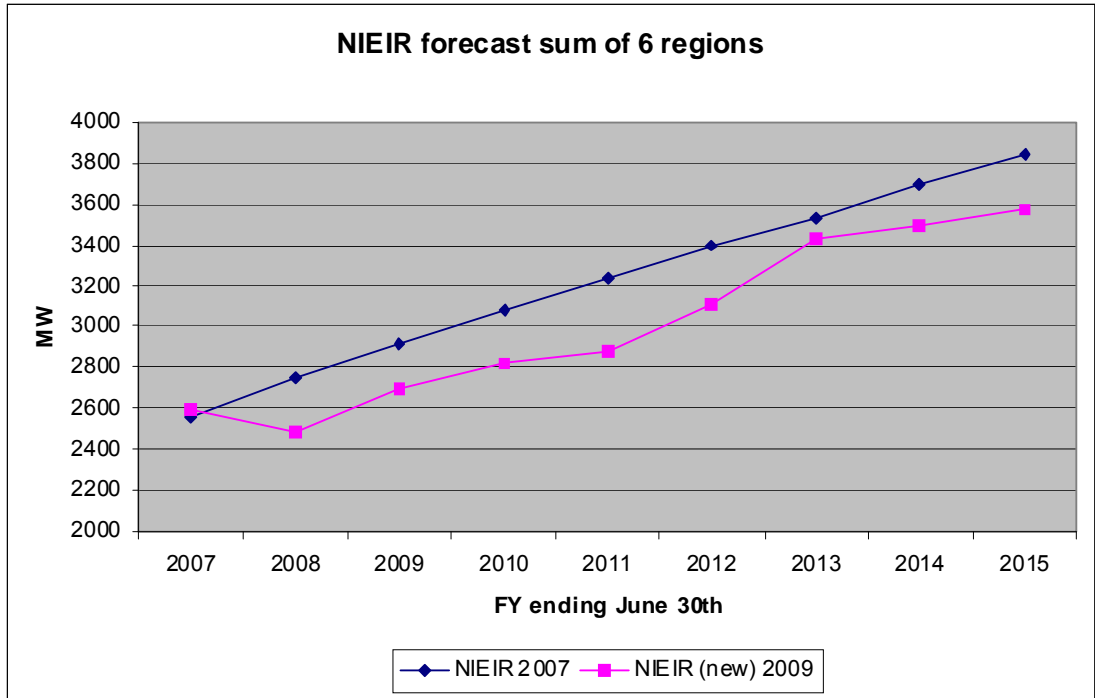
Overall, the average RSMD over the 2015 regulatory period forecast by Ergon Energy in December 2009 is some 5.6% less than the average RSMD over the 2015 regulatory period forecast by Ergon Energy in its September 2007 forecasts which were used for capex purposes.

² As can be seen in Section 3.4.5 the NIEIR forecast regional diversity factors vary significantly over the 2015 regulatory period. While the Ergon Energy regional diversity factors in the Ergon 2009 forecasts remain constant at about 0.956, this is quite different to the 0.927 factor which was applied in the Ergon 2007 forecasts. It is not clear to MMA what has driven the change in NIEIR or Ergon regional diversity factors.

NIEIR 2007 and 2009 forecasts prepared for Ergon Energy

Figure E2 presents the RSMDs from NIEIR’s forecasts in November 2007 and December 2009.

Figure E2 Sum of NIEIR’s six regions maximum demand forecasts, 2007 and (new) 2009, MW



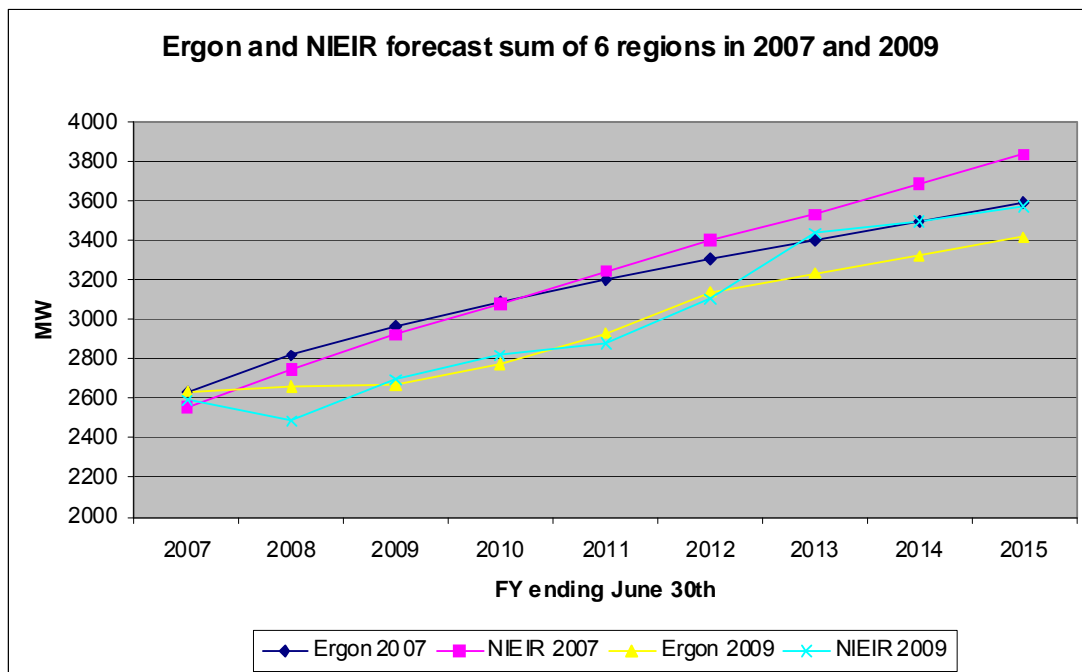
Source: NIEIR November 2007 and (new) December 2009.

Between the 2007 and 2009 reports NIEIR RSMD forecasts for the 2015 regulatory period have dropped by, on average, some 7%.

Reconciliation between Ergon Energy and NIEIR forecasts

Ergon Energy has stated that it reconciles its forecasts with NIEIR’s. However, as can be seen from Figure E3 below, there were significant differences between the NIEIR RSMD forecasts and the Ergon Energy RSMD forecasts in 2007 and, from the year 2013 there are also significant differences between the 2009 versions of the RSMD forecasts.

Figure E3 Comparison of regional sums of Ergon 2007, NIEIR 2007, Ergon 2009 and NIEIR 2009, MW



Ergon Energy appears to be arguing that it reconciled its 2007 forecasts against NIEIR in 2007 and that it has reconciled its 2009 forecasts against NIEIR's in 2009 and that, as they are similar the NIEIR 2009 forecast validates the Ergon 2007 forecast and associated capex requirement.

MMA does not consider this to be a compelling argument. There are clear differences, seen in Figure E3, between the NIEIR and Ergon Energy forecasts in both 2007 and 2009 which are not straightforward to understand and need to be reconciled. From MMA's point of view, just because the NIEIR 2009 and Ergon 2007 forecasts are similar for three years (2013 to 2015) does not mean that the NIEIR 2009 forecasts validate the Ergon 2007 forecasts. Even a simple comparison of the two shows that over the 2015 regulatory period the NIEIR 2009 regional sum forecasts are, on average, some 3% below those of the Ergon Energy 2007 forecasts.

In terms of capex forecasts it appears inconsistent to argue that despite Ergon Energy's RSMD forecasts between 2007 and 2009 falling by 5.6% and NIEIR's RSMD forecasts between 2007 and 2009 falling by 7%, the Ergon 2007 forecasts are reasonable for use in 2009 as they are similar to the NIEIR 2009 forecasts.

Consideration of the NIEIR December 2009 forecasts

MMA has not reviewed the NIEIR forecast models or methodologies³ and cannot comment on the derivation of the forecasts. However, while MMA cannot comment on

³ Review of the NIEIR forecast methodology was beyond the scope of this phase of the project. In addition, as discussed in Section 3.4.1, details of the NIEIR methodology were not transparent to MMA.

the NIEIR methodologies, a high level analysis of the outputs raises several potential issues and possible inconsistencies with the Ergon Energy forecasts documented in the body of the report including:

- an apparent difference between the historic and forecast elasticity of maximum demand to economic growth
- unexplained substantial increases in temperature sensitive load in 2012
- uncertainty about the inclusion of large “spot loads”, including criteria for inclusion, timing and whether these loads are connected to the distribution network or transmission system
- inconsistent regional diversity factors between the NIEIR and Ergon Energy 2009 forecasts.

MMA has also previously pointed out that the NIEIR 2009 and Ergon 2009 regional sum forecasts in 2009 are quite different from the year 2013.

Conclusions about the revised Ergon Energy forecasts

Based on MMA’s assessment, the Ergon Energy forecasts used in its revised proposal are substantially below the Ergon 2007 forecasts used to prepare capex forecasts.

The NIEIR 2009 forecasts apparently used by Ergon Energy to justify its original forecast⁴ are also different to the Ergon 2009 forecasts and to the Ergon 2007 forecasts prior to 2013. In addition, while MMA has not reviewed the NIEIR methodology, a high level assessment of forecasts has highlighted several areas of potential inconsistency between Ergon Energy and NIEIR forecasts.

MMA does not consider the new material and forecasts provided by Ergon Energy have substantiated the use of Ergon 2007 capex forecasts. Even without any further review or amendment, the Ergon 2009 and NIEIR 2009 forecasts suggest reductions of some 3% and 5.6% respectively from the Ergon 2007 forecast levels.

Argument about MMA comments regarding Ergon Energy methodology

In its report to the AER, MMA raised key concerns about the Ergon Energy methodology relating to lack of responsiveness to key drivers, treatment of spot loads, reconciliation and weather correction at the spatial level.

Ergon Energy has responded to these comments by providing argument and a report by Evans & Peck related to specific aspects of its methodology.

MMA has seen no evidence to cause it to change the opinion it previously expressed about this aspect of the Ergon 2007 forecasts.

⁴ Refer to Section 3.3

Update to MMA indicative forecasts

In its October 2009 report to the AER, MMA factored in a pessimistic outlook of Queensland economic growth in 2009 and 2010 based on a current public forecast. However, the MMA report also stated that the Australian and Queensland economies remain volatile and that a material change to expected economic outlook may materially change its forecasts.

As pointed out by Ergon Energy, more recent economic growth forecasts are less pessimistic, especially in the earlier years of the period. MMA accepts this and has used the most recent NIEIR forecasts in updating its indicative forecasts of system maximum demand.

In addition, MMA has factored in some extra air-conditioning impact of households purchasing additional air-conditioning. In combination this has had the effect of increasing the MMA forecasts by about 2.7% pa across the 2015 regulatory period. However, they are still some 5% pa below the Ergon 2007 forecasts on which the capex forecasts were based.

Conclusions

Ergon Energy has provided new forecasts and information in support of its argument that its original capex forecasts, based on the Ergon Energy 2007 forecasts were realistic.

Based on its analysis, MMA does not consider this to be the case. As evidence of this, both the Ergon Energy 2009 forecasts and the NIEIR 2009 forecasts are substantially below the analogous forecasts in 2007 – primarily due to the effects of the GFC which were not considered in the 2007 forecasts.

In terms of forecast regional sum of maximum demand the Ergon Energy 2009 and NIEIR 2009 forecasts are some 5.6% pa and 3% pa below the Ergon Energy 2007 forecasts across the 2015 regulatory period.

After updating, MMA's indicative forecasts of Ergon Energy system maximum demand are some 5% pa below the Ergon Energy 2007 forecasts. This difference is reasonably consistent with the difference between the Ergon 2009 and Ergon 2007 RSMD forecasts.

1 INTRODUCTION

1.1 Background

The Australian Energy Regulator (AER) is required to determine the revenue requirements for services provided by electricity distribution network service providers (DNSPs) in Queensland, Energex and Ergon Energy, from 1 July 2010 to 30 June 2015 (2015 regulatory period). The National Electricity Rules require the AER to accept the forecasts of operating and capital expenditures in the DNSPs' regulatory proposals if they reasonably reflect, amongst other things, realistic expectations of demand.

AER engaged McLennan Magasanik Associates (MMA) to assist it by reviewing the key maximum demand forecasts used by the DNSPs in formulating their regulatory proposals. The final MMA reports were provided to the AER in October 2009 and were taken into account by the AER in the draft decisions which were published in November 2009 together with public versions of the MMA reports.

In January 2010 the DNSPs submitted revised regulatory proposals in which they commented on the MMA reviews of demand forecasts, provided some additional information and, to an extent, amended their forecasts.

The AER has asked MMA to review the basis of the revised demand forecasts provided by Energex and Ergon Energy using the approach outlined in the AER's Terms of Reference (TOR) provided on 29 January 2010. This is the public version of MMA's report to AER with sections for which confidentiality has been claimed having been removed.

1.2 Approach to the review of revised proposals

The approach and work required by the AER are specified in the TOR:

- MMA is to limit its review to information submitted by Energex and Ergon Energy as part of their revised proposals and any subsequent submissions and information made available to MMA during the current review process
- MMA is to determine whether information contained in the DNSPs' revised proposals and submissions provides sufficient evidence to cause MMA to alter its previous conclusions regarding the reasonableness of the DNSPs' maximum demand forecasts
- If MMA considers the DNSPs' revised maximum demand forecasts are reasonable, provide clear reasons to justify the conclusions reached
- If MMA considers the DNSPs' revised maximum demand forecasts are not reasonable, MMA is required to reconsider its own previous forecasts with regard to issues raised by the DNSPs and, if necessary, provide updated forecasts. Any amendments to MMA's previously advised forecasts or methodology should be explained and supporting information provided

- MMA is to liaise with the AER and DNSPs by telephone and email to the extent required
- MMA is to report to the AER in the form of a letter or brief report which constitutes an addendum to the reports provided by MMA in October 2009.

1.3 Process followed

In line with the TOR, MMA has:

- reviewed the revised proposals and associated material provided by the DNSPs
- identified areas where the DNSPs have provided new information and evidence which might cause MMA to change its views about the reasonableness of the previous DNSP maximum demand forecasts
- requested additional clarification and information where considered appropriate
- reviewed the available evidence to assess the likely impact on forecasts
- reviewed the reasonableness of the changes to the forecasts proposed by the DNSPs
- re-assessed the previous MMA forecasts in light of any new evidence provided
- produced this draft addendum report on which the DNSPs will be requested to provide comment on confidentiality and errors of fact.

1.4 Addendum report

As this is an addendum report it should be read in conjunction with the previous MMA report.

The conventions adopted in the previous MMA report have been followed in this addendum report. All years in this report refer to financial years ending June 30th.

Unless otherwise stated, forecasts in this report refer to maximum demand forecasts.

In this report two different sets of maximum demand forecasts for Ergon Energy are considered. The first are the sum of the maximum demands for the six Ergon Energy regions¹ (referred to as RSMD) and the second is the Ergon Energy system maximum demand which takes into account the diversity at regional level (regional diversity) of the six regional loads. We have used either or both of these measures in the report, depending on availability of information.

¹ These are Far North Queensland (FNQ), North Queensland (NQ), Capricornia, Mackay, Wide Bay Burnet (WBB) and South West Queensland (SWQ).

2 NEW EVIDENCE AND INFORMATION PROVIDED BY THE DNSPS

2.1 Basis of the initial demand and capital expenditure (capex) forecasts

Ergon Energy's capex forecasts were initially based on its September 2007 demand forecasts derived after the summer 2006/07 and winter 2007 peak demands. Ergon Energy justified the use of these forecasts by comparing them against its own 2008 and 2009 forecasts. As the 2008 and 2009 Ergon Energy forecasts at a regional sum level were greater than the 2007 forecasts, Ergon Energy argued that the 2007 forecasts and resulting capex forecasts were conservative.

MMA reviewed the forecasts provided by Ergon Energy for the AER. MMA considered that the 2007 forecasts relied upon by Ergon Energy to prepare its capex forecasts were not realistic. MMA considered that the trend-line methodology applied by Ergon Energy is not realistic during times of significant change in key drivers, such as those due to the GFC, that the spot load methodology used is flawed as it potentially allows double-counting of spot loads and that the spot load forecasts and probabilities actually applied by Ergon Energy are likely to be over-optimistic in terms of both magnitude and timing.

Based in part on the MMA review the AER was not satisfied that the system and spatial maximum demand forecasts proposed by Ergon Energy provided a realistic expectation of the demand forecast required to achieve the capital and operating expenditure objectives and adjusted the Ergon Energy forecasts based on indicative MMA analysis provided in the report to the AER.

2.2 New information

2.2.1 Provided by Ergon Energy

Ergon Energy has produced revised maximum demand forecasts which are largely unchanged in system maximum demand (MD) terms from the Ergon 2007 forecasts on which it based its initial capex proposal. As a result the capex proposal is essentially the same as that resulting from the detailed Ergon 2007 forecasts.

Ergon Energy has provided the following new information in support of its forecasts:

- RP896c - details about specific block loads by region
- RP929c - regional bulk supply point and connection point forecasts 2009, dated 23 December 2009
- RP886c - email to KPMG Econtech about GSP forecasts
- RP887c - KPMG Econtech email about timing of its next forecast publication

- RP894c - Emails between Ergon Energy and NIEIR about forecasts in 2005 and 2008
- RP895c - procedure for collection of information about customer block loads
- RP908c - NIEIR report commissioned by Ergon Energy dated December 2009 entitled “Maximum summer demand forecasts for Ergon Energy to 2020”
- RP909c - a graphical comparison by Ergon Energy of various system MD forecasts including the Ergon Energy December 2009 forecast and the NIEIR December 2009 forecast
- RP970c - National Institute of Economic and Industry Research (NIEIR) report commissioned by Ergon Energy dated December 2009 entitled “Maximum demand forecasts for Ergon Energy connection points to 2019-20”
- RP981c - a confidential report by Evans and Peck commissioned by Ergon Energy entitled “Ergon Energy: 2010/11 to 2014/15 regulatory determination: independent review of aspects of load forecasts” which has estimated weather and regional diversity corrected maximum demand in 2008/09, trended this forward two years and has commented on other aspects of Ergon Energy’s forecasting practices.

In addition Ergon Energy has provided argument relating to MMA’s review of Ergon Energy’s demand forecasts, specifically with regard to:

- reconciliation with NIEIR forecasts
- treatment of spot loads
- weather correction.

Finally, Ergon Energy has argued in its Revised Regulatory Proposal² that the indicative maximum demand forecasts prepared by MMA are incorrect because

- MMA uses low, out of date GSP forecasts
- the GSP forecasts relate to Queensland, rather than to the Ergon Energy region
- they underestimate the impact of additional air conditioning load.

2.2.2 Requested by AER and MMA

In addition the AER and MMA requested some information from Ergon Energy and/or NIEIR. Some of the questions and responses are referred to throughout this report.

² Ergon Energy, “Revised regulatory proposal to the Australian Energy Regulator: Distribution services for 1 July 2010 to 30 June 2015”, 14 January 2010, Chapter 8.

Several of the questions related to the NIEIR reports on which Ergon Energy is placing some reliance for its system demand forecasts from 2011/12. There were a number of inconsistencies³ between the reports provided by Ergon Energy: RP908c and RP970c.

Ergon Energy has stated that the RP908c report was a preliminary submission to Ergon Energy from NIEIR and also that the original RP970c had some errors in Chapter 7 which were corrected in the January version of the RP970c report and that this should be regarded as the final NIEIR view⁴.

MMA has used the information in the new version of RP970c. MMA notes that there have also been some changes made in Chapter 9 of the NIEIR 2009 report between the original version and the final version⁵.

³ For example the components of system maximum demand, baseload and temperature sensitive load, were different between the two NIEIR reports. See Section A.4 of Appendix A.

⁴ Ergon Energy, Response to MMA.ERG.RRP.01 provided to AER by email on 19 February 2010.

⁵ In total up to 80 MW of regional summer MD has been subtracted from the initial version in the final version - although the system MD forecasts have remained unchanged from those in RP908c.

3 EVALUATION OF NEW INFORMATION

3.1 Information and arguments considered

The arguments and new information presented by Ergon Energy in support of its revised proposal can be divided into three reasonably distinct streams:

- relating to the revised forecasts prepared by or for Ergon Energy and its justification for using these
- arguments against the MMA assessment of Ergon Energy's forecast methodologies
- arguments against the MMA methodology in forecasting.

We focus on these in turn.

3.2 Basis of the revised Ergon Energy forecasts

3.2.1 Ergon Energy's own forecasts

Ergon Energy initially prepared its capital expenditure forecasts based on its own September 2007 demand forecast. It then justified use of these forecasts by comparing them against its own 2008 and March 2009 forecasts. As the 2008 and March 2009 Ergon Energy forecasts were greater than the 2007 forecasts, Ergon Energy argued that the 2007 forecasts and resulting capex forecasts were conservative.

Following the AER's draft determination, Ergon Energy then prepared its own revised December 2009 forecast. The four forecasts are illustrated in Figure 3-1. We have used the RSMD in our analysis as it best indicates overall trends and is not confused by different estimates of regional diversity factors⁶. For example, as can be seen in Section 3.4.5, the NIEIR forecast regional diversity factors vary significantly over the 2015 regulatory period. While the Ergon Energy regional diversity factors in the Ergon 2009 forecasts remain constant at about 0.956, this is quite different to the 0.927 factor which was applied in the Ergon 2007 forecasts⁷.

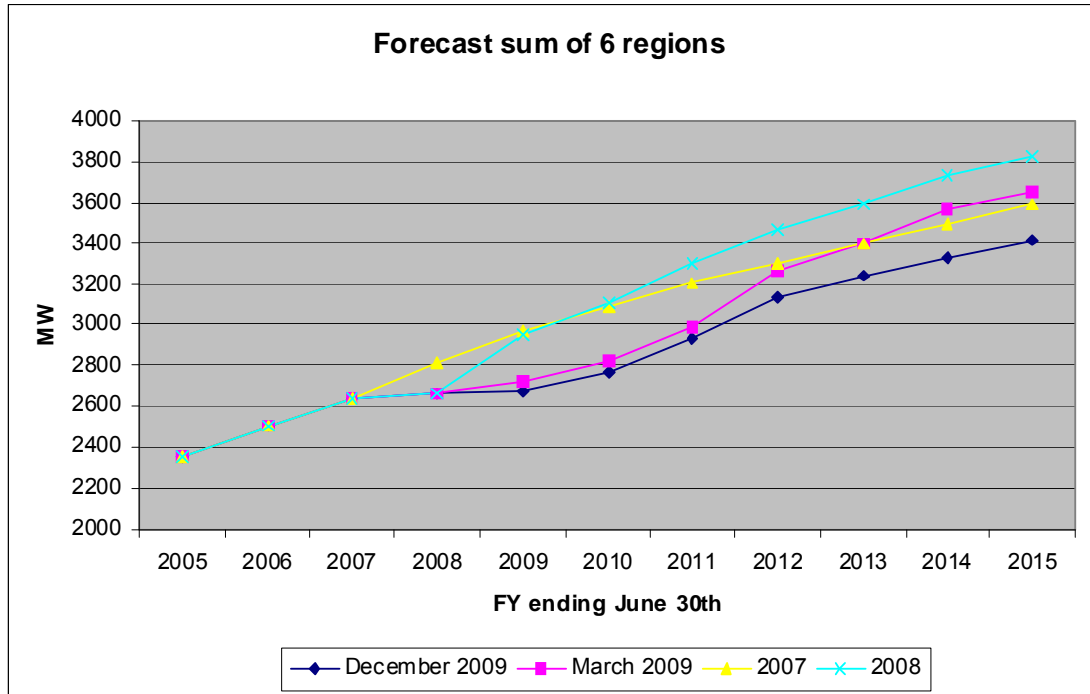
We note that analysis of RSMD has also been considered most realistic by Evans and Peck in their report to Ergon Energy⁸ and we use it where available.

⁶ Regional diversity factors are those that convert the regional sum forecasts into the system maximum demand forecast.

⁷ It is not clear to MMA what has driven the changes in NIEIR or Ergon regional diversity factors.

⁸ RP981c_Evans & Peck confidential report to Ergon Energy, "Ergon Energy: 2010/11 to 2014/15 regulatory determination: independent review of aspects of load forecasts", Page 3. "Evans & Peck is of the view that, given the lack of interconnection in the distribution network between regions and the geographic diversity of Ergon Energy, the sum of the regional demands is realistically the best driver of demand related capital expenditure. However, we also acknowledge the need of the AER to compare network service providers on a like for like basis and the consequent need to use system diversified load as a broad indicator."

Figure 3-1 Sum of Ergon Energy’s RSMD forecasts, 2007, 2008, March 2009 and December 2009, MW



Source: Ergon Energy AR436, AR412, PL758c, RP 929c.

As can be seen from the graph, the 2007 Ergon Energy RSMD forecasts started at about 3200 MW in 2011 and increased to 3600 MW by 2015. The 2008 Ergon forecasts were more bullish, starting at about 3300 MW in 2011 and growing to 3800 MW by 2015. The March 2009 Ergon Energy RSMD forecasts were lower in the earlier years due to the expected impact of the global financial crisis (GFC) on large new loads, starting at about 3000 MW in 2011 but growing to over 3600 MW by 2015.

Ergon Energy’s most recent forecasts, carried out in December 2009, shows a further effect of the GFC, both an initial delay and also significantly reduced absolute growth, with growth from 2930 MW in 2011 to 3420 MW in 2015⁹.

Overall, the average RSMD over the 2015 regulatory period forecast by Ergon Energy in December 2009 is some 5.6% less than the average RSMD over the 2015 regulatory period forecast by Ergon Energy in its September 2007 forecasts.

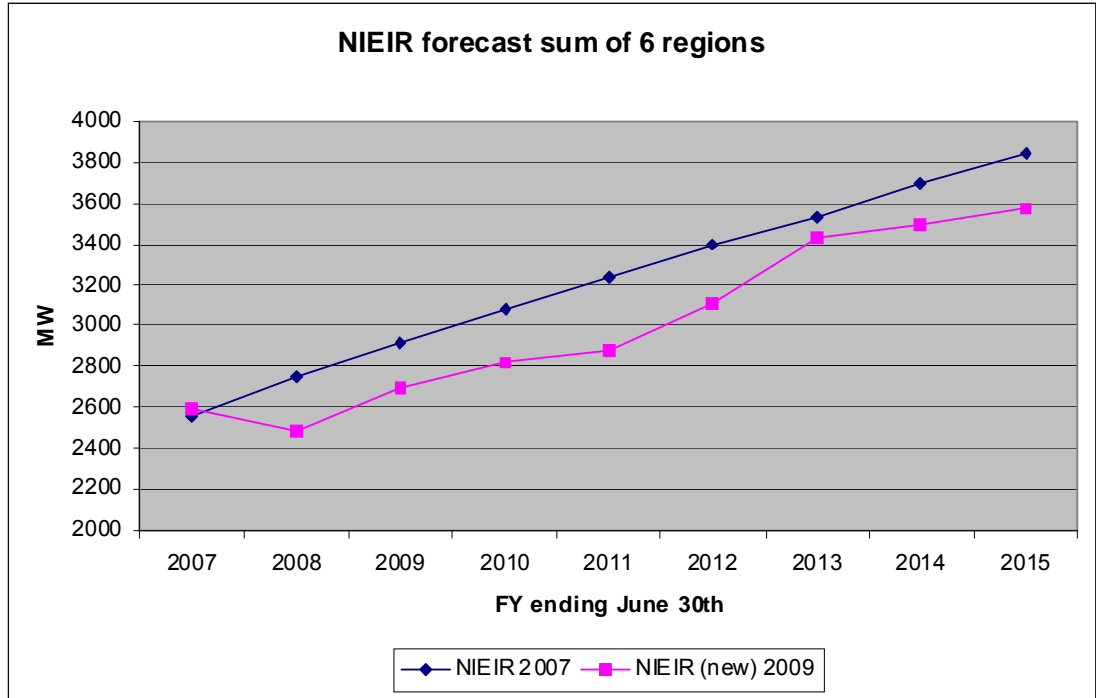
With all else being equal we would expect the capital expenditure requirements to reflect this average RSMD reduction of 5.6%. For example, looking at the graph it would appear that the RSMD of 3400 MW currently forecast by 2015 was forecast in September 2007 to have been achieved in 2013 – suggesting that the last two years of growth capex would now be delayed to the following regulatory period.

⁹ Although it should also be noted that some of this may also be due to existing projects (and expected growth from these) reducing because of a change in supply from Powerlink rather than Ergon Energy.

3.2.2 NIEIR forecasts for Ergon Energy

Ergon Energy refers to forecasts by the National Institute of Economic and Industry Research (NIEIR). We present in Figure 3-2 the regional sums of maximum demand from NIEIR’s forecasts in November 2007 and (the new version) of December 2009.

Figure 3-2 Sum of NIEIR’s RSMD forecasts, 2007 and (new) 2009, MW



Source: NIEIR November 2007 and (new) December 2009.

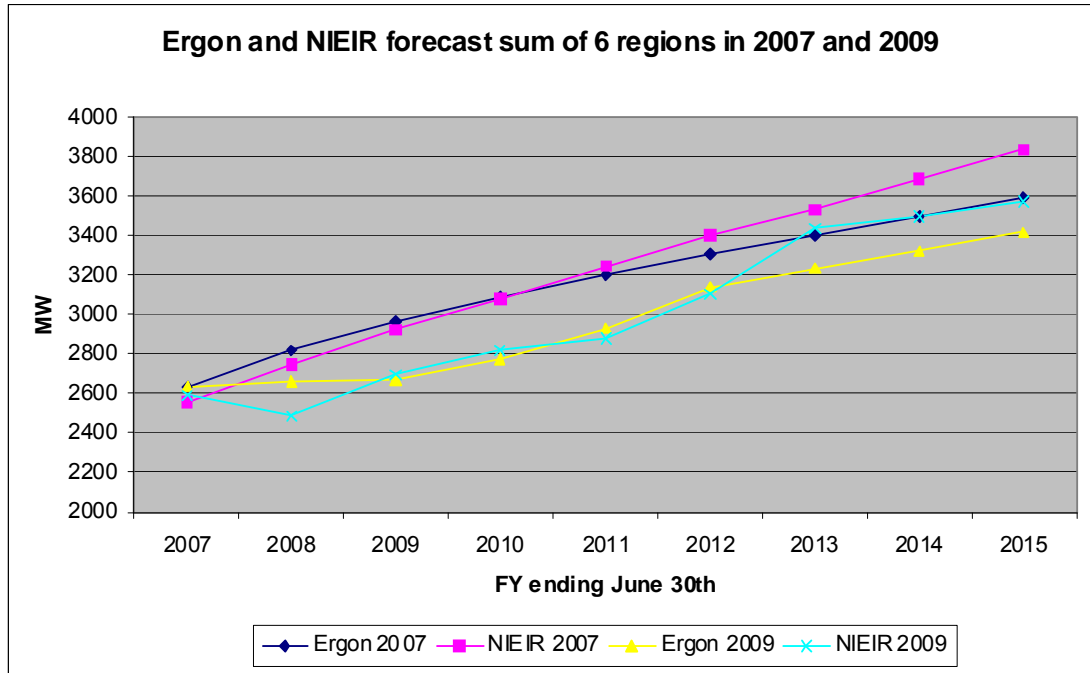
Between the 2007 and 2009 reports NIEIR RSMD forecasts for the 2015 regulatory period have dropped by, on average, some 7%. We note that some of this may be due to customers changing supply from distribution to transmission lines.

3.3 Reconciliation between Ergon Energy and NIEIR

Ergon Energy has stated that it reconciles its forecasts with NIEIR’s¹⁰. However, as can be seen from Figure 3-3 below, there were significant differences between the NIEIR RSMD forecasts and the Ergon Energy RSMD forecasts in 2007 and, from the year 2013 there are also significant differences between the 2009 editions of the RSMD forecasts

¹⁰ Ergon Revised Regulatory Proposal, P.74.

Figure 3-3 Comparison of RSMDs of Ergon 2007, NIEIR 2007, Ergon 2009 and NIEIR 2009, MW¹¹



Ergon Energy appears to be arguing that it reconciled its 2007 forecasts against NIEIR in 2007 and that it has reconciled its 2009 forecasts against NIEIR’s in 2009 and that, as they are similar the NIEIR 2009 forecast validates the Ergon 2007 forecast and associated capex requirement.

MMA does not consider this to be a compelling argument. As can be seen from Figure 3-3 above, there are clear differences between the NIEIR and Ergon Energy forecasts in both 2007 and 2009 which are not straightforward to understand and need to be reconciled. For example, in the final three years of the 2015 regulatory period the NIEIR 2009 RSMDs are some 150 MW higher than the Ergon 2009 RSMDs and there appears to be no explanation of the reason for this at the RSMD level. From MMA’s point of view, just because the NIEIR 2009 and Ergon 2007 forecasts are similar for three years (2013 to 2015) does not mean that the NIEIR 2009 forecasts validate the Ergon 2007 forecasts. Even a simple comparison of the two shows that over the 2015 regulatory period the NIEIR 2009 RSMD forecasts are, on average, some 3% below those of the Ergon Energy 2007 forecasts.

¹¹ Note that MMA has used the Capricornia Network less TNCP (Transmission Network Connection Point) forecasts provided by Ergon while the NIEIR forecasts do not specify whether with or without TNCP. The other regions do not specify any TNCP loads.

3.4 Consideration of the NIEIR December 2009 forecasts

3.4.1 MMA has not reviewed the NIEIR methodology or models

As discussed above, Ergon Energy appears to rely on the latest NIEIR forecasts, prepared in December 2009, to either validate the Ergon Energy 2007 forecast or to replace this forecast. In the review of the Ergon Energy demand forecasts carried out by MMA for the AER's draft determination, the focus was not on previous NIEIR forecasts which were provided by Ergon Energy as supplementary supporting documentation rather than being the forecasts which were relied upon.

MMA has not reviewed the NIEIR methodologies used in preparing NIEIR's reports for Ergon Energy. Such a review was beyond the scope of this phase of the project. In addition while general details about the NIEIR methodologies are available, the actual parameters and assumptions used by NIEIR in generating its forecasts for Ergon Energy are not. Both Ergon Energy and NIEIR have stated that the internal mechanics of the NIEIR model are considered commercially confidential and not open to scrutiny by MMA or the AER.

"NIEIR have advised that they are only prepared to make available what is already available through our submission or in the public domain"¹².

As a result the specific NIEIR assumptions and parameters are not transparent to MMA.

MMA notes the statement by Ergon Energy that NIEIR *"is a very credible consulting firm, which has significant experience in providing forecasts for the majority of the electricity transmission and distribution industry, including for Powerlink Queensland, ENERGETX, Western Power, Aurora Energy, ETSA Utilities, SP AusNet, Jemina Electricity Networks, United Energy, Citipower, Powercor Australia, Integral Energy, AEMO, Country Energy, Transend Networks and Energy Australia"*¹³.

However, maximum demand forecasts for Ergon Energy do require a very large number of assumptions and estimates to be made, for example, assumptions about coincidence factors across supply points and regions, air conditioner uptake assumptions, assessment of new large loads (spot loads), assessment of the probability of these proceeding, deciding whether they should be included within the general econometric model or added separately and assumptions about whether these loads will be supplied from transmission or distribution lines.

While MMA has not reviewed the NIEIR methodology, it can make some observations about the NIEIR forecasts based on high level observation of the outputs.

As discussed in Section 2.2.1, Ergon Energy has provided as new information three December 2009 NIEIR reports which have differed in some ways. MMA refers below to information contained in the new RP970c report provided on 19 February 2010, but notes

¹² Ergon response to AER question regarding NIEIR model details, full question and response contained in Appendix A.

¹³ Ergon response to AER question regarding NIEIR model details, full question and response contained in Appendix A.

that this report contains changes to both regional maximum demand levels and temperature and base load values from the previous report.

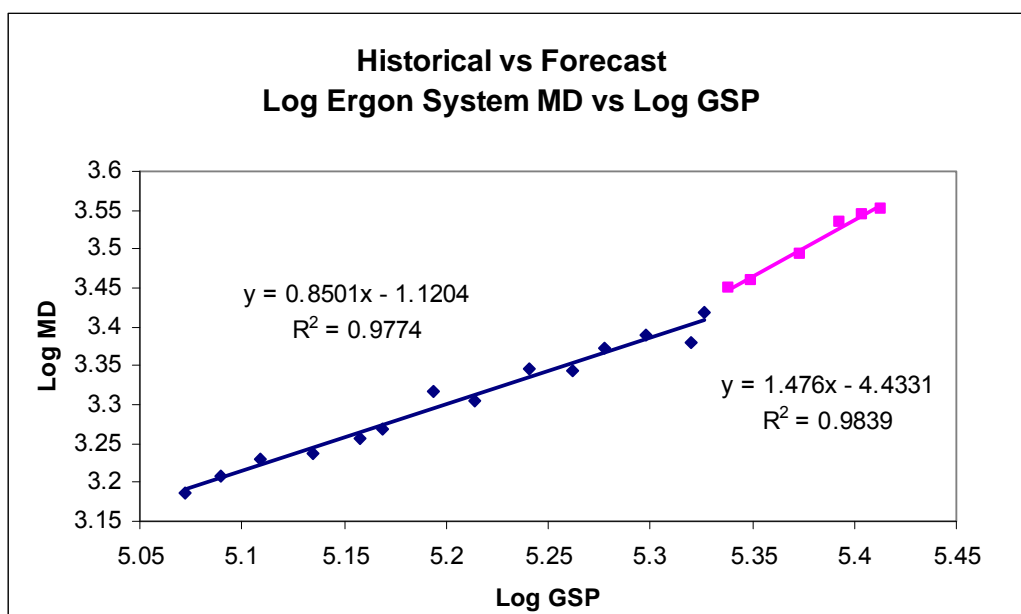
3.4.2 Relationship between economic growth and system maximum demand

One of the key inputs into the NIEIR forecast of maximum demand is the growth in economic activity represented by either gross state product (GSP) or gross regional product (GRP).

We consider the relationship between Queensland GSP¹⁴ and Ergon Energy system MD, both historical and forecast by NIEIR, in Figure 3-4. We have plotted a log - log relationship between Qld GSP against the Ergon Energy System MD actuals from 1996 to 2004¹⁵ and Evans & Peck weather and diversity corrected MDs from 2005 to 2009¹⁶. Over a 13 year period the GSP explains most of the change in System MD, the linear trend has an R² of 0.977.

We have plotted a log - log graph as it allows us to estimate the elasticity relationship between GSP growth and MD growth. From the historic data (including Evans & Peck data) the elasticity is 0.85. This means that a 1% increase in GSP results approximately in a 0.85% increase in system MD.

Figure 3-4 Log System MD vs Log GSP, historic actual, Evans & Peck corrected and NIEIR 2009 forecast



¹⁴ Based on Australian Bureau of Statistics (ABS) publication 5220.0 historical chain volume measures and NIEIR growth forecasts.

¹⁵ Sourced from AR412c_EE_Demand Load Forecasts 2008.xls. It is not clear whether the historical data have been weather or diversity corrected.

¹⁶ RP981c_Evans & Peck Demand Review.pdf (confidential) Fig 1.4. P.4.

In Figure 3-4 we have also included the NIEIR forecasts of GSP and Ergon system MD from 2010¹⁷. Due to the difference in basis between the NIEIR and ABS GSP figures they have been aligned.

Using only GSP as the explanatory variable, the NIEIR forecasts appear to show a higher elasticity between System MD and GSP going forward than has been seen over recent years, with an elasticity of 1.48 versus 0.85 historically¹⁸.

In several responses to questions raised by MMA¹⁹ about the relationship between GSP or GRP and system MD forecast by NIEIR it has been pointed out that it is simplistic to consider economic growth in isolation and that many other factors such as regional versus state growth, growth in air conditioning and population and large new projects and lag effects need to be taken into account. MMA accepts this to be the case.

However, according to MMA analysis, forecasts of many of the other potential drivers such as GRP, population and dwelling growth and air conditioner growth over the period 2010 to 2015 are likely to be either the same as, or lower than, over the period 2004-2009.²⁰

The inclusion of large “spot” loads may contribute significantly to the forecasts and help explain the difference in elasticities observed above. These are discussed in Section 3.4.4.

3.4.3 Components of demand forecasts, baseload and temperature sensitive components

NIEIR has presented its 10%, 50% and 90% POE system MD forecasts in Table 7.1 of RP970c. For the demand forecast reviews we have focused on the NIEIR 50% POE summer system MD forecast because this allows comparison of the different components and because they are referred to in the Ergon Energy revised proposal.

Table 3-1 provides data from the new NIEIR report RP970c Table 7.1. There is a large step change in temperature sensitive load from 2009 to 2010; this is presumably due to weather correction from actual 2009 as 2009 was understood to be a mild summer. For this reason the first year of growth, 2010, has not been included in the calculation of the average growth of each component.

¹⁷ The year 2010 has been chosen as we understand it includes weather normalised system forecasts.

¹⁸ A similar graph can be drawn of log Ergon system MD versus log GRP, however, MMA has only limited historical GRP data.

¹⁹ For example see Section A.1 of Appendix A

²⁰ For example the NIEIR 2009 forecast growth rates for 2010-2015 vs 2004-2009 actuals in the RP970c report are as follows: GRP 3.26% (forecast) vs 3.56% (historical), GSP 3.48% vs 3.98%, Population 1.84% vs 2.05%, Dwellings 1.82% vs 2.05%, Energy 2.44% vs 2.38%. We have also indicated in Section 2.4 of the MMA October report to AER that the growth in air-conditioning penetration is expected to reduce in the coming period compared to the previous one..

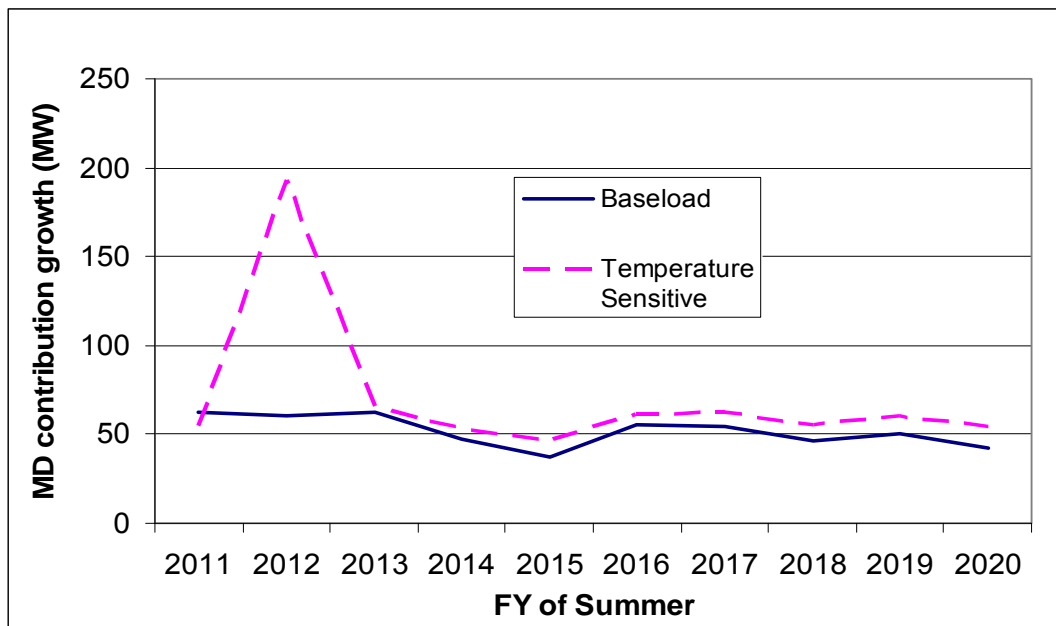
Table 3-1 NIEIR 2009 forecast System MD, components and growth in MW

	Baseload (MW)	Annual change (MW)	50 POE Temperature Sensitive (MW)	Annual change (MW)	Total (MW)	Annual change (MW)
2009	1850		559		2409	
2010	1889	39	792	233	2681	272
2011	1952	63	847	55	2799	118
2012	2013	61	1040	193	3052	254
2013	2076	63	1105	66	3181	129
2014	2123	47	1159	53	3282	100
2015	2161	38	1205	46	3365	84
2016	2216	55	1266	62	3482	117
2017	2270	54	1328	62	3599	116
2018	2316	46	1384	56	3700	102
2019	2367	50	1445	60	3811	111
2020	2409	43	1499	54	3908	97
Average 2011-2020		52		71		123

Source: NIEIR Table 7.1 and MMA analysis.

The large increase in demand of 254 MW in 2012 is more than double the average annual MW increase (123 MW) in the forecast period from 2010 onwards. This large increase is due to substantial growth in temperature sensitive load in that year and not to baseload growth. Figure 3-5, a plot of the demand growth for baseload and temperature sensitive load highlights the unusual magnitude of the 2012 growth in temperature sensitive load.

Figure 3-5 System MD growth contributions in MW

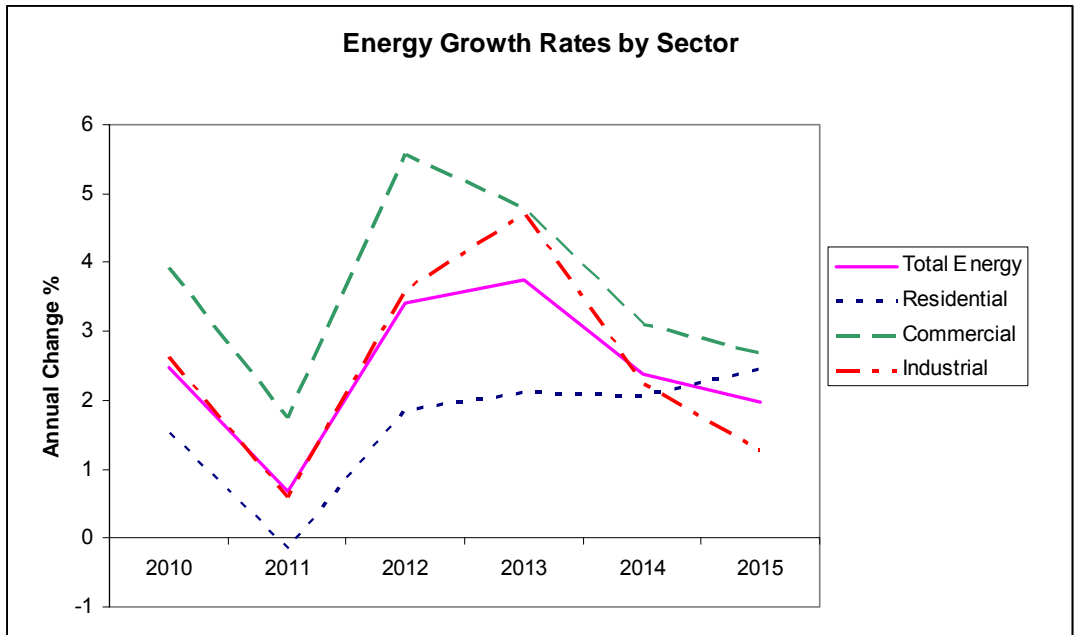


Source: NIEIR Table 7.1 and MMA analysis.

MMA asked Ergon Energy about the large MD increase for 2012. Their reply, included in Appendix A section A.2, does not specifically answer the question but seems to indicate that strong demand in the resource sector drives the demand growth in the early part of their forecast. MMA is unsure why resource sector demand growth would drive temperature sensitive growth so strongly.

NIEIR does not provide MD contribution by sector in its reports. However, a sectoral comparison which is available is forecast energy sales. We plot the forecast energy growth rate by sector in Figure 3-6. The sector with the highest growth rate in terms of energy sales for 2012 is the commercial sector with 5.6%. Total energy grows by 3.42%. The commercial sector is 21% of total energy sales in 2010, which is substantially smaller than both the industrial (41%) and residential (28.5%) sectors²¹. We also could not find evidence of particularly strong energy growth in any specific region, suggesting a specific project.

Figure 3-6 Energy Sales forecast growth rate by sector, %



Source: NIEIR December 2009 RP970c, Table 6.1, 6.2, 6.3 and 6.4.

It is not clear to MMA why such a large increase in temperature sensitive MD occurs in 2012 when the total energy sales increase is greater in 2013. While it might possibly be due to strong increase in commercial energy sales, which are forecast to grow by about 5.5% in 2012, a slightly lower increase (4.8%) in commercial energy sales in 2013 is not accompanied by a similar increase in temperature sensitive MD in that year.

²¹ The remainder is not specified by NIEIR.

The large increase in temperature sensitive load in 2012 appears anomalous to MMA. We can see no apparent reason for such an increase and note that it should not be due to weather correction in that year.

3.4.4 NIEIR inclusion of spot loads

As discussed in Section 3.4.2, the inclusion of spot loads is likely to be important in the forecasts. As further discussed in that section, decisions about matters such as inclusion and timing of new large loads, assessment of the probability of these proceeding, deciding whether they should be included within the general econometric model or added separately and assumptions about whether these loads will be supplied from transmission or distribution lines need to be made.

It is not clear to MMA exactly how NIEIR determines which loads to include, their timing and whether the new loads will be connected to the distribution or transmission networks.

MMA asked a question about such issues:

“Question MMA.ERG.RRP.01.07. “If the above and other relatively high MD growth rates relate to spot or block loads, could NIEIR please explain the criteria used for estimating probabilities and timings and sizes of such loads and differentiating these from underlying normal growth”

Response²²:

Material removed as confidentiality claimed.

The response provided does not allow MMA to make an assessment of how NIEIR treats spot loads. However, as demonstrated below, it is clear that there is potential for different assumptions to be made in many such matters.

A possible allocation of loads by NIEIR to distribution networks rather than to transmission is noted by Ergon Energy in the revised regulatory submission:

²² Note that the question and response (confidential) for MMA.ERG.RRP.01.06 which are referred to in the response to MMA.ERG.RRP.01.07 are provided in Section A.2 in Appendix A.

“For example, in the most recent December 2009 forecast [Document RP970c], NIEIR has predicted higher loads in the Surat Basin area than what Ergon Energy has forecast. Ergon Energy’s forecast is based on very recent joint planning discussions with Powerlink about where these loads are likely to connect – i.e. into the transmission network or alternatively into the distribution network. NIEIR forecasts are higher because it has not accounted for the expected connection points at this point in time and has allocated most of the loads to the distribution network. NIEIR will make appropriate connection point adjustments in their model for the following year’s forecast”²³.

The impact of changing the assumptions is not commented upon by Ergon Energy.

In its report to Ergon Energy, Evans & Peck has also commented on issues of timing of loads:

“Both NIEIR and Ergon Energy are projecting a significant increase in load in 2011/12 (of the order of 250 MW compared to around 100MW in preceding years). In NIEIR’s case, this increase is an outturn of their economic model reflecting a significant increase in Queensland State GDP growth. NIEIR attributes this increase, in part, to “A number of delayed resource processing projects in Queensland are assumed to proceed after this period as the commodity export outlook improves”⁴. Evans & Peck is aware of a number of major potential developments in the resources sector that could readily account for such an “abnormal” increase. Ideally, these would be treated as contingent loads, but this mechanism is not available to DNSP’s. We have concluded that on balance, the magnitude of the load included is reasonable, but do have some concern in relation to timing”²⁴.

3.4.5 Regional diversity factor

The system MD connects to the Ergon Energy regional sum forecasts through regional diversity factors. When system MD forecasts are compared this needs to be against an understanding of the regional diversity factors used or derived.

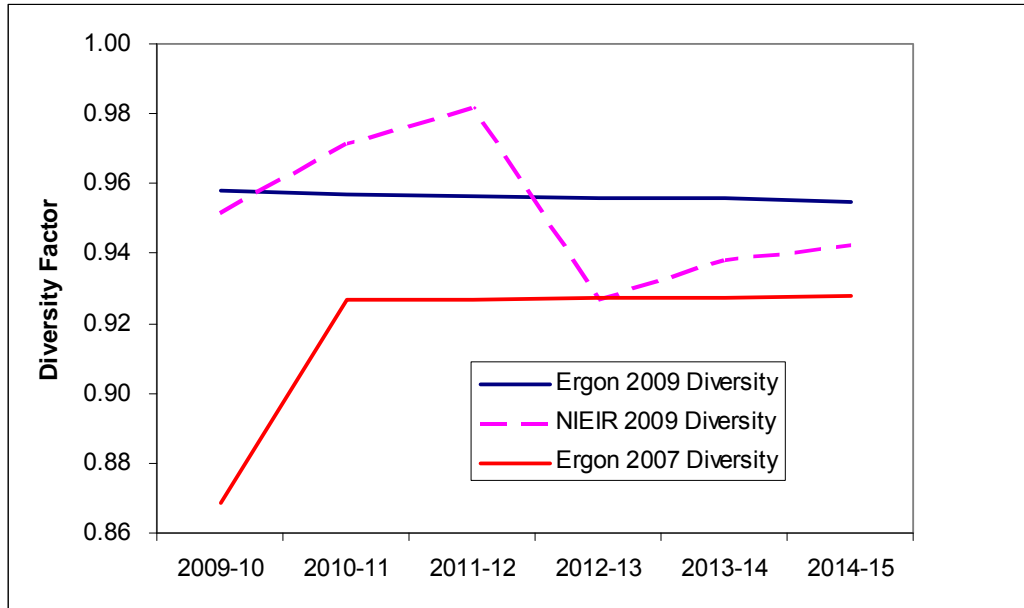
Figure 3-7 compares the system diversity factors²⁵ from the Ergon Energy 2007 and Ergon Energy 2009 forecasts against those in the NIEIR 2009 forecasts. As can be seen, the factors used or derived are quite different and have ramifications on system maximum demand forecasts and also raise questions about the consistency of diversity factors used at lower levels of the network.

²³ Ergon Energy Revised Regulatory Proposal, P.76.

²⁴ RP981c_Evans & Peck Demand Review.pdf (confidential), P.5.

²⁵ Regional sum MD divided by system MD. Sources are AR436c, RP970c Table 7.1 and Tables 9.1-6, RP896c for Ergon Regional MDs and Ergon Revised Regulatory Proposal Table 8-5

Figure 3-7 Regional diversity factors in Ergon Energy and NIEIR 2009 forecasts and Ergon Energy 2007 Forecasts



3.4.6 Summary of observations about NIEIR forecasts

MMA has not reviewed the NIEIR forecast models or methodologies and cannot comment on the derivation of the forecasts. However, while MMA cannot comment on the NIEIR methodologies, a high level analysis of the outputs raises several potential issues and possible inconsistencies with the Ergon Energy forecasts including:

- an apparent difference between the historic and forecast elasticity of maximum demand to economic growth
- unexplained substantial increases in temperature sensitive load in 2012
- uncertainty about the inclusion of large “spot loads”, including criteria for inclusion, timing and whether these loads are connected to the distribution network or transmission system
- inconsistent system diversity factors between the NIEIR and Ergon Energy 2009 forecasts.

MMA has also previously pointed out in Section 3.3 that the NIEIR 2009 and Ergon Energy 2009 regional sum forecasts in 2009 are quite different from the year 2013.

3.5 Argument about MMA comments regarding Ergon Energy methodology

3.5.1 Overview of previous MMA comments regarding Ergon Energy methodology

The Executive Summary of the MMA report to the AER about the review of Ergon Energy demand forecasts specified some key concerns about the Ergon Energy methodology:

- lack of responsiveness to key drivers
- calculation and treatment of spot loads
- lack of weather correction at a spatial level.

Ergon Energy has responded to these comments by providing argument and a report by Evans & Peck related to specific aspects of its methodology.

3.5.2 Reconciliation

Ergon Energy has argued that it does systematically reconcile its forecasts internally and against the NIEIR forecasts. It has provided some emails as evidence of such reconciliations in 2005 and 2008 and Evans & Peck has commented, with regard to internal Ergon Energy reconciliation that:

“This appears to be a communication misunderstanding and ignores the information provided in the spreadsheet “Weather Correction_Summary_08_09.xls”. The sole intent of this analysis, which appears to have been in place for many years, is to reconcile from a Bulk Supply Station level to a Regional Level to a System Wide level. There is then a second level of reconciliation from the Zone Substation Level to the Bulk Supply level in “Load Forecast reconcile_08_09.xls”. In this context, we cannot find justification for the MMA assertion²⁶.”

Ergon Energy based its capex forecasts on its 2007 forecasts. When MMA reviewed the Ergon Energy forecasts at zone substation (ZSS) and higher levels it appeared clear that the only internal reconciliation was through assuming a changing diversity factor – which MMA does not consider to be an appropriate reconciliation. This is based on MMA’s review of PL641c_EE_SMBD DEMANDS 2007_11Aug09.xls. MMA does not have a record of having received or reviewed either “Weather Correction_Summary_08_09.xls” or “Load Forecast reconcile_08_09.xls”, the two spreadsheets referred to by Evans & Peck, the titles of which appear to relate to later reconciliations.

Ergon Energy may also have changed its reconciliation methodology subsequent to this.

As discussed in Section 3.3, MMA has seen no evidence of any systematic reconciliation between the NIEIR and Ergon Energy forecasts. We would expect such reconciliation to include, for example, documentation providing reasons for different adjustment factors involved at ZSS and BSP level, documentation concerning any observed differential growth rates between forecasts at connection point and system level, different assumptions about treatment of embedded loads and loads supplied from transmission lines as well as exploring significant differences between the outcomes and providing reasons for adopting either one or other of the forecasts or an intermediate value.

MMA notes that the Evans & Peck “reconciliation” with Ergon Energy 2009 and NIEIR 2009 forecasts is restricted to two years – 2010/10 and 2010/11.

²⁶ RP981c_Evans & Peck Demand Review.pdf (confidential), P.20.

MMA has seen no evidence to cause it to change the opinion it previously expressed about this aspect of the Ergon Energy 2007 forecasts.

3.5.3 Spot loads

In its Executive Summary MMA expressed the following opinion about the treatment of spot loads in the Ergon Energy methodology:

“After assessing information provided by Ergon Energy, MMA considers that the Ergon Energy methodology both effectively double-counts small spot loads and also generally takes too optimistic a view of the timing, size and probability of the spot loads.

This is likely to result in forecasts which are over-optimistic. MMA has not been able to accurately quantify the impacts of these but provides an indicative assessment of 2.5% based on double-counting. In addition, many spot loads are likely to be delayed by at least a year²⁷”.

MMA provided evidence for its reasoning and, in particular Section 4.3 of the report provided details about why including spot loads below a threshold size, and larger loads without subsequently removing them from the trend analysis, was likely to lead to double counting. MMA also provided very specific examples in Table 4-3 of analysis of Ergon Energy’s forecast spot loads forecasts in Capricornia over a number of years and concluded:

“Based on the above evidence, we would expect that the size of large spot loads is over-stated and the timing forecast is almost invariably earlier than actually eventuates²⁸”.

With regard to spot loads the Evans & Peck report states the following:

“MMA has identified the potential for double counting of spot loads in forecasts – our analysis does not separate spot loads and therefore implicitly incorporates a “business as usual” level of spot load. We have no material difference to Ergon Energy or NIEIR in our forecast to 2010/11 and are therefore satisfied that there is no double counting to that point²⁹”.

MMA does not consider that such an analysis disproves MMA’s view. We note that the Ergon 2007 forecast, on which the Capex forecast was based, is some 9% to 12% higher in the years mentioned by Evans & Peck.

As observed in the initial MMA review, Ergon Energy includes small spot loads explicitly. MMA considers that previous small spot load growth is generally already captured in trend growth. Our analysis of a number of zone sub-stations (ZSS) has suggested this may result in some double counting.

²⁷ McLennan Magasanik Associates, draft report to Australian Energy Regulator “Review of Ergon Energy’s maximum demand forecasts for the 2011 to 2015 price review”, 20 October 2009, page 7.

²⁸ McLennan Magasanik Associates, draft report to Australian Energy Regulator “Review of Ergon Energy’s maximum demand forecasts for the 2011 to 2015 price review”, 20 October 2009, page 57.

²⁹ RP981c_Evans & Peck Demand Review.pdf (confidential), P.5.

In addition, MMA previously showed in Table 4-3 of its original report that the type of consultation with customers undertaken by Ergon Energy has, in the past, produced over-optimistic spot load forecasts in terms of both size and especially timing. Ergon Energy has not provided any evidence to refute this assessment.

Overall, MMA has seen no evidence to cause it to change the opinion it previously expressed about this aspect of the Ergon Energy 2007 forecasts.

3.5.4 Weather correction

In its report to AER, MMA considered weather correction an issue at the spatial level. MMA notes that, with the change to underlying forecast GSP growth discussed in Section 3.6.1, there are now no material differences between the weather and diversity corrected system maximum demand forecasts of Evans & Peck, Ergon 2009, NIEIR 2009 and MMA 2010 for the 2009-10 and 2010-11 forecast years.

3.6 Consideration of Ergon Energy arguments about MMA forecasts

3.6.1 Changed economic circumstances

Between 2002 and 2007 Queensland gross state product (GSP) grew by about 5% pa. In its November 2007 report to Ergon Energy, NIEIR forecast that growth in GSP between 2009 and 2015 would be about 3.7% pa. In its December 2009 forecast to Ergon Energy this had been reduced to 3.1% pa.

According to the NIEIR December 2009 report:

“The collapse in the financial sector and subsequent fall in commodity prices should see Queensland GSP growth slow considerably.

Queensland GSP growth was 1.5 per cent in 2008-09, following growth of 5.3 per cent in 2007-08.

Queensland GSP growth is projected to grow by 1.1 per cent in 2009-10 and by 2.3 per cent in 2010-11. Business investment is expected to fall sharply in 2009-10 and 2010-11, however, private consumption expenditure is expected to recover.

Queensland GSP growth strengthens again by 2011-12 and 2012-13, as stronger domestic and world growth leads to a recovery in commodity prices. A number of delayed resource processing projects in Queensland are assumed to proceed after this period as the commodity export outlook improves. Projected GSP growth is 6.1 per cent in 2011-12 and around 4.8 per cent in 2012-13”³⁰.

In its report to the AER dated 20 October 2009, MMA used the most recent forecasts publicly available, those of KPMG Econtech, which forecast strong negative growth in Queensland GSP of - 4.8% in 2009 followed by growth of 3.2% pa between 2009 and 2015.

³⁰ National Institute of Economic and Industry Research report to Ergon Energy, “Maximum demand forecasts for Ergon Energy connection points to 2019-20”, December 2009 (RP970c), page 23.

In its report at the time MMA stated:

*“Finally, we note that the Australian and Queensland economies remain volatile. We have used economic forecasts for Queensland prepared in August 2009 as the basis of our analysis of system maximum demand. If there is a material change to the expected outlook then it may also materially impact on the forecasts”*³¹.

The significant drop in Queensland economic growth forecast by KPMG Econtech in 2009 did not eventuate. MMA considers the latest NIEIR economic growth forecasts to be the most timely currently available and that it is reasonable to use these forecasts. MMA has used these in its updated MD projections.

In addition, MMA has used the latest NIEIR dwelling growth forecasts.

3.6.2 Relevance of Queensland GSP growth to Ergon Energy

Ergon Energy has argued that the Queensland GSP growth is not relevant to its area.

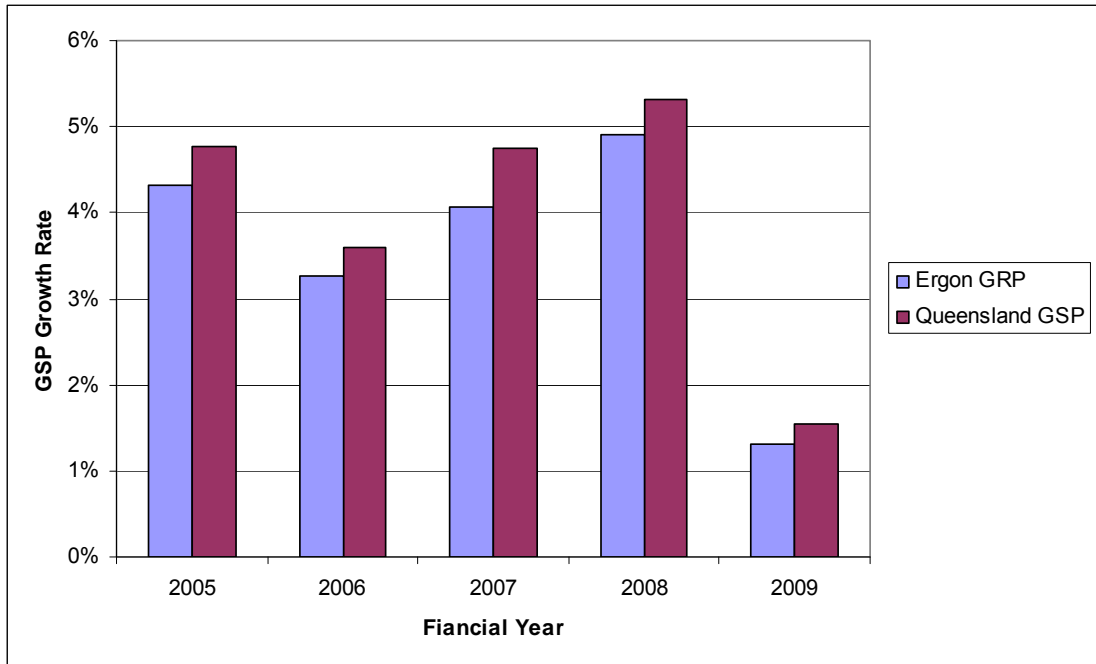
*“MMA appears to have relied on GSP as a proxy for growth in regional Queensland. This is inappropriate given the higher exposure of regional Queensland to the rapidly recovering Asian export markets”*³².

Despite Ergon Energy’s assertions about Ergon Energy growth and Queensland GSP being unrelated, the recent history, provided in Figure 3-8, shows that Ergon Energy GRP growth closely tracks Queensland GSP growth while being on average a little lower.

³¹ McLennan Magasanik Associates, draft report to Australian Energy Regulator “Review of Ergon Energy’s maximum demand forecasts for the 2011 to 2015 price review”, 20 October 2009, page 9.

³² Ergon Energy Revised Regulatory Proposal, page 18

Figure 3-8 Historic Growth rate of Queensland GSP and Ergon GRP



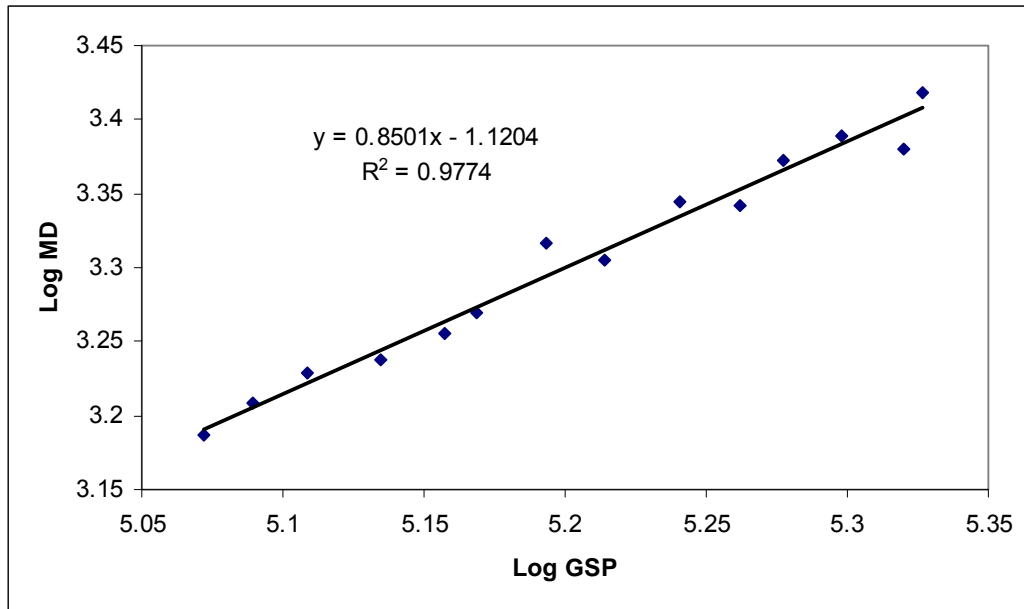
Source: RP970c_NIEIR_2009_Demand Forecast_Dec09.pdf, Table 4.1, P.30.

A graph of the log of the Ergon Energy system MD versus Queensland GSP is provided in Figure 3-9³³. The system MD historicals come from Ergon Energy³⁴ for 1996 to 2004 and from Evans & Peck weather and diversity corrected for 2005 to 2009. As can be seen, Ergon system MD is closely correlated with Queensland GSP as indicated by the high $R^2=0.9774$.

³³ The historical part of this graph has previously been provided in Figure 3-4.

³⁴ AR436c_EE_Demand Load Forecast Summary 2007.xls.

Figure 3-9 Ergon System MD from 1996 to 2009 vs ABS GSP³⁵

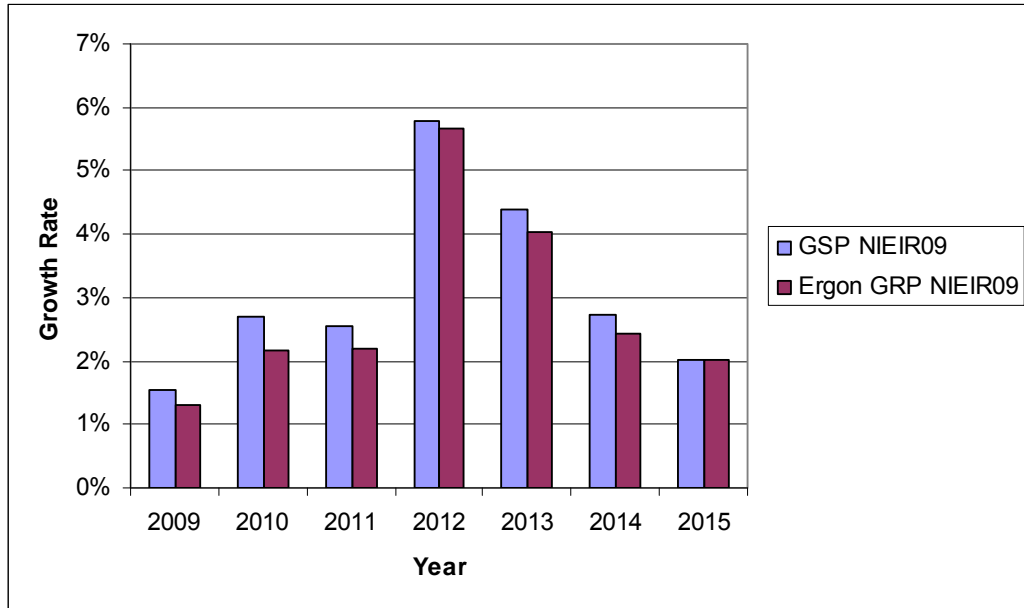


In addition, Ergon Energy appears to be suggesting that the resource part of Queensland is expected to boom compared to the rest of Queensland. According to NIEIR this does not appear to be the case, with the growth in GRP for the Ergon Energy region as a whole forecast to be a little lower than that for the state as a whole, and, therefore, for south east Queensland. Figure 3-10 shows the NIEIR forecasts for Queensland GSP and Ergon region GRP from the December 2009 forecasts. In every year the forecast Ergon GRP growth rate is lower than GSP except for 2015 when they are equal. This was also the case for the NIEIR 2007 economic forecast³⁶.

³⁵ GSP is from ABS state accounts volume chain, Ergon system MD comes from AR436c for 1996 to 2004 and Evans & Peck weather and diversity corrected for 2005 to 2009.

³⁶ We note in addition that the Ergon 2009 RSMD forecasts, which presumably look at other factors including specific resource developments, are some 5.6% lower than those in the Ergon 2007 forecasts.

Figure 3-10 NIEIR forecast growth rates from 2009 forecasts for Queensland GSP and Ergon Region GRP



3.6.3 Additional air conditioning

Ergon Energy has argued that MMA has understated the growth in air conditioning, in particular the effect of the installation of additional air conditioning³⁷.

Evans & Peck in its report was asked to review the air conditioning issue and has stated:

“Whilst acknowledging some merit in MMA’s arguments pertaining to saturation of the market and seeing some evidence to support this in some of Ergon Energy’s regions, our best estimate is that the temperature sensitive (and by deduction air conditioning) load is continuing to grow at a slightly greater rate than Ergon Energy’s overall growth rate. Our conclusion is that any significant reduction in growth driven by saturation effects in air conditioning penetration as envisaged by MMA is still some way off”³⁸.

3.6.3.1 Evans & Peck assessment of weather sensitivity

Evans & Peck has examined the weather sensitivity of each Ergon Energy region for the last 5 years then fit a linear trend through the 5 data points. We note that in Table 3-2 from the Evans & Peck report the temperature sensitivity of three of the six regions is apparently increasing while in three it is apparently declining.

³⁷ Ergon Energy Revised Regulatory Submission, P.69.

³⁸ RP981c_Evans & Peck Demand Review.pdf (confidential), Fig 4.3 P.21.

Table 3-2 Evans & Peck temperature sensitivity trend by region³⁹

Region	2004/05 sensitivity MW / Degree	Growth (Decline) in Sensitivity MW / Degree / annum
Far North Queensland	10.214	1.57
North Queensland	14.141	3.493
Mackay	7.568	-0.143
Capricornia	11.724	2.155
Wide Bay Burnett	13.378	-0.871
South West Queensland	9.946	-0.122

When we look at individual regions the results are confusing. In particular Wide Bay Burnett which has high population, high population growth, and one of the highest initial temperature sensitivities shows a decline in temperature sensitivity of 6.5% per annum, while other regions are apparently reporting temperature sensitivity growth rates of well over 20% pa.

We would certainly expect the temperature sensitive load in the Ergon Energy region to increase over time – there is reasonable dwelling growth in the region and we expect almost all new dwellings to have air-conditioning – and therefore increased weather sensitive load. We would, for example, expect Wide Bay to have reasonable increasing temperature sensitivity due to resident installation of air-conditioning associated with population growth.

The question is not whether the weather sensitive load is increasing, but whether it is increasing at a faster or slower rate than has historically been the case. It is very difficult to draw any conclusions in this regard from the analysis by Evans & Peck. MMA considers that the analysis of air conditioner penetration rate provided in the report to the AER to be sound. However, MMA accepts that there may be some further growth due to additional air conditioners being installed. The impact of this growth is estimated in Section 4.1.

3.7 Overall conclusion about new evidence

MMA has previously assessed the Ergon Energy 2007 forecasts, on which the capex forecasts have been based and the associated material provided by Ergon Energy.

MMA has reviewed the arguments and new material submitted by Ergon Energy with its revised proposal. These include new forecasts by Ergon Energy, NIEIR and a report by Evans & Peck.

MMA concludes that there has been no material provided to suggest that the Ergon 2007 forecast methodology or forecasts themselves were realistic. Indeed, the latest Ergon

³⁹ RP981c_Evans & Peck Demand Review.pdf (confidential), Fig 4.3 P.11.

Energy forecasts (based on regional sums) are some 10% below the Ergon Energy 2007 forecasts in 2009/10 and an average of some 5.6% below the Ergon Energy 2007 forecasts over the 2015 regulatory period.

On this basis, MMA has concluded that the new information contained in the Energex revised proposals and submissions does not provide sufficient evidence to cause MMA to alter its previous conclusions regarding the reasonableness of the Ergon Energy 2007 maximum demand forecasts.

Ergon Energy has also provided new NIEIR 2009 forecasts. MMA has not reviewed these forecasts in any detail but has observed some potential issues with use of these forecasts. In any case, based again on the regional sums, the NIEIR 2009 forecasts are on average some 3.1% below the Ergon Energy 2007 forecasts over the 2015 regulatory period.

Based on the above Ergon 2009 and NIEIR 2009 forecasts as provided, MMA concludes that the Ergon Energy 2007 forecasts are over-stated by of the order of 5.6% and 3% respectively.

Ergon Energy has, however, provided some new evidence to suggest that the MMA indicative forecasts provided in the report to the AER should be amended to take account of changed economic forecasts and additional air conditioners. This amendment is made in the following Chapter.

4 UPDATED MMA FORECASTS

4.1 New factors taken into account

MMA has reconsidered its own previous forecasts with respect to issues raised by Ergon Energy. MMA has updated its forecasts to take into account:

- the latest NIEIR GSP and dwelling forecasts
- a small increase in estimated growth of air-conditioning due to assumptions about growth of additional air conditioners⁴⁰. This has the effect of increasing assumptions about effective air conditioning growth by about 3% by 2015.

4.2 Updated indicative MMA forecast

The updated indicative MMA forecasts for Ergon Energy are provided in Table 4-1. The changes we have made have had the effect of increasing the underlying MMA forecasts by about 2.7% on average across each year of the 2015 regulatory period.

Table 4-1 Updated MMA forecasts of Ergon Energy system MD, MW

Forecast	2010	2011	2012	2013	2014	2015
MMA March 2010	2704	2778	2907	3017	3100	3171
MMA October 2009	2607	2693	2811	2928	3031	3121
Difference (MMA2010 – MMA2009)	98	86	96	89	69	50

4.3 Comparison of forecasts

A number of Ergon Energy, NIEIR and MMA system MD forecasts are presented in Table 4-2. It should be noted that these forecasts are on a different basis than the regional sum forecasts generally considered in Chapter 3. As discussed in Section 3.2.1, MMA considers the regional sum forecasts to be a better indicator of expected capital expenditure, however, MMA's indicative forecasts have been derived based on system MD.

⁴⁰ The extra impact of growth in additional air conditioners has been added to the index of growth in air-conditioner penetration used in the MMA indicative forecasts. The extra impact on system MD has been estimated by using the 2008 OESR survey to calculate the number of households which will add additional air-conditioning over the next five years and then multiplying this by a factor (18%) to take into account estimated size and diversity effects of second and third units compared to the first unit installed. The 18% is derived by assuming that each additional unit contributes 1 kW x 25% diversity factor to the system after diversity maximum demand (ADMD) compared to existing units which contribute 2 kW x 70% diversity factor, thus contributing an additional 18% increase per additional unit to the index compared to the index based on increased penetration alone.

Table 4-2 Comparison of several system MD forecasts for Ergon Energy, MW

	2009	2010	2011	2012	2013	2014	2015	2011-2015
Ergon 2007 Capex Basis	2595	2684	2967	3063	3153	3243	3330	
Ergon 2009 RP 909c		2654	2807	3002	3093	3179	3262	
NIEIR December 2009		2681	2799	3052	3181	3282	3365	
Ergon 2009 Submission		2654	2807	3052	3181	3282	3365	
Evans and Peck (P16)	2622	2672	2761					
MMA 2009	2614	2607	2693	2811	2928	3031	3121	
MMA 2010	2629	2704	2778	2907	3017	3100	3171	
Ratios								
MMA 2010 to Ergon 2007		101%	94%	95%	96%	96%	95%	95.0%
MMA 2010 to Ergon 2009		102%	99%	97%	98%	98%	97%	97.6%
Ergon 2009 to Ergon 2009 revised		100%	100%	98%	97%	97%	97%	97.9%
Ergon 2009 to Ergon 2007		99%	95%	98%	98%	98%	98%	97.3%
Ergon revised to Ergon 2007		99%	95%	100%	101%	101%	101%	99.5%

The MMA 2010 indicative forecasts are some 5% below the Ergon Energy 2007 forecasts on which capex was based. This average difference falls within the 3.1% to 5.6% range suggested by the ratios of NIEIR 2009 and Ergon 2009 to Ergon 2007 RSMD forecasts.

While the MMA 2010 MD forecasts are, on average, only some 2% to 3% below the Ergon 2009 forecasts and the Ergon revised submission forecasts (based on NIEIR 2009 in the latter years), some of the reduced discrepancy is due to system diversity impacts.

Ergon Energy’s 2009 RSMD forecast is some 5.6% below that of its 2007 RSMD forecast. This reduction level is reasonably consistent with the average 5% reduction seen in the indicative MMA system MD forecasts.

APPENDIX A SELECTED ERGON ENERGY RESPONSES TO MMA AND AER QUESTIONS

A.1 Decreasing GSP forecasts and increasing MD forecasts for NIEIR 2007 versus NIEIR December 2009 forecasts

“MMA.ERG.RRP.01.04 Demand forecast NIEIR also prepared reports for Ergon In November 2007 and September 2008. The following table is a comparison of gross regional product (GRP) and Gross State Product (GSP) annual growth rates between 2009 and 2015 from the November 2007 (AR065c) NIEIR report to Ergon and the December 2009 NIEIR report (RP970c) as well as the forecast annual growth in MD for those regions from these reports.

MMA.ERG.RRP.01.04

4. Can NIEIR or Ergon explain why the decreases in forecast GRP growth rates for FNQ, Mackay, Capricornia and SWQ and Ergon Total nevertheless result in increased MD growth rates forecasts.

Material removed as confidentiality has been claimed.

A.2 Question about high growth in 2012 for the NIEIR forecast

“6. What are the drivers of the NIEIR 9.1% MD growth for Ergon regions in 2012? This growth is approximately double that of the surrounding years and does not appear in the previous NIEIR forecasts from 2007 and 2008.

Material removed as confidentiality has been claimed

A.3 Detailed information on NIEIR’s MD and Energy model

AER.ERG.RRP.11 Demand forecasts. Can Ergon Energy provide detailed information on NIEIR's maximum demand and energy consumption model including: The basic equation for the forecasting model in mathematical form, definitions of all variables used in the model, and how it is derived. Historic and forecast data for all variables in the model, and the source of the data. Modelling spreadsheets and outputs including estimated coefficients, standard errors and residuals. If Ergon Energy is unable to provide any aspects of this information, please provide an explanation as to why it cannot be provided.

Material removed as confidentiality has been claimed

A.4 Differences between RP980c and RP970c

AER.ERG.RRP.10 Demand forecasts. It appears that the NIEIR 2009 50% PoE maximum demand forecasts for 2009-10 and 2010-11 reported in Table 8-5 of the revised proposal are not consistent with figures contained in Table 5.1 of the NIEIR report (document number RP908c). Please explain the difference in these sets of figures.

Material removed as confidentiality has been claimed