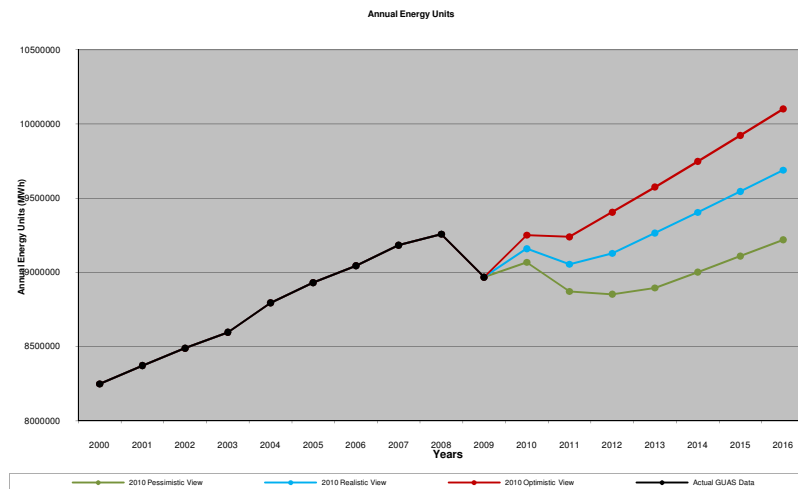




2010 Forecast of NI Peak Demand & Energy Production

June 2010



Introduction

SONI, as System Operator for Northern Ireland, is responsible for operating the transmission system in a safe, secure and economic manner. An important aspect of this role is to ensure generation capacity is adequate to meet forecast and actual Demand. To successfully achieve this SONI require accurate annual forecasts of Peak Demand (MW) and Energy Production (MWh).

Given that temperature has been found to have the greatest effect on the demand for electricity, SONI adjust Peak Demand data to a temperature standard known as Average Cold Spell (ACS). Climate condition variation is therefore accounted for in the Peak Demand forecast.

SONI have historically used a deterministic forecasting modelling tool called “GMAS” to predict future values of these variables. GMAS uses regression analysis over varying historic time frames to create forecasts for both Peak Demand (MW) and Energy Production (MWh). Until 2008 annual forecasts of Energy Production and Peak Demand using GMAS have been reasonably accurate and produced predicted values close to the actual observed values.

However, since 2008, with out appropriate adjustment there would have been an increase in the error between the predicted values of the GMAS forecasts and the actual observed values. This is explained by the drastic downturn in the global economy that began during the second half of 2008. This economic crisis has had a major affect on Peak Demand and Energy Production in Northern Ireland.

This affect can be seen in Figure 1 and Figure 2. These show how the GMAS forecasts for Peak Demand and Energy Production have compared against the actual observed values and also how the current economic crisis have affected the Peak Demand and Energy Production.

It should be noted that the decline in Energy Production shown in 2008 is not to the same extent as the decline in Peak Demand during the 2008/09 winter because the economic downturn only began in the second half of 2008. If we were to adjust the 2008 figures for the complete year to represent the decline that happened in the second half of 2008, the Energy Production drop would be considerably more and would then be consistent with the observed drop in Peak Demand for during the 2008/09 winter (Figure 2).

Regression analysis using GMAS looks back over historic time scales to maximise data correlation. This technique is appropriate when considering general longer term trends in energy usage patterns. When sudden non incremental swings occur it is necessary to consider shorter term economic indices and demand data analysis must be more granular in nature also. It is for this reason the traditional forecasting approaches have been modified to increase accuracy in the short term.

Figure 1 – GMAS Forecasted and Actual Peak Demand

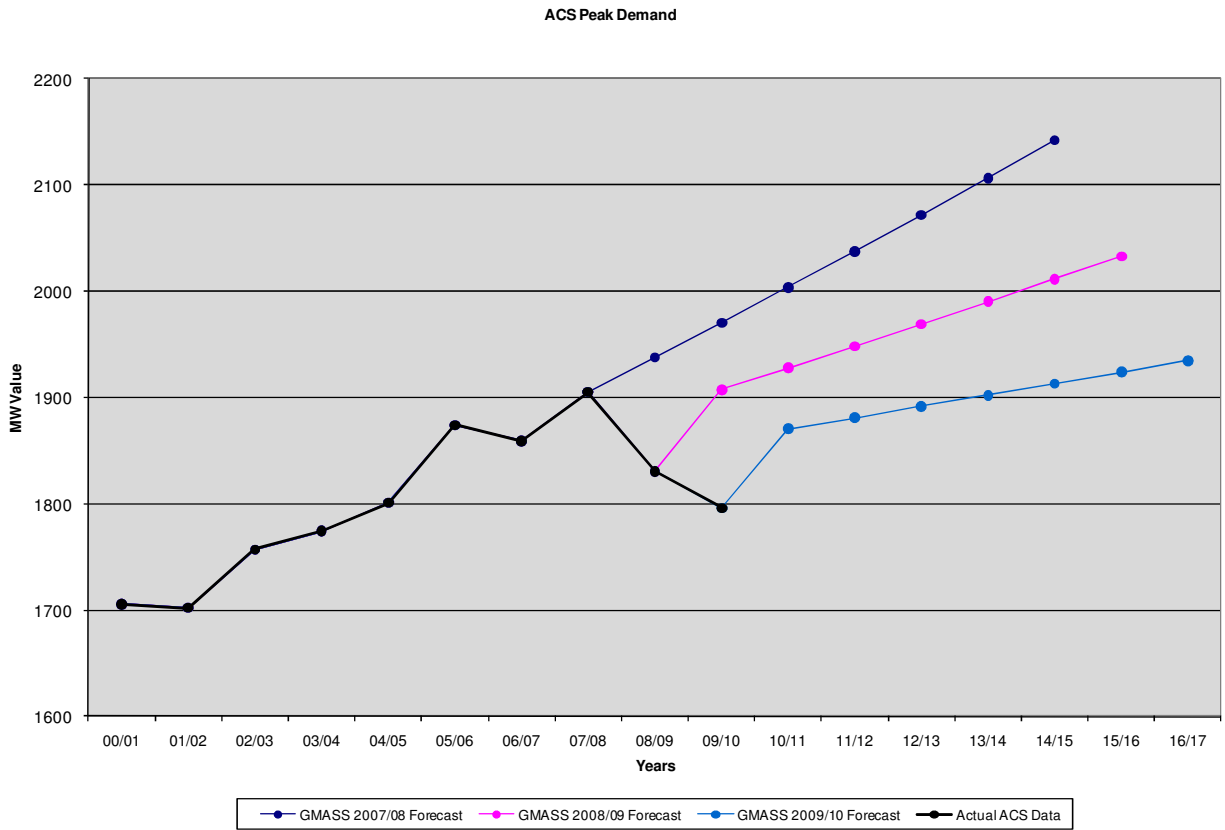
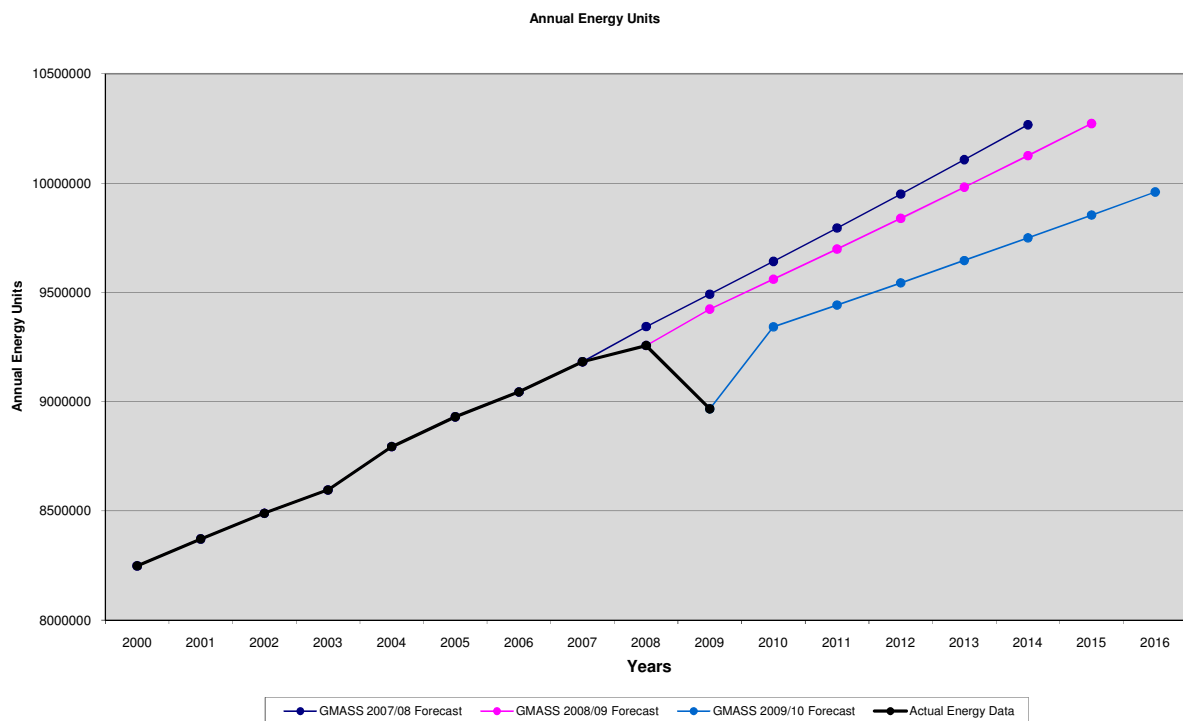


Figure 2 – GMAS Forecasted and Actual Energy Production

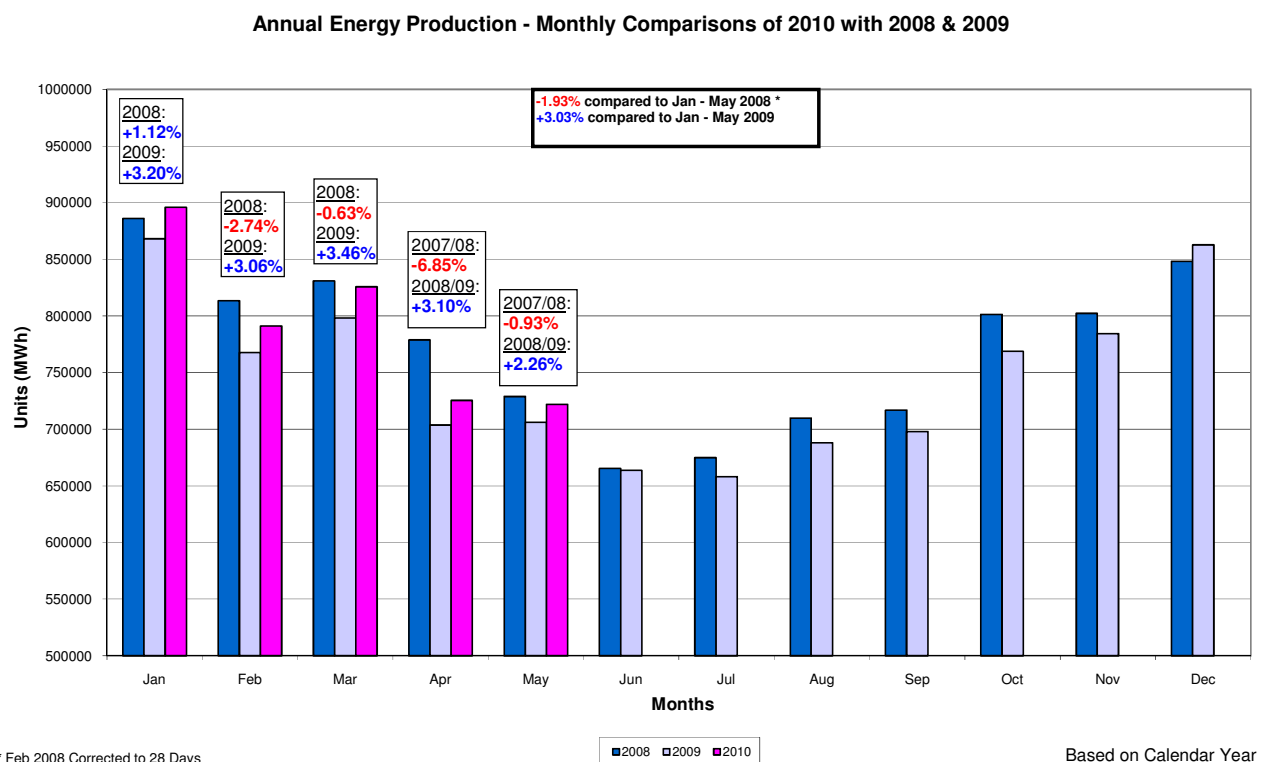


Current Energy Trends

An analysis of monthly energy production has now been included as part of the forecasting process to consider the shorter term impact of the current economic down turn.

Figure 3 shows recent monthly energy growth rates comparing the first 5 months of 2010 with the same months in 2008 and 2009. When comparing 2010 with 2009 this clearly shows on average a 3% - 3.5% growth for the months January 2010 to April 2010 with this falling to approximately 2% in May 2010.

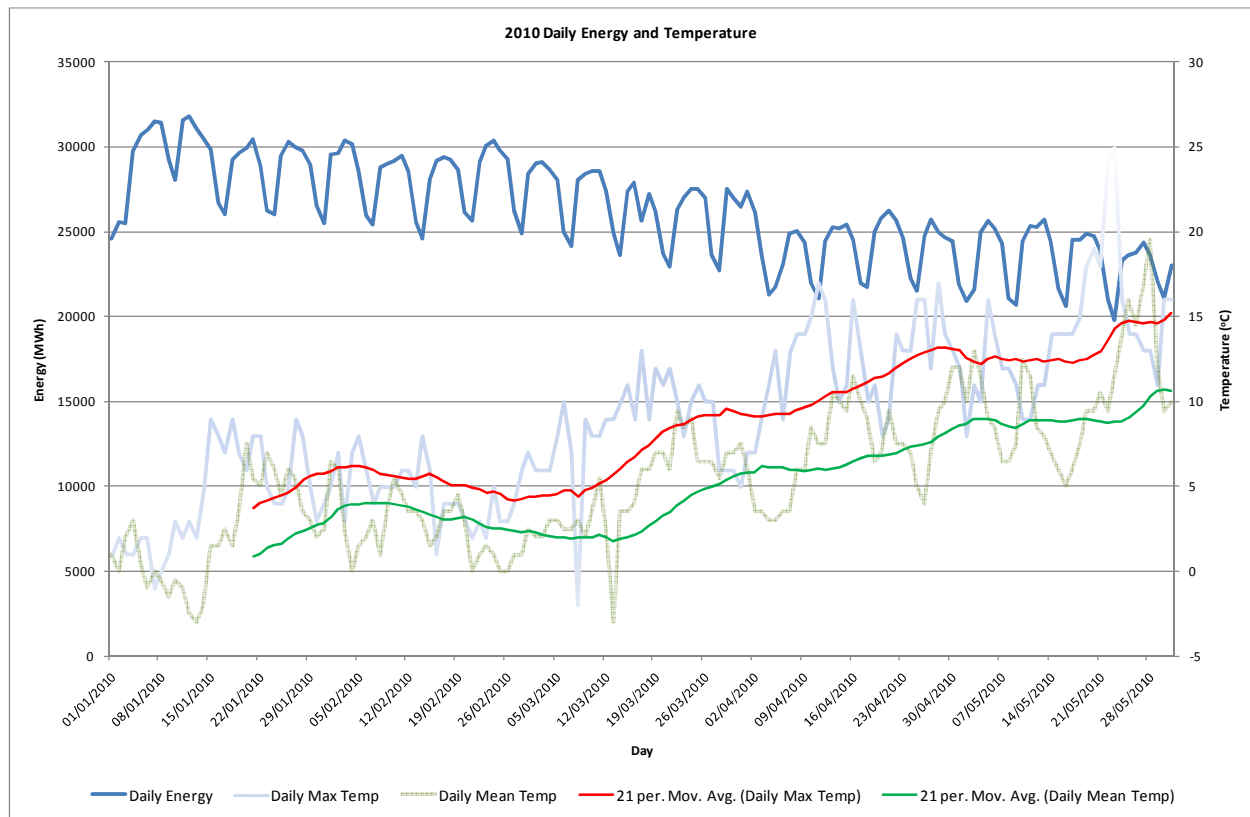
Figure 3 – 2010 Energy Production Monthly Comparison



It should also be noted that the winter 2009/10 was particularly cold and experienced inclement weather conditions with prolonged low temperatures that had not been experienced in Northern Ireland and the UK since the early 1980s. This inclement weather continued on until April 2010, including severe storms at the end of March 2010 with considerable ice accretion that caused major disruption on the NI transmission system. This accounts for the positive $\approx 3\%$ growth rates from January 2010 to April 2010. However, in May, when temperatures are generally back to typical levels, a positive growth rate can still be observed of $\approx 2\%$.

Figure 4 illustrates how the temperature, which was recorded at Castlereagh House, has varied over the first five months of 2010 and shows how the temperatures resumed to normal levels by May.

Figure 4 – NI Energy vs Temperatures at Castlereagh House



SONI have therefore taken the view that the $\approx 3\%$ growth rates from January 2010 to April 2010 have been partially lifted by the abnormally low temperatures experienced over these months. When we consider May 2010 when normal temperature conditions return there still appears to be an underlying growth rate of circa 2%.

SONI believe that this underlying growth rate will be further eroded as additional economic measures are taken by Government to reduce the national deficit. Looking forward as budget cuts in Northern Ireland take effect on the public sector this will reduce the large public sector spending in the Northern Ireland economy. This will be explored in more detail in the following section.

Econometric Factors

Until 2008 factors affecting energy consumption, such as economic growth represented by various econometric indices, have merely been used to validate system demand forecasts. Assuming that short term economic slumps influence electricity demand as was illustrated in Figure 1 and Figure 2, it would also seem logical to account for these short term economic conditions in the forecast of future Peak Demand and Energy Production.

The global economy weakened rapidly towards the second half of 2008 and has continued through 2009, although at a reduced rate.

To date the main areas of the NI economy which have suffered include the retail sector, the manufacturing sector, and the construction industry. However, it was generally accepted that Northern Ireland was in a better position to deal with the ongoing downturn compared to many other UK regions as it has a higher share of public sector employment than other regions of the UK with these jobs being less likely to be at risk.

The UK general elections that were held recently resulted in a new Conservative and Liberal Democrat Coalition government who released an emergency budget at the end of June 2010. The run-up to the General Election in the UK resulted in open public debates about the state of the UK's public finances and left households and business in limbo with regard to their future financial positions. This sort of uncertainty can have a knock-on effect upon consumer spending and overall demand.

The new Prime Minister, David Cameron has made a number of pre-budget speeches and has stated that the UK's deficit and high level of debt are "even worse than we thought" and that unless action was taken the country could be paying £70bn of interest on its debt in the next five years, with the national debt currently standing at £770bn. He also stated that "the legacy left by the previous government is terrible and the private sector has shrunk back to what it was six years ago. People's lives – and this is vital – will be worse unless we do something now. The cause of creating a fairer society will be set back unless we do something now."

Therefore as expected major cuts in the UK public sector funding and benefits have been announced in the emergency and actual budget to try and reduce the UK deficit and debt. This will have a substantial knock on affect on the Northern Ireland economy due to the large public sector that exists in Northern Ireland. Already the devolved Northern Ireland Executive has been hit with a funding cut of £128m within the current year's budget and on top of that it is expect that another cut of between £360-400m of funding will be contained within next year's budget for Northern Ireland. These spending cuts are only for the devolved areas of Government that the Northern Ireland Executive are responsible for and therefore the overall cuts to Northern Ireland could be even more severe.

Economic analysts have therefore adjusted the predictions on economic growth. At a local level, recent economic outlook reports from both the Northern Bank¹ and Ulster Bank² state that predicted economic growth should be revised downwards to 1% by the end of 2010. In terms of when the economic trends will return to normal is also open to much debate. The Northern Bank believe at this stage that local output will not reach pre-recession levels again until the second half of 2012. Economists are hesitant to project further ahead than this.

Given the high degree of uncertainty over the future SONI feel the best approach is to consider three alternative possible scenarios for the economy and for each of these derive an estimate of Peak Demand and Energy Production. The three scenarios will consist of a Pessimistic, Realistic and Optimistic view for both the ACS Peak Demand and Annual Energy Production and the figures will be adjusted so that these take account of current and predicted economic conditions.

¹ *Northern Bank Quarterly forecasts, Quarter 2: 2010*

² *Ulster Bank NI Quarterly Economic Review& Outlook June 2010*

Forecast of Annual Energy Production

Realistic Annual Energy Production Forecast

When we compare the first half of 2009 to 2010 SONI has made the assumption that there is an underlying growth rate of $\approx 2\%$, however this will not continue at this rate due to the economic factors as outlined previously. Instead, the assumption has been made that there will be a gradual month by month decline from 2% in June to 1% growth by the end of the year in December 2010. This assumption has been made based on the view that, as public spending cuts gradually take effect, there will be a gradual drop to 1% in line with the predictions of a 1% growth of the economy by the end of 2010.

Taking 2009 as the base year, we continue this 1% increase month on month to gain a view of the Energy production in 2011. This in effect removes the higher energy growths experienced in the first 4 months of 2010 that had been higher due the effect of the inclement weather. The resultant monthly Energy Production and associated growth rates are shown in Figure 5 and in the graph in Figure 6. In effect the conditions experienced by the end of 2010 are expected to continue on throughout 2011. From 2012 onwards we anticipate a gradual return to pre-recession modest growth rates in the region of 1.5% by the end of the year.

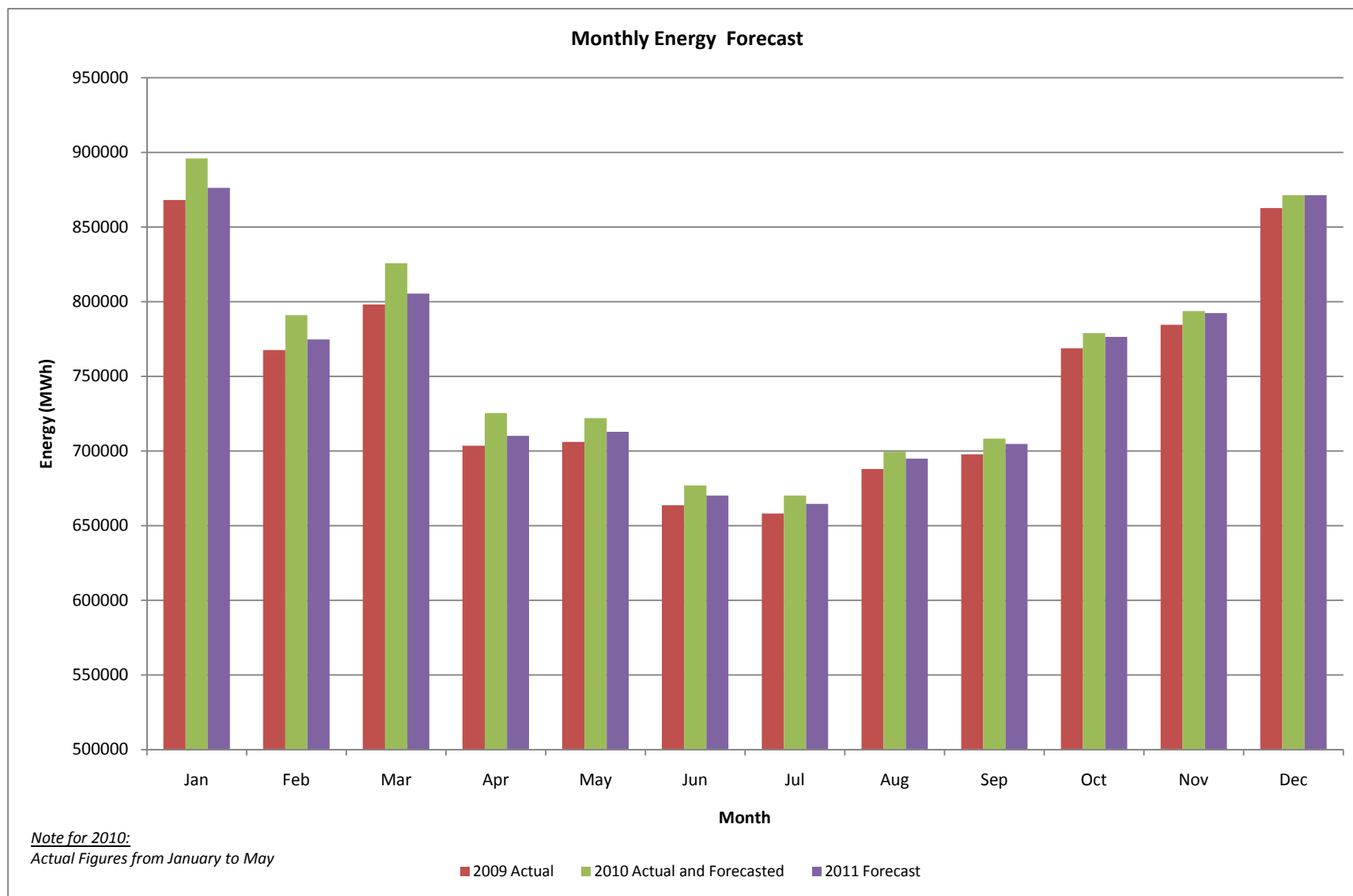
Figure 5 – Forecasted Monthly Energy Production and Growth Rates

Forecasted Energy Production (MWh - Units Sent Out)								
Month	2009	2010	2011	2012	2013	2014	2015	2017
Jan	868158	895909	876199	877338	890499	903856	917414	945143
Feb	767607	791068	774772	776709	788359	800185	812187	836736
Mar	798132	825732	805419	808480	820607	832916	845410	870962
Apr	703594	725400	710167	713718	724424	735290	746319	768877
May	706044	721976	712880	717371	728131	739053	750139	772812
Jun	663656	676929	670160	675186	685314	695594	706028	727367
Jul	658086	670129	664567	670415	680471	690678	701038	722227
Aug	688010	699500	694814	701762	712288	722972	733817	755997
Sep	697834	708301	704760	712723	723414	734265	745279	767806
Oct	768798	779023	776452	786158	797950	809919	822068	846915
Nov	784467	793645	792296	803230	815278	827507	839920	865307
Dec	862742	871369	871369	884440	897706	911172	924839	952793
Yearly	8967127	9158983	9053854	9127529	9264442	9403408	9544459	9832941
Yearly Growth Rate		2.14	-1.15	0.81	1.50	1.50	1.50	1.50

Month on Month Growth Rates								
Jan	3.20	-2.20	0.13	1.50	1.50	1.50	1.50	1.50
Feb	3.06	-2.06	0.25	1.50	1.50	1.50	1.50	1.50
Mar	3.46	-2.46	0.38	1.50	1.50	1.50	1.50	1.50
Apr	3.10	-2.10	0.50	1.50	1.50	1.50	1.50	1.50
May	2.26	-1.26	0.63	1.50	1.50	1.50	1.50	1.50
Jun	2.00	-1.00	0.75	1.50	1.50	1.50	1.50	1.50
Jul	1.83	-0.83	0.88	1.50	1.50	1.50	1.50	1.50
Aug	1.67	-0.67	1.00	1.50	1.50	1.50	1.50	1.50
Sep	1.50	-0.50	1.13	1.50	1.50	1.50	1.50	1.50
Oct	1.33	-0.33	1.25	1.50	1.50	1.50	1.50	1.50
Nov	1.17	-0.17	1.38	1.50	1.50	1.50	1.50	1.50
Dec	1.00	0.00	1.50	1.50	1.50	1.50	1.50	1.50

NB: That both 2010 and 2011 have been forecasted from the base year of 2009 with 2011 being a 1% growth on 2009.

Figure 6: - Forecasted 2010 & 2011 Monthly Values



These monthly figures have then been totalled up to get an Annual Energy forecasts which is considered as the Realistic forecast scenario.

Under this Realistic scenario the anticipated growth for 2010 is +2.14%, falling to -1.15% in 2011, before gradually returning to the normal steady growth rate of 1.5% in 2013 and continuing at this 1.5% growth rate in the subsequent years after that. It will be 2012 before the pre-recessionary 2007 Energy Production levels would be reached.

Due to the degree of uncertainty surrounding the economic outlook, SONI have also compiled an Optimistic scenario to reflect a situation where economic growth will be better than expected and a Pessimistic Scenario where economic growth would be lower than expected as described below.

Optimistic Scenario – Annual Energy Production

This scenario will assume that the economy will recover faster than some expect and hence growth would be higher than in the realistic scenario. Energy Production will therefore return to a steady growth rate over a shorter period, reaching a higher stabilised growth rate of 1.8% by the 2012. It will be 2012 before the pre-recessionary 2007 Energy Production levels would be reached.

Pessimistic Scenario – Annual Energy Production

This scenario will assume that the economy does not recover as fast as hoped and actually falls deeper into recession and hence growth would be lower than in the realistic scenario. Energy Production will therefore return to a steady growth rate over a longer period, reaching a lower stabilised growth rate of 1.2% by the 2014. It will be the 2016 before the pre-recessionary 2007 Energy Production levels would be reached.

Figure 7 below shows the predicted values of Annual Energy Production in future years under three various scenarios. The blue line depicts the forecast values if the Realistic Scenario discussed above were to occur. The red line depicts the Optimistic Scenario outlined above where the economy recovers sooner than some expect. The green line forecasts possible future peak demand values if economic conditions were to be possibly worse than expected as outlined in the Pessimistic Scenario.

Figure 8 and Figure 9 are tables showing the values of the predicted Annual Energy Production and the corresponding year on year & growths respectively.

From Figure 7 it can also be seen that that there is a double dip effect of the profile. This is in line with a double dip effect that some economists are now predicting. However, it should also be noted that the increase in the 2010 Energy Production forecast has been lifted due to the inclement weather during the first 4 months of 2010, and if this was not the case this double dip effect would not be as noticeable.

Figure 7 – Annual Energy Production Forecast

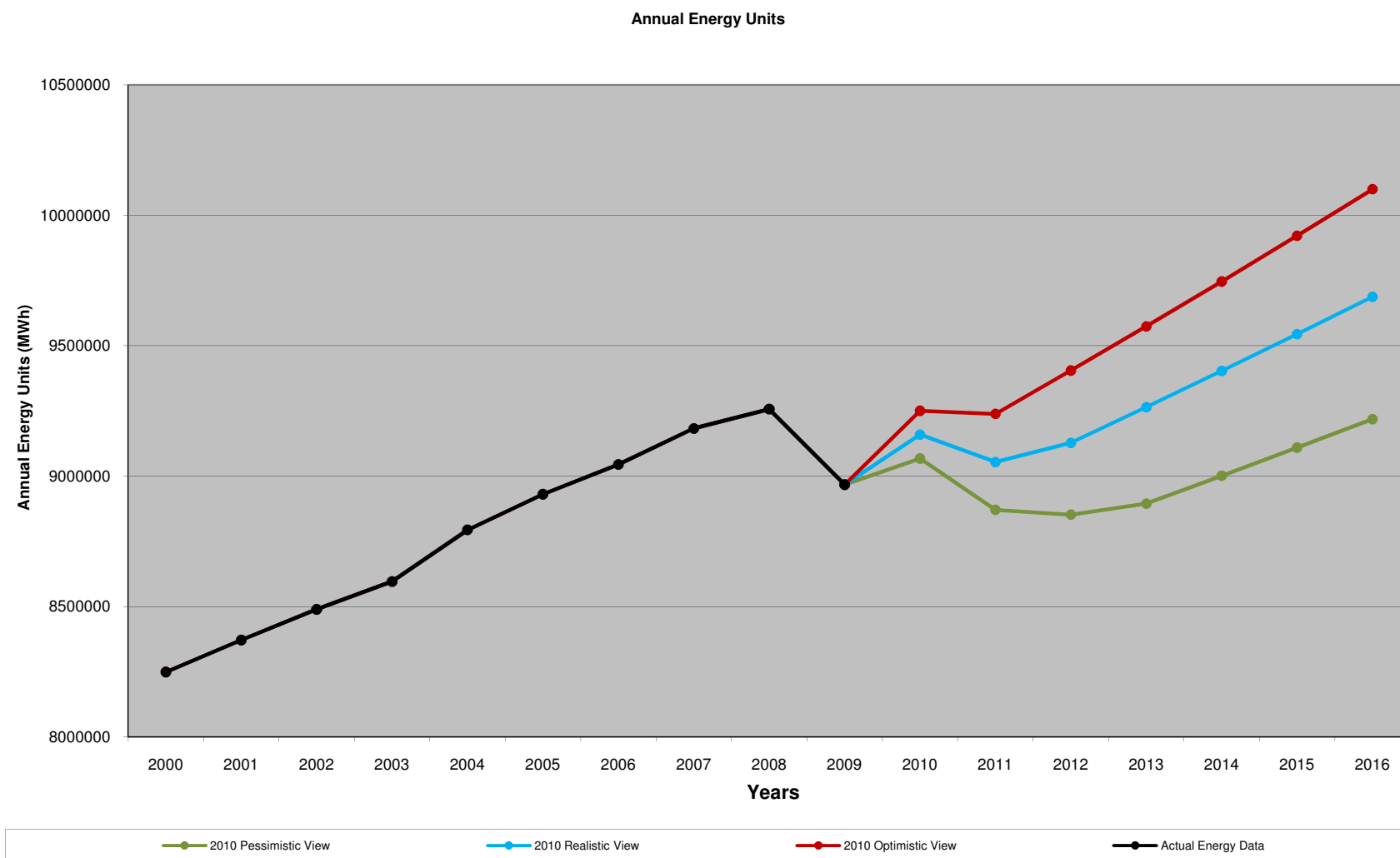


Figure 8 – Forecasted Annual Energy Production

	Forecast of Energy Demand (MW)							
	Actual 2009	2010	2011	2012	2013	2014	2015	2016
2010 Realistic Scenario	8967127	9158983	9053854	9127529	9264442	9403408	9544459	9687626
2010 Optimistic Scenario	8967127	9250573	9238547	9404841	9574128	9746462	9921898	10100493
2010 Pessimistic Scenario	8967127	9067393	8870631	8852002	8894492	9001226	9109240	9218551

Figure 9 - Forecasted Annual Energy Production Year on Year Growth Rates

	% Growth in Energy Demand Year on Year						
	2010	2011	2012	2013	2014	2015	2016
2010 Realistic Scenario	2.14	-1.15	0.81	1.50	1.50	1.50	1.50
2010 Optimistic Scenario	3.16	-0.13	1.80	1.80	1.80	1.80	1.80
2010 Pessimistic Scenario	1.12	-2.17	-0.21	0.48	1.20	1.20	1.20

Forecast of Future ACS Peak Demand

ACS Peak Demand Scenarios

1. Realistic Scenario – ACS Peak Demand

In this scenario it will be assumed that the ACS Peak Demand will grow in line with the 1% economic increase that is predicted by the end of 2010. This is expected to return to the normal 1.5 % growth rate by the 2013/14 winter as it is predicted that economic growth will have returned to pre-recession growth by this stage and continue on at this normal 1.5% growth year on year from then. It will therefore be the 2014/15 winter before the pre-recessionary 2007/08 ACS Peak Demand level would be reached.

2. Optimistic Scenario – ACS Peak Demand

This scenario will assume that the economy will recover faster than some expect and hence growth would be higher than in the realistic scenario. The ACS Peak Demand will therefore return to a steady growth rate in a shorter period, reaching a higher stabilised growth rate of 1.8% by the 2012/13 winter. It will therefore be the 2012/13 winter before the pre-recessionary 2007/08 ACS Peak Demand level would be reached.

3. Pessimistic Scenario – ACS Peak Demand

This scenario will assume that the economy does not recover as fast as hoped and actually falls deeper into recession and hence growth would be lower than in the realistic scenario. The ACS Peak Demand will therefore return to a steady growth rate over a longer period, reaching a lower stabilised growth rate of 1.2% by the 2014/15 winter. It will therefore be the 2016/17 winter before the pre-recessionary 2007/08 ACS Peak Demand level would be reached.

Figure 10 shows the predicted values of ACS Peak Demand in future years under three various scenarios. The blue line depicts the forecast values if the Realistic Scenario discussed above were to occur. The red line depicts the Optimistic Scenario outlined above where the economy recovers sooner than some expect. The green line forecasts possible future peak demand values if economic conditions were to be possibly worse than expected as outlined in the Pessimistic Scenario.

Figure 11 and Figure 12 are tables showing the values of the predicted ACS Peak Demand and the corresponding year on year & growths respectively.

Figure 10 - ACS Seven Year Peak Demand Forecast

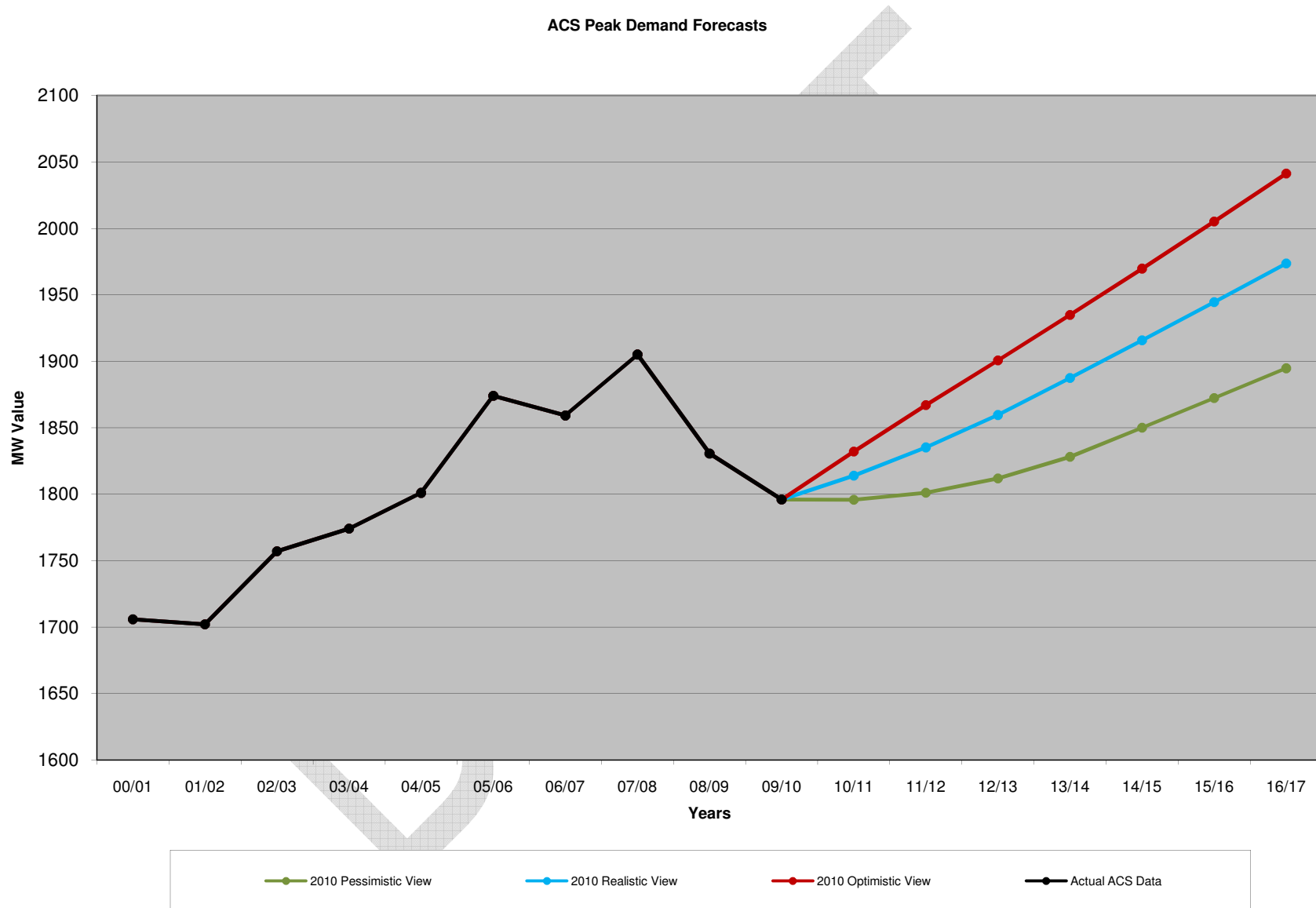


Figure 11 – Forecasted ACS Peak Demand

	Forecast of ACS Peak Demand (MW)							
	Actual 2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
2010 Realistic Scenario	1796	1814	1835	1860	1887	1916	1945	1974
2010 Optimistic Scenario	1796	1832	1867	1901	1935	1970	2005	2041
2010 Pessimistic Scenario	1796	1796	1801	1812	1828	1850	1872	1895

Figure 12 - Forecasted ACS Peak Demand Year on Year Growth Rates

	% Growth in ACS Peak Demand Year on Year						
	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
2010 Realistic Scenario	1.00	1.17	1.33	1.50	1.50	1.50	1.50
2010 Optimistic Scenario	2.01	1.91	1.80	1.80	1.80	1.80	1.80
2010 Pessimistic Scenario	-0.01	0.29	0.60	0.90	1.20	1.20	1.20

Forecast Approval by the Utility Regulator for Northern Ireland (UREGNI)

This forecast has been discussed with the Utility Regulator for Northern Ireland. They have agreed with rationale and methodology used in compiling the forecasts.

Economic statistics sourced from the following publications:

First Trust Bank Economic Outlook & Business Review, June 2010

Northern Bank Quarterly Economic Overview, April 2010

Northern Bank Quarterly forecasts, Quarter 2: 2010

Ulster Bank NI Quarterly Economic Review & Outlook June 2010

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