

D-Factor Submission for Costs & Revenue Forgone 2011-2012 Report to the AER

January 2013



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1 Introduction

This submission has been prepared under the D-factor scheme applied to Ausgrid by the AER in the 2010 regulatory determination. Under Appendix K of the AER's final decision for NSW distributors, Ausgrid is required to follow the same reporting requirements for the D-factor scheme as stated within clause 11.1 of IPART's 2004 final determination. Clause 11.1 requires Ausgrid to submit information to the AER concerning demand management measures undertaken in the previous financial year. The information will be used to calculate the annual D-factor adjustment to the weighted average price cap formula.

Accordingly, our submission details non-tariff demand management measures undertaken by Ausgrid in the 2010/11 financial year. Our estimates of costs and foregone revenue have been calculated in accordance with the IPART guidelines attached to Appendix C of the AER's Demand Management Incentive Scheme. This includes IPART's guidelines for the calculation of avoided distribution costs, the methodology for estimating foregone revenue and IPART's assessment of partial demand management.

2 Summary of Submission

There were seven non-tariff demand management projects for which we incurred costs or revenue foregone in 2011/12. Ausgrid's submission identifies claimable costs incurred of \$1.94m and foregone revenue totalling \$253,005, resulting in a D factor pass through claim of \$2.67m.

This submission is arranged by project. For each project, the following information is included:

- A description of the DM project undertaken, including the target capital and operating costs to be deferred and the decision making process followed.
- Details of the costs incurred in 2011/12.
- Calculation of avoided network cost cap applicable to the 2011/12 claim, based on the avoided network costs anticipated at the time of the decision to undertake the DM project.
- Estimate of revenue foregone in 2011/12 due to the DM project.
- Details of relevant assumptions and methodologies underlying these estimates.

3 Methodologies & Assumptions

The following methodologies and assumptions for calculation of avoided costs and foregone revenue are used for all projects unless specifically noted otherwise.

Actual costs incurred are collected by project in the Ausgrid financial system. The amounts claimed are those actually booked to each project in the applicable year. Costs include development and implementation costs, project management and other directly related costs, but exclude costs related to DM investigations.

The methodology for estimating avoided costs is according to the IPART guidelines, based on the expected costs of network projects at the time of deciding to implement the DM alternative, as documented in the relevant planning documents of the time. The value is expressed as a present value in 2011/12 dollars based on anticipated real cashflows and a real discount rate of 7.47%.

Several projects active in 2011/12 are being undertaken on the basis of reducing load at risk with the calculation of avoided distribution costs based on the apportioning model endorsed by IPART in February 2007. Under this methodology, the ADC cap attributable to a project is based on the expected reduction in load at risk resulting from the project. Where the project expenses are due to project development costs, and the project details are not final, this has been estimated based on the results of the investigation. The ADC proportion will be recalculated when the project is fully developed and authorised and the revised ADC proportion identified in future D-factor claims. Details of this methodology may be found in the IPART document '*Tribunal 2007 Preliminary Assessment of Methodology for Apportioning Avoided Distribution Costs under the D-Factor Mechanism - 2004 Determination - February 2007*'

Where avoided cost caps have been determined in previous years, that amount remaining under the cap is calculated by subtracting the costs claimed against the cap in 2010/11 and grossing up the residual to 2011/12 dollars using the nominal rate of return of 10.02%.

The methodologies for assessing foregone revenue are based on a detailed assessment of the impacts on quantities at each individual customer site. The generalised method used for power factor correction projects is common to all projects of this type and is detailed in Appendix 1.

The method for assessing the energy efficiency projects involves an engineering assessment of the change in all relevant tariff quantities that might be affected by the measures undertaken at each site.

For each measure at each site, actual monthly billing data is collected. Actual measured quantities for each month after installation are then adjusted to account for the calculated impact of the measure implemented to determine what the quantities would have been in the absence of the measure. The differences in each month are then multiplied by the applicable DUOS price components to arrive at the foregone revenue for the year.

4 Project 1 – Wollombi Generator Extension 2

This project involved a further extension of the original Wollombi generator project for up to six years. It provides support to a long rural feeder by reducing demand at times of high load. It was included in the previous D-factor submission.

4.1.1 2011/12 Costs

In FY 2011/12 the costs for this project were **\$277,660**.

4.1.2 Anticipated Avoided Network Costs

The value of avoided network costs was calculated in last year's submission in 2010/11 dollars. The costs claimed against that amount are subtracted and the remainder brought forward as a new cost cap. This amount is grossed up to 2011/12 dollars by the nominal rate of 10.02%.

2010/11 avoided cost cap	\$0
2010/11 costs claimed	\$276,630
Residual cap (\$2010/11)	\$0
Residual cap (\$2011/12)	\$0

The value of avoided network costs relevant to 2011/12 costs is calculated as **\$0**.

4.1.3 Foregone Revenue – 2011/12

No foregone revenue is claimed.

5 Project 2 – Greenacre DM Project

This program focused on reducing load at risk at Greenacre Park Zone Substation in summer 2011/12. It consists of a network support contract with customer standby generators, and a relatively small customer power factor correction program. It was included in the previous D-factor submission. The program was completed in 2011/12.

5.1.1 2011/12 Costs

In FY 2011/12 the costs for the project were **\$639,720**.

5.1.2 Anticipated Avoided Network Costs

The value of avoided network costs was calculated in last year's submission in 2010/11 dollars. The costs claimed in 2010/11 against this amount have been subtracted and the remainder brought forward as a new cost cap. This amount is grossed up to 2011/12 dollars by the nominal rate of 10.02%.

2010/11 avoided cost cap	\$4,701,081
2010/11 costs claimed	\$83,143
Residual cap (\$2010/11)	\$4,617,938
Residual cap (\$2011/12)	\$5,080,655

The value of avoided network costs relevant to 2011/12 costs is calculated as **\$5,080,655**.

5.1.3 Foregone Revenue

Foregone revenue is based on the reduction in customer's bills due to installation of power factor correction equipment. The calculated revenue foregone in 2011/12 for this project is **\$140,708**.

6 Project 3 - Terrey Hills PFC & Generator Project

This program consisted of two elements - installation of 3MW of embedded relocatable generators and a customer power factor correction (PFC) program. The objective was to reduce demand on the 33kV network supplying Terrey Hills and several other zone substations from Sydney East subtransmission substation (STS) in winter 2009, enabling the deferral of an investment in a new 33kV feeder to Terrey Hills Zone Substation by one year. It was included in the previous D-factor submission. The program was completed in 2009/10.

6.1.1 2011/12 Costs

In FY 2011/12 the costs for these projects were **\$0**.

6.1.2 Anticipated Avoided Network Costs

The value of avoided network costs was calculated in last year's submission in 2010/11 dollars. The costs claimed in 2010/11 against this amount have been subtracted and the remainder brought forward as a new cost cap. This amount is grossed up to 2011/12 dollars by the nominal rate of 10.02%.

2010/11 avoided cost cap	\$102,261
2010/11 costs claimed	\$0
Residual cap (\$2010/11)	\$102,261
Residual cap (\$2011/12)	\$112,508

The value of avoided network costs relevant to 2011/12 costs is calculated as **\$112,508**.

6.1.3 Foregone Revenue

The calculated revenue foregone in 2011/12 for this project is **\$7,518**.

7 Project 4 – Willoughby STS DM Project

This program consisted of two elements – a non-dispatchable network support agreement with a gas-fired cogeneration site, and a customer power factor correction program. The objective was to reduce demand on Willoughby Subtransmission Substation (STS) by 2.6MVA in summer 2010/11. It was included in the previous D-factor submission.

This is Stage 2 of a two year project.

7.1.1 2011/12 Costs

In FY 2011/12 the costs for the project were **\$3,946**.

7.1.2 Anticipated Avoided Network Costs

The value of avoided network costs was calculated in last year's submission in 2010/11 dollars. The costs claimed in 2010/11 against this amount have been subtracted and the remainder brought forward as a new cost cap. This amount is grossed up to 2011/12 dollars by the nominal rate of 10.02%.

2010/11 avoided cost cap	\$1,755,980
2010/11 costs claimed	\$98,590
Residual cap (\$2010/11)	\$1,657,390
Residual cap (\$2011/12)	\$1,823,460

The value of avoided network costs relevant to 2011/12 costs is calculated as **\$1,823,460**.

7.1.3 Foregone Revenue

Foregone revenue is based on the reduction in customer's bills due to installation of power factor correction equipment. The calculated revenue foregone in 2011/12 for this project is **\$92,397**.

8 Project 5 - North West Pennant Hills DM Project

This program consists of installation of between 0.4MVA & 1.0MVA of temporary diesel generators in the summer season over a five year period. The objective is to maintain network performance in the North West Pennant Hills area, enabling the deferral of a proposed \$3.8m in laying new 11kV cable from Pennant Hills Zone Substation to an area north of Cherrybrook. The program completed in summer 2011/12 was the second stage of a five year program.

In February 2010 we identified that load on the 11kV network supplied from Pennant Hill Zone Substation was driving the need for a proposed investment in new cable works estimated to cost \$3.8m.

Analysis showed that a demand reduction of up to 1.0MVA in the North West Pennant Hills load area would enable the need for the investment to be deferred for five years.

A DM investigation carried out in 2010 found that the installation of a relocatable generator by would be a feasible option to reduce demand by 1.0MVA, and development of this option was commenced.

The embedded generator project involved the installation of one 500kVA diesel generator in summer 2011/12 connected to an 11kV feeder and dispatchable from our control room. By operating the generators during times of peak demand, the load on the 11kV network in the North West Pennant Hills area could be reduced.

Future stages will involve the installation of one 800kVA generator in summer 2012/13 & 2013/14, and one 1.0MVA generator in summer 2014/15.

The estimated cost for the generator project was \$1.47m.

8.1.1 2011/12 Costs

In FY 2011/12 the costs for these projects were **\$127,789**.

8.1.2 Anticipated Avoided Network Costs

The value of avoided network costs was calculated in last year's submission in 2010/11 dollars. The costs claimed in 2010/11 against this amount have been subtracted and the remainder brought forward as a new cost cap. This amount is grossed up to 2011/12 dollars by the nominal rate of 10.02%.

2010/11 avoided cost cap	\$1,438,262
2010/11 costs claimed	\$477,390
Residual cap (\$2010/11)	\$960,872
Residual cap (\$2011/12)	\$1,057,151

The value of avoided network costs relevant to 2011/12 costs is calculated as **\$1,057,151**.

8.1.3 Foregone Revenue

The calculated revenue foregone in 2011/12 for this project is **\$0**.

9 Project 6 - Medowie DM Project

This program consists of installation of 5.0MVA of temporary diesel generators and 62kVA of power factor correction in the summer seasons of 2011/12 & 2012/13. The objective is to reduce load at risk in the Medowie area, prior to the construction of the new Medowie Zone Substation.

In July 2010 we identified that load in the Medowie area was driving the need for a proposed investment in new Medowie zone substation, at an estimated cost of \$22.2m.

Analysis showed that, whilst it wasn't reasonable to expect that the investment could be deferred by a demand reduction, it was likely to be cost effective to reduce load at risk via demand management options in summers 2011/12 & 2012/13, prior to commissioning of the new zone substation.

A DM investigation carried out in 2011 found that the installation of relocatable diesel generators would be a feasible option to reduce demand by 5.0MVA, plus a power factor correction program of up to 62kVA. Development of these options was commenced.

The embedded generator project involves the installation of four 1.25MVA diesel generator in summer 2011/12 connected at two separate 11kV feeder locations, which are dispatchable from the Ausgrid control room. By operating the generators during times of peak demand, the load on the 11kV network in the Medowie area can be reduced. In addition, a program will be conducted to encourage commercial/industrial customers to install power factor correction equipment, which will reduce demand by approximately 62kVA.

In the second stage, the four 1.25MVA generators will be installed again in the summer peak period for 2012/13.

The estimated cost for the project is \$2.738m.

9.1.1 2011/12 Costs

In FY 2011/12 the costs for these projects were **\$1,027,001**.

9.1.2 Anticipated Avoided Network Costs

The value of avoided network costs was calculated in last year's submission in 2010/11 dollars. The costs claimed in 2010/11 against this amount have been subtracted and the remainder brought forward as a new cost cap. This amount is grossed up to 2011/12 dollars by the nominal rate of 10.02%.

2010/11 avoided cost cap	\$2,414,608
2010/11 costs claimed	\$64,103
Residual cap (\$2010/11)	\$2,350,505
Residual cap (\$2011/12)	\$2,586,026

The value of avoided network costs relevant to 2011/12 costs is calculated as **\$2,586,026**.

9.1.3 Foregone Revenue

The calculated revenue foregone in 2010/11 for this project is **\$1,456**.

10 Project 7 - East Maitland DM Project

This program consists of installation of up to 5.0MVA of temporary diesel generators and 200kVA of power factor correction in the summer seasons of 2011/12 & 2012/13. The objective is to reduce load at risk in the East Maitland area, prior to the construction of the replacement East Maitland Zone Substation. This replacement project has recently been renamed as the "Metford Zone Substation".

In December 2010 we identified that load in the East Maitland area was driving the need for a proposed investment in new/replacement zone substation, at an estimated cost of \$20.1m.

Analysis showed that, whilst it wasn't reasonable to expect that the investment could be deferred by demand reduction, it was likely to be cost effective to reduce load at risk via demand management options in summers 2011/12 & 2012/13, prior to commissioning of the new zone substation.

A DM investigation carried out in 2011 found that the installation of relocatable diesel generators would be a feasible option to reduce demand by up to 5.0MVA, plus a power factor correction program of up to 200kVA. Development of these options was commenced.

The embedded generator project involves the installation of four 1.25MVA diesel generator in summer 2011/12 connected at an 11kV feeder location, which are dispatchable from the Ausgrid control room. By operating the generators during times of peak demand, the load on the 11kV network in the East Maitland area can be reduced. In addition, a program will be conducted to encourage commercial/industrial customers to install power factor correction equipment, which will reduce demand by approximately 200kVA.

In the second stage, the five 1.25MVA generators will be installed again in the summer peak period for 2012/13. The estimated costs for the project are \$2.160m.

During the project development stage, in September 2011, Ausgrid completed the annual revision of the demand forecasts in the Hunter Region. Resulting from this, and including some changes in expected spot loads from a large commercial site in the East Maitland area, it was concluded that we no longer expected to have load at risk in summer 2011/12 & 2012/13. A decision was therefore made in to cancel the proposed demand reduction program.

Prior to the revision of the demand forecast, it was reasonable for Ausgrid to develop the demand reduction projects in the expectation that it would benefit our customers by reducing load at risk. The project development costs incurred prior to the withdrawal by the customer in 2011/12 were \$143,334.

10.1.1 2011/12 Costs

In FY 2011/12 the costs for these projects were **\$143,334**.

10.1.2 Anticipated Avoided Network Costs

The value of avoided network costs was calculated in last year's submission in 2010/11 dollars. The costs claimed in 2010/11 against this amount have been subtracted and the remainder brought forward as a new cost cap. This amount is grossed up to 2011/12 dollars by the nominal rate of 10.02%.

2010/11 avoided cost cap	\$1,552,946
2010/11 costs claimed	\$19,992
Residual cap (\$2010/11)	\$1,532,954
Residual cap (\$2011/12)	\$1,686,556

The value of avoided network costs relevant to 2011/12 costs is calculated as **\$1,686,556**.

10.1.3 Foregone Revenue

The calculated revenue foregone in 2011/12 for this project is **\$10,926**.

11 Summary of D-Factor Pass Through Claim

Project	Avoided Cost Cap	Costs 2011/12	Claim	Foregone Revenue 2011/12
Wollombi embedded generator ext 2		\$277,660		
Greenacre DM Project	\$5,080,655	\$639,720	\$639,720	\$140,708
Terrey Hills PFC & Generation	\$112,508			\$7,518
Willoughby STS DM Project	\$1,823,460	\$3,946	\$3,946	\$92,397
NW Pennant Hills Generation	\$1,057,151	\$127,789	\$127,789	
Medowie DM Project	\$2,586,026	\$1,027,001	\$1,027,001	\$1,456
East Maitland DM Project	\$1,686,556	\$143,334	\$143,334	\$10,926

Total	\$12,346,356	\$2,219,450	\$1,941,790	\$253,005
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Plus 2010/11 Independent review			\$12,425	
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Plus Foregone Revenue			\$253,005	
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Total D Factor Claim amount	\$2011/12		\$2,207,220	
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nominal rate of return	10.02%			
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Time Value of money	to year t (2013/14)		\$464,487	
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Total Claimed	\$2013/14		\$2,671,707	
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Appendix A: Methodology for estimating foregone revenue from power factor correction projects

The following describes the method used to calculate foregone revenue for power factor correction projects:

- The key quantities are the monthly capacity components, measured in kVA. It is assumed that no change in kWh quantities will result from these projects.
 - A 12 month profile of monthly maximum kVA demand and corresponding power factor collected for the initial assessment and selection of target customers (and hence prior to the installation of PFC), for each of the appropriate time periods considered in the applicable tariff structure, is stored for each individual supply ultimately corrected.
 - This 12 month profile of metered power factors prior to correction will be assumed to be the power factor profile that would otherwise exist on a supply over future 12month periods, in the absence of the operation of PFC (base power factor).
 - For each 12 month period of claim for foregone revenue, the actual monthly maximum kVA and corresponding kW and power factor for each of the periods considered in the tariff structure applicable in the year of claim will be collected for each supply corrected under a PFC program.
 - The monthly kW readings at max kVA will be divided by the corresponding monthly base power factor to determine an estimate of the “without PFC” max kVA demand in the absence of PFC.
 - The foregone Capacity component is calculated by setting the actual billed Capacity amount(s) (in kVA) at the time of installation as a baseline and using the “without PFC” max monthly kVA numbers to reconstruct the “without PFC” Capacity amount for each month. The actual Capacity amounts billed after the installation of PFC are subtracted from these calculated amounts. Allowance is made for the timing of any capacity reset applied to the account. This difference is multiplied by the appropriate Capacity Charge for each month over the 12month period assessed, for each NMI.
 - The total foregone revenue for PFC is equal to the foregone Capacity component.
 - Note that there is no TUOS component included in the prices used for the calculation.
-