DIRECTLINK JOINT VENTURE

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23 September 2005

Mr Warwick Anderson
Acting General Manager, Access Branch
Australian Energy Regulator
470 Northbourne Avenue
CANBERRA ACT 2600

Dear Warwick

Re: Application for Conversion to a Prescribed Service and a Maximum Allowable Revenue to June 2015

The Directlink Joint Venturers provided an interim response to the Intelligent Energy Systems ('**IES**') report *Directlink Conversion Application – Review of interregional market benefits* of 26 April 2005 on 18 May 2005. In our letter, we indicated that we have been working with the AER staff and IES to conduct additional modelling requested by the AER staff to examine, in particular, historical and short run marginal cost bidding scenarios with updated [2005] inputs. While we have presented the modelling results progressively over the past few months, we take this opportunity to present them all together.

TEUS's modelling results

Attachment 1 contains a report from TransÉnergie US ('**TEUS**') that sets out the additional scenarios it modelled, its updated inputs and its results. We have collated salient results of TEUS's original and additional modelling in Table 1.

Table 1

INTER-REGIONAL MARKET BENEFITS OF DIRECTLINK'S ALTERNATIVE PROJECTS ($M)

			Alt. 0	Alt. 1	Alt. 2	Alt. 3	Alt. 5
Bidding strategy	Topology with NNSW subregion	Gen. cost & project inputs	Inter-regional benefits	Inter-regional benefits	Inter-regional benefits	Inter-regional benefits	Inter-regional benefits
LRMC	No	2004	135.1	135.1	135.1	7.8	0.0
LRMC	Yes	2004	116.7	116.7	116.7	No calc.	0.0
Historical	Yes	2005	69.4	69.4	69.4	-7.7	0.0
SRMC	No	2004	57.3	57.3	57.3	4.1	0.0
SRMC	Yes	2005	45.9	45.9	45.9	No calc.	0.0

Sources: TEUS, *Supplementary Report*, 15 September 2004, *Response to IES Questions of October 25, 2004*, 20 January 2005, and *Summary of Additional Modelling and Results*, 22 September 2005.

Note: TEUS conducted its original modelling using new entrant generation costs and committed projects using the most recently published material available when the modelling was conducted in 2004. TEUS conducted its additional modelling using update material available in 2005. All results in this table relate to cases in which the forecast value of USE is $29,600 per MWh, the discount rate is 9%, and economic growth is as expected. Results are given as net present values in July 2005 dollars.

IES finds TEUS's methodology and results to be reasonable and reliable

From our recent interaction with AER staff and IES, we understand that IES has now thoroughly investigated TEUS's modelling methodology—which TEUS also used for its original modelling—and the results of its additional modelling, and that IES finds them to be reasonable and reliable.

As Table 1 demonstrates and, as indicated in its attached report, TEUS's additional modelling results are consistent with the results of its original modelling that we presented in our September 2004 conversion application and subsequent advice. This should provide the AER with a good degree of confidence that the results of the original modelling are also reasonable and reliable for the scenarios they represent.

More detailed interpretation and our response to the next IES report

To enable the AER to progress with its draft decision more quickly, we have confined this letter to being a presentation of the information already provided to the AER, which includes only a limited level of interpretation. For the same reason, the AER will not give us access to IES's formal report on the TEUS additional modelling results until after the AER publishes its draft decision on our conversion application.

We appreciate the AER's efforts to expedite this matter. However, we reserve our right to provide a more detailed interpretation of the TEUS results and respond more fully to the IES report when it and the draft decision become available to us.

Value of unserved energy

The results of TEUS's additional modelling confirm again the importance of selecting a sound estimate of the value of unserved energy. As we have submitted previously[1], unserved energy can be reasonably valued at $29,600 per MWh for the purposes of transmission planning—and applications of the Regulatory Test, in particular.

In support of this view, the Directlink Joint Venturers note that the AER's current Regulatory Test highlights the need to recognise the value of reductions in lost load using a reasonable forecast of the value of electricity to consumers.[2] VENCorp's current forecast is $29,600 per MWh.[3] VENCorp and other TNSPs have used this forecast for recent applications of the Regulatory Test for transmission develops across Australia.[4] The Directlink Joint Venturers support VENCorp's forecast and

[1] Directlink Joint Venturers, *Response to stakeholder issues*, 24 August 2004, pp. 14-16; and *Application for Conversion to a Prescribed Service and a Maximum Allowable Revenue to June 2015*, p. 42.

[2] Australian Energy Regulator, *Compendium of Electricity Transmission Regulatory Guidelines*, August 2005, p. 34.

[3] VENCorp, *Response to Submissions: Final Report – Value of Unserved Energy to be used by VENCorp for Electricity Transmission Planning*, 23 May 2003.

[4] For example in: VENCorp, *Application Notice, New Large transmission network asset, Additional 500/220 kV transformation to support western metropolitan Melbourne and Geelong area load growth*, August 2005, p. 9; and TransGrid & Powerlink Queensland, *Benefits of upgrading the capacity of the Queensland – New South Wales Interconnector (QNI), A preliminary assessment*, 19 March 2004, p. 27.

continue to submit that $29,600 per MWh is the most credible forecast of the value of unserved energy, and it should form the basis of our credible scenarios.

Further, as stated in its report on Directlink, IES also concurs that $29,600 per MWh is a fair estimate of the value of unserved energy for our study.[5]

We have appreciated the cooperation of the AER staff and IES as TEUS has conducted its recent work.

I trust that this letter draws together the material that has been presented to the AER over recent months and confirms the ability of Directlink's Alternative Projects 0, 1 and 2 to provide significant inter-regional market benefits.

Yours sincerely

Dennis Stanley
Directlink Joint Venture Manager

Encl.

[5] IES, *Directlink Conversion Application – Review of interregional market benefits*, 26 April 2005, pp. 28-9.

ATTACHMENT 1

TransÉnergie US, *Summary of Additional Modelling and Results*, 22 September 2005.

September 22, 2005

Directlink's Alternative Projects' Inter-regional Market Benefits

Summary of Additional Modeling and Results

Prepared for

Allen Consulting Group

By

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Table of Contents

1 Executive Summary

TransEnergie US Ltd. (TEUS) has completed, at the request of the Australian Competition and Consumer Commission (recently reorganized as the Australian Energy Regulator, or AER), the analysis of Directlink's alternative projects' inter-regional market benefits for for seven additional scenarios, with the same modelling methodology used to complete the analyses submitted in September 2004, and using several revised or updated assumptions proposed by Intelligent Energy Systems (IES) and agreed upon by the Directlink Joint Venturers (DJV). The revised assumptions include:

- recent generation developments
- network topology
- historical bidding strategies
- market entry costs

TEUS developed the historical bidding strategies by region and generator type (baseload, base-mid, intermediate and peaker) to calibrate the resulting Prosym hourly prices to closely reproduce target 2005 price duration curves provided by IES.

To eliminate the possibility of spurious differences between the Prosym results for With Directlink and Without Directlink runs caused by changes in the random forced outages between the runs, TEUS arranged the Prosym input files to ensure outages were synchronized between all With and Without simulations.

The results of the additional scenarios with the revised modelling input assumptions are shown I in Table 1:

Table 1

Summary of Additional Scenario Results

			$10,000 Value of USE			**$29,600 Value of USE**		
Discount Rate	**9%**		Load Growth			Load Growth		
Alternative	Bidding	Market Entry Cost	High	Medium	Low	High	Medium	Low
0,1,2	Historical	90% 2005 ACIL Tasman		79,857			76,844	
0,1,2	Historical	100% 2005 ACIL Tasman	174,063	40,429	22,834	156,789	69,413	25,702
0,1,2	Historical	110% 2005 ACIL Tasman		15,914			75,606	
0,1,2	SRMC	100% 2005 ACIL Tasman		43,967			45,868	
3	Historical	100% 2005 ACIL Tasman		(2,612)			(7,731)	
Discount Rate	**7%**		Load Growth			Load Growth		
Alternative	Bidding	Market Entry Cost	High	Medium	Low	High	Medium	Low
0,1,2	Historical	90% 2005 ACIL Tasman		156,011			153,001	
0,1,2	Historical	100% 2005 ACIL Tasman	301,455	46,409	23,817	275,535	87,140	25,216
0,1,2	Historical	110% 2005 ACIL Tasman		23,250			102,524	
0,1,2	SRMC	100% 2005 ACIL Tasman		40,423			44,227	
3	Historical	100% 2005 ACIL Tasman		(3,718)			(11,006)	
Discount Rate	**11%**		Load Growth			Load Growth		
Alternative	Bidding	Market Entry Cost	High	Medium	Low	High	Medium	Low
0,1,2	Historical	90% 2005 ACIL Tasman		35,060			32,076	
0,1,2	Historical	100% 2005 ACIL Tasman	94,035	36,750	20,991	82,308	57,923	24,556
0,1,2	Historical	110% 2005 ACIL Tasman		11,368			57,580	
0,1,2	SRMC	100% 2005 ACIL Tasman		42,154			42,989	
3	Historical	100% 2005 ACIL Tasman		(1,884)			(5,578)	

Comparing the additional scenario results with the original results submitted in September 2004, TEUS makes several observations:

- the results of the additional scenarios are consistent with the original results when similar scenarios are compared

- the results of the Historical Bidding scenarios lie generally between the original SRMC Bidding and LRMC Bidding scenarios when similar scenarios are compared

TEUS understands that IES, after reviewing these results and following up with TEUS to clarify any questions regarding inputs, methodology, and detailed model outputs, will be preparing a report to the AER indicating that the metholodgy used by TEUS, and results of the analysis of the additional scenarios are reasonable and appropriate for use by the Australian Energy Regulator (AER), in the application of the Regulatory Test to Directlink and its alternative projects.

In completing the analysis of the additional scenarios, the methodology was unchanged. Only input assumptions were altered or updated — in particular, assumptions regarding network topology, generation developments, market entry costs, and generator bidding strategies.

The original September 2004 results for Alternatives 0-1-2, and the January 2005 revised results for Alternative 3 therefore still provide valid and useful information as scenarios reflecting different, but still reasonable, assumptions. These results, including in particular the LRMC bidding scenario results, can further helpfully inform the AER's determination of the Directlink Alternative Projects' market benefits.

2 Background

In September 2004, TEUS evaluated the inter-regional market benefits provided by Directlink's alternative projects, the results of which the Directlink Joint Venture (DJV) submitted to the Australian Competition and Consumer Commission (ACCC) in support of the DJV's conversion application. The TEUS analysis considered a number of scenarios, including high, medium, and low load growth, and two different generator bidding strategies (based on short run marginal cost and a proxy for long run marginal cost) For this analysis, TEUS employed the same approach that it had used for the market benefits analysis that the ACCC accepted when it granted regulated status to Murraylink in 2003.

The ACCC engaged Intelligent Energy Systems (IES) to review the TEUS modelling methodology and assumptions, and comment on the suitability of the TEUS analysis of Directlink's interregional market benefits for use in applying the Regulatory Test to Directlink and the Alternative Projects. IES identified several issues that it believed merited further investigation before it would support the results as meeting the needs of the Regulatory Test. The issues included:

- a generator bidding strategy that replicated recent historical bidding behavior
- network topology
- market entry generation costs.

In April 2005, the DJV agreed to the ACCC's request to conduct additional modelling using revised inputs to address IES' comments.

To facilitate IES's review of TEUS's additional modelling results, TEUS and IES conducted a model benchmarking process in which both groups separately estimated Directlink's market benefits using their respective modelling tools and agreed input assumptions that were as similar as possible given the differences in the models' requirements. The results of the two models were compared in detail for a "base case" scenario.

Throughout the benchmarking and review process, IES and TEUS communicated (in writing and through telephone conference calls) to clarify assumptions and methodologies, and to give explanations for any differences in results.

TEUS understands that IES agrees that the benchmarking was successfully completed and considers that TEUS's metholodgy and results are reasonable and appropriate for use by the Australian Energy Regulator (AER), in the application of the Regulatory Test to Directlink and its alternative projects.

3 Description of Additional Scenarios

The AER requested that the DJV have TEUS calculate the market benefits for seven additional scenarios, using updated assumptions agreed by IES. The seven scenarios are described in Table 2.

Table 2

Description of Supplemental Scenarios					
Supplemental Scenario Name		Alternative Project	Bidding Strategy	Load Growth	Market Entry Costs
1	Base Case	0,1,2	Historical	Medium	2005 ACIL Tasman
2	High Growth	0,1,2	Historical	High	2005 ACIL Tasman
3	Low Growth	0,1,2	Historical	Low	2005 ACIL Tasman
4	High ME Cost	0,1,2	Historical	Medium	110% of 2005 ACIL Tasman
5	Low ME Cost	0,1,2	Historical	Medium	90% of 2005 ACIL Tasman
6	SRMC Bidding	0,1,2	SRMC	Medium	2005 ACIL Tasman
7	Alt3	3	Historical	Medium	2005 ACIL Tasman

A discussion of the agreed upon assumptions and the methodology used to calculate market benefits for the additional scenarios is presented below in Sections 4 and 5.

4 Summary of Inputs and Assumptions

4.1 Prosym Topology and NSW-NNSW Intraregional Constraints

TEUS's original network topology used in the Prosym model represented New South Wales as three subregions: Buronga, Wagga, and the rest of NSW. NNSW was not included as a separate Prosym region. Consequently, the original Prosym topology did not represent the intraregional constraint between the central part of NSW and northern NSW, which limits northward flows to 1200 MW. In response to a question from IES, TEUS demonstrated in January 2005 that the recognition of a northern NSW region subregion made little difference to our estimate of inter-regonal benefits.[1]

However, as agreed with the AER, TEUS included a northern NSW subregion in the Prosym simulations for the additional modeling, and the transfer limits between NSW and NNSW were explicitly modelled. TEUS developed hourly load traces for the subregion following the methodology described in the TEUS's September 15, 2004 report[2] and January 18, 2005 report using historical hourly loads provided by Country Energy. TEUS also developed a forecast of peak demand and annual energy for northern NSW from information contained in the TransGrid "New South Wales Annual Planning Report 2003".

4.2 Historical Bidding Strategy

In the analyses TEUS submitted in September 2004, two different generator bidding strategies – SRMC and LRMC – were simulated. The SRMC bids were developed from the 2003 ACIL Tasman report, "SRMC and LRMC of Generators in the NEM". Consistent with the approach used in TEUS's earlier work for Murraylink's conversion application, TEUS developed LRMC proxy prices for existing generators by adding $20/MWh to each generator's SRMC[3].

When the AER requested additional modelling scenarios that used historical bidding strategies, TEUS developed them in a manner described in Section 5.2 of this report.

[1] TEUS, "Response to IES Questions of October 25, 2004", pages 2-5.
[2] TEUS, "Supplementary Report on Directlink's Alternative Projects' Inter-Regional Market Benefits", pages 4-5.
[3] TEUS, "Estimation of Directlink's Alternative Projects' Inter-regional Market Benefits", April 2004, page 17.

4.3 Market Entry Generation Cost

The September 2004 TEUS analysis used capital and O&M costs for market entry generation derived from the ACIL Tasman 2003 report and the Inter-regional Planning Committee's SNI Stage 1 Report[4].

After TEUS conducted its modeling and before IES finished its report on Directlink, NEMMCO published the 2005 ACIL Tasman Report[5], which provided new estimates of annualized generator costs. The 2005 ACIL Tasman Report appears to reflect a (potentially temporary) softening of generator capital costs in real terms, probably due to the recent firming of the AUD/USD exchange rate. It also reflects different assumptions with regard to generators' WACC, asset lives, and depreciation than those in the SNI Stage 1 Report and those in IES's own report on SNI[6].

For the additional modeling, the DJV agreed that TEUS would estimate Directlink's alternative projects' market benefits for cases in which the new entry generation costs were equal to 100%, 90%, and 110% of the 2005 ACIL Tasman costs, as summarized in Table 3.

Table 3

Market Entry Costs Derived from 2005 ACIL Tasman Report

Region	Type	Variable O&M $/MWH	Capital Cost $/KW	Fixed O&M $/KW-Yr	Annualized Capital plus Fixed O&M $/KW-Yr
NSW	Combined Cycle	$2.4	$840.9	$12.9	$96.6
	Coal	$1.2	$1,434.4	$36.8	$190.5
	Combustion Turbine	$9.4	$520.4	$7.5	$58.5
QLD	Combined Cycle	$2.4	$836.7	$12.8	$96.1
	Coal	$1.2	$1,478.7	$37.9	$196.4
	Combustion Turbine	$9.4	$520.4	$7.5	$58.5
VIC	Combined Cycle	$2.4	$840.9	$12.9	$96.6
	Coal	$1.2	$1,892.2	$32.5	$232.4
	Combustion Turbine	$9.4	$520.4	$7.5	$58.5
SA	Combined Cycle	$2.4	$893.5	$14.7	$110.2
	Combustion Turbine	$9.4	$520.4	$7.5	$58.5

Costs stated in June 2005 dollars

4 TEUS, "Estimation of Directlink Alternative Projects' Market Benefits", April 2004, pages 15-16.
5 ACIL Tasman, "Report on NEM generator costs (Part 2)", published by the IRPC and NEMMCO in February 2005 (the 2005 ACIL Tasman Report).
6 IES, "Application of the ACCC Regulatory Test to SNI – Report for TransGrid", 27 November 2000, page 28.

4.4 Other Assumptions

In the period between the preparation of model inputs and assumptions used by TEUS to prepare the September 2004 analyses, and completion of the IES review of these analyses in April 2005, NEMMCO published the 2004 Statement of Opportunities, which indicated changes had occurred in the committed status of several projects. In addition, IES recommended several other projects be deemed as committed, based on recent market information. For the additional modelling, TEUS incorporated the generation assumptions shown in Table 4, reflecting changes to existing and planned generation.

Table 4

Generation Assumptions

Generator	Details	Timing
Townsville Power Station	Conversion of current 165MW OCGT to 223MW CCGT	June 1, 2005
Callide A (CS Energy)	120MW return to service	Jan. 1, 2006
Braemar (Wambo)	3 x 150 OCGT	June 1, 2006
Kogan Creek (CS Energy)	1 x 750MW coal fired	Dec. 1, 2007
Laverton (Snowy Hydro)	2 x 156MW OCGT	Dec. 1, 2006
Tallawarra Power Station (TXU)	400MW CCGT	Jan. 1, 2008
Quarantine (Origin)	Conversion of current 96MW OCGT to 170MW CCGT	Jan. 1, 2008
Swanbank B	500 MW Retired	July 1, 2011

5 Discussion of Methodology

5.1 General Methodology

The methodology that TEUS used for its original and additional modelling has been described in previous submissions, including, principally, the TEUS report prepared in April 2004[7] and the January 2005 report[8].

The April 2004 report documents the process of calculating the four components of inter-regional market benefits – energy savings, deferred market entry savings, deferred reliability entry plant savings, and reductions in residual unserved energy – using the Prosym model to determine market entry schedules and calculate energy savings, and using the MARS model to determine the need for reliability entry plant and the amount of residual unserved energy remaining. The January 2005 report, which presents a series of responses to IES questions, describes the methodology enhancements required to include northern NSW as a separate subregion in the Prosym modelling.

With two exceptions, the methodology used by TEUS to complete the additional scenarios is the same as that used for the original September 2004 analyses. The exceptions, implementation of historical bidding strategies and outage synchronization, are described below.

5.2 Development of Historical Bidding Strategies

Determining individual generator's actual bidding strategies is a difficult and complex undertaking, potentially requiring significant data collection and analysis efforts to infer each generator's bidding behavior in a wide range of NEM conditions. To simplify and facilitate the process of developing a historical bidding strategy for Prosym, the AER agreed TEUS may use for its Prosym modelling a bidding strategy that produced 2005 prices that were reasonably close to the prices IES produced using its Prohpet model and its interpretation of historical bidding.

In particular, Prosym-produced 2005 price duration curves, average prices, and maximum prices for each NEM region were compared against the IES simulated results. A "reasonably close" matching of the price duration curves was interpreted to mean the general shapes of the curves were close matched across the full range of hours.

To speed the bidding strategy development, IES suggested that TEUS license the most recent version of the Prosym Australia database, which was believed to be generally callibrated to current NEM market conditions, as a starting point. TEUS did this and then made adjustments

[7] TEUS, "Estimation of Directlink's Alternative Projects' Inter-regional Market Benefits", April 2004
[8] TEUS, "Response to IES Questions of October 25, 2004", January 18, 2005.

to generators' bidding parameters to further callibrate the Prosym price outcomes to the IES-provided targets. For each region, generators were classified as baseload, base-mid, intermediate, or peaking. TEUS establisghed a five-point heat rate curve and bid adjustment curve for each generator. The bid at each point included the marginal fuel cost at that point, plus a bid adder, with higher bid adders at points closer to full capacity. The size and shape of the bid adders for each generator type and region were modified incrementally until the price outcomes replicated the IES target results. Figures 1 and 2 below illustrate the Prosym and IES 2005 historical bidding strategy price duration curves for QLD and NSW, showing that these are reasonably close, including the distribution of high price events.

Figure 1

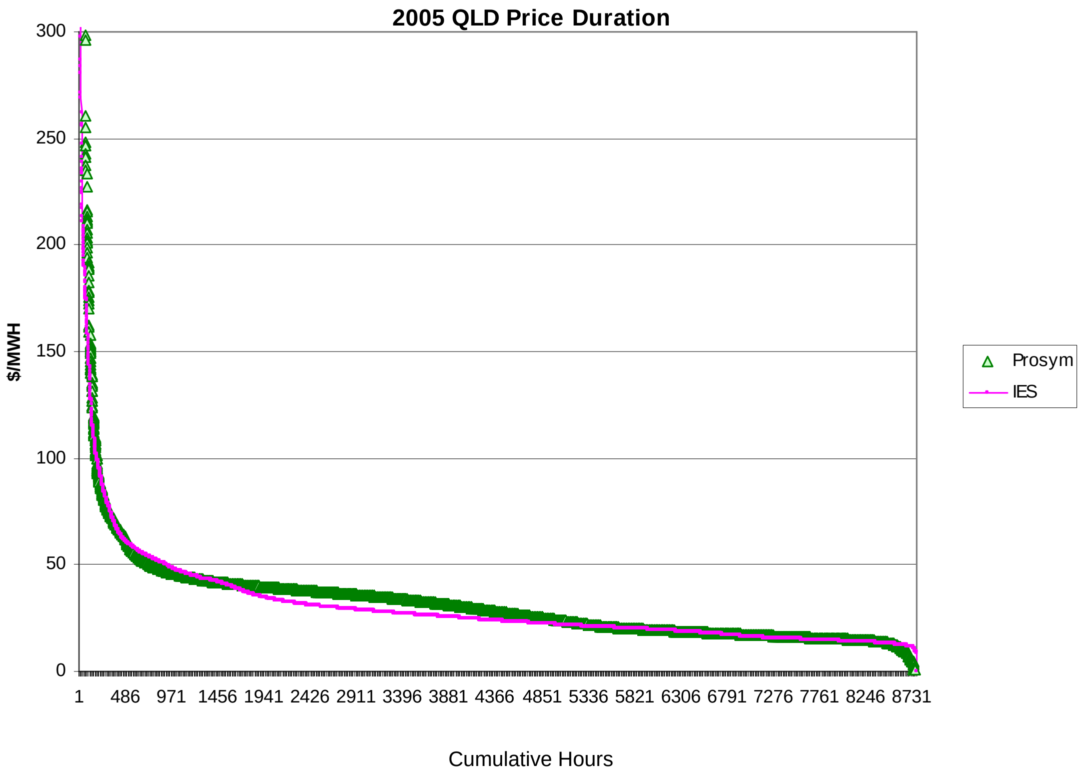
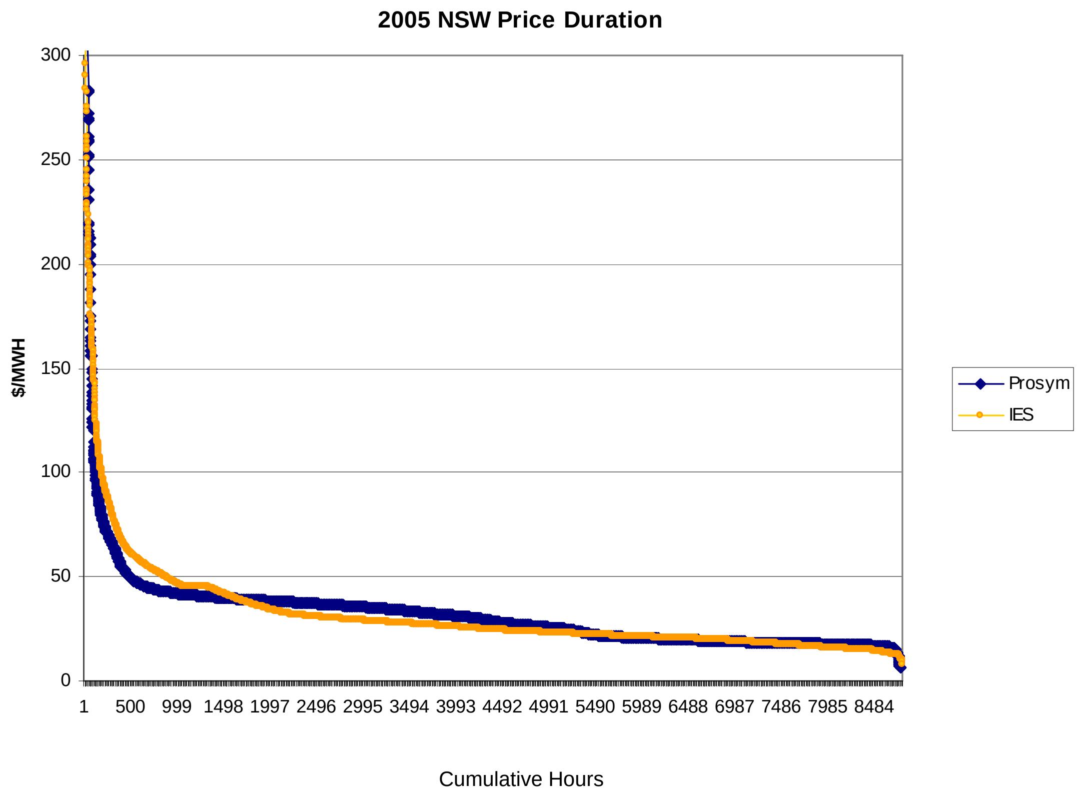


Figure 2



The Prosym modelled price duration curves are “reasonably close” to the IES-provided target results, confirming the choice of bidding strategies. The same bidding strategies developed for 2005 were used for 2006 and beyond, without any modification or additional calibration.

5.3 Outage Synchronization

The Prosym model simulates random forced outages for each generator with a positive forced outage rate. The specific timing of a generator’s outage can have a significant impact on that particular generator’s profitability, and on market prices. For example, large units that are unavailabe during high peak load periods due to a random outage may miss the opportunity to earn significant revenues, while simultaneously causing market price spikes. Conversely, an outage during offpeak periods may have little impact on the unit’s financial performance, or on market prices. It is possible that by coincidence, the randomly generated outages might lead to unusual results that are not representative of the NEM’s expected performance. Furthermore, comparisons between different Prosym simulations (for example, between the With Directlink and Without Directlink simulations) might show differences that are the result of different outage patterns, rather than a difference in expected system performance.

To avoid this problem, Prosym was run using the "Convergent Monte Carlo algorithm" option, that conducts several simulation iterations using different outage patterns configured to most accurately reproduce the expected system performance when the results of the separate iterations are averaged together. For the original September 2004 analyses, TEUS used 8 Convergent Monte Carlo iterations. For the additional modelling cases, TEUS used three iterations, which was within the capability of its available computer resources.

The Prosym random outage process is repeatable, meaning that the same outages will be created in two different runs if the list of generators in each run is identical (i.e. the same generators with the same characteristics are input to the Prosym model in the same sequence). To further reduce the possibility of anomalous outage-related differences, TEUS ensured that the generator lists used in the With and Without simulations for each of the additional scenarios were identical.

6 Results of Additional Modelling

6.1 Summary of Results

Table 5 below provides a summary of the results from the additional modelling cases. This information was previously provided to the AER and IES in reports dated June 14, 2005[9], July 25, 2005[10], September 7, 2005[11] and September 9, 2005[12].

Table 5

Summary of Additional Scenario Results

Discount Rate **9%**			$10,000 Value of USE – Load Growth			$29,600 Value of USE – Load Growth		
Alternative	Bidding	Market Entry Cost	High	Medium	Low	High	Medium	Low
0,1,2	Historical	90% 2005 ACIL Tasman		79,857			76,844	
0,1,2	Historical	100% 2005 ACIL Tasman	174,063	40,429	22,834	156,789	69,413	25,702
0,1,2	Historical	110% 2005 ACIL Tasman		15,914			75,606	
0,1,2	SRMC	100% 2005 ACIL Tasman		43,967			45,868	
3	Historical	100% 2005 ACIL Tasman		(2,612)			(7,731)	

Discount Rate **7%**			$10,000 Value of USE – Load Growth			$29,600 Value of USE – Load Growth		
Alternative	Bidding	Market Entry Cost	High	Medium	Low	High	Medium	Low
0,1,2	Historical	90% 2005 ACIL Tasman		156,011			153,001	
0,1,2	Historical	100% 2005 ACIL Tasman	301,455	46,409	23,817	275,535	87,140	25,216
0,1,2	Historical	110% 2005 ACIL Tasman		23,250			102,524	
0,1,2	SRMC	100% 2005 ACIL Tasman		40,423			44,227	
3	Historical	100% 2005 ACIL Tasman		(3,718)			(11,006)	

Discount Rate **11%**			$10,000 Value of USE – Load Growth			$29,600 Value of USE – Load Growth		
Alternative	Bidding	Market Entry Cost	High	Medium	Low	High	Medium	Low
0,1,2	Historical	90% 2005 ACIL Tasman		35,060			32,076	
0,1,2	Historical	100% 2005 ACIL Tasman	94,035	36,750	20,991	82,308	57,923	24,556
0,1,2	Historical	110% 2005 ACIL Tasman		11,368			57,580	
0,1,2	SRMC	100% 2005 ACIL Tasman		42,154			42,989	
3	Historical	100% 2005 ACIL Tasman		(1,884)			(5,578)	

[9] TEUS, "Directlink's Alternative Projects' Interregional Market Benefits using Historical Bidding Strategies - Results of first case", June 14, 2005.
[10] TEUS, "Directlink's Alternative Projects' Interregional Market Benefits using SRMC Bidding Strategy and Revised Market Entry Costs", July 25, 2005.
[11] TEUS, "TEUS Summary of Additional Four Case Results", September 7, 2005.
[12] TEUS, "TEUS Summary of Alternative 3 Results", September 9, 2005.

6.2 September 2004 Results

Table 6 presents the September 2004 results for Alternative 0, 1, and 2, and the revised results for Alternative 3 (recognizing that Alternative 3 provides no increase in interreginal transfer capability) presented in the TEUS January, 19, 2005 report[13].

Table 6

		$10,000 Value of USE			$29,600 Value of USE		
	9%	Results (Ave of Termination in Yrs 2015-2019)			Results (Ave of Termination in Yrs 2015-2019)		
Alternative	Bidding	High	Med	Low	High	Med	Low
0, 1 and 2	LRMC	186,986	107,888	60,504	197,113	135,130	45,409
0, 1 and 2	SRMC		30,439			57,248	
3 (with revised limits)	LRMC	(4,130)	177	4,754	(7,466)	7,796	(4,283)
3 (with revised limits)	SRMC		(105)			4,100	

	7%	Results (Ave of Termination in Yrs 2015-2019)			Results (Ave of Termination in Yrs 2015-2019)		
Alternative	Bidding	High	Med	Low	High	Med	Low
0, 1 and 2	LRMC	220,396	108,361	44,451	234,113	143,272	23,320
0, 1 and 2	SRMC		20,121			58,351	
3 (with revised limits)	LRMC	(5,839)	(1,143)	4,267	(11,179)	7,083	(8,079)
3 (with revised limits)	SRMC		(1,704)			2,574	

	11%	Results (Ave of Termination in Yrs 2015-2019)			Results (Ave of Termination in Yrs 2015-2019)		
Alternative	Bidding	High	Med	Low	High	Med	Low
0, 1 and 2	LRMC	162,697	102,928	65,264	170,458	124,836	54,203
0, 1 and 2	SRMC		35,752			55,065	
3 (with revised limits)	LRMC	(2,935)	1,196	4,907	(4,938)	8,306	(1,892)
3 (with revised limits)	SRMC		1,126			5,311	

6.3 September 2004 Base Case Revised Topology Results

TEUS submitted a resimulation of the September 2004 Base Case (Alternative 0-1-2, Medium Growth, LRMC Bidding) in January 2005[14] to provide information on the sensitivity of results to the revised network topology that modelled northern NSW as a separate Prosym region. Table 7 presents these results.

[13] TEUS, "Response to IES Questions of October 25, 2004", January 18, 2005, pages 5-6.
[14] TEUS, "Response to IES Questions of October 25, 2004", January 18, 2005, pages 2-5.

Table 7

Impact of NSW/N-NSW Intraregional Constraint on

		Discount Rate			
	Value of USE	7%	9%	11%	Average
Original Topology	$10k	108,361	107,888	102,928	106,392
	$29.6k	143,272	135,130	124,836	134,413
Revised Topology	$10k	128,023	101,937	84,053	104,671
	$29.6k	146,059	116,714	96,552	119,775
Change in IRMB	$10k	19,663	(5,951)	(18,875)	(1,721)
	$29.6k	2,787	(18,416)	(28,284)	(14,638)

Average Impact - All Cases (8,179)

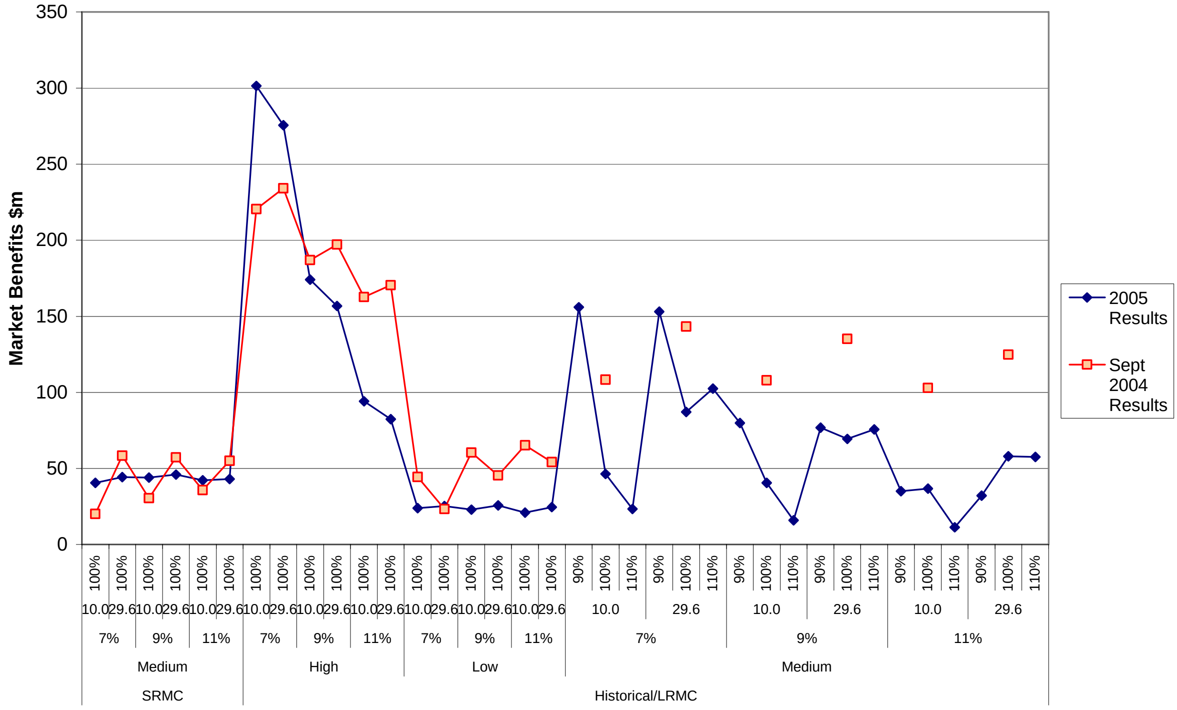
The analysis indicated that the average reduction in market benefits attributable to the revised topology was approximately $8m.

6.4 Consistency of September 2004 and Additional Results

Figure 3 presents a “side-by-side” illustration of the market benefits of the original Alternative 0-1-2 analyses and the additional Alternative 0-1-2 analyses, allowing the most similar cases to be compared. SRMC results are presented from both the original September 2004 modelling, and the additional modelling. The LRMC results shown are from the September 2004 modelling, and the historical bidding results are from the additional modelling.

Figure 3

Comparison of Results



The comparision indicates a general consistency between the original analyses and the additional analyses. Overall, TEUS believes this confirms the reasonability and consistency of the original results. Table 8 provides the same information in tabular form.

Table 8

Comparison of Results

						Analysis Vintage	
Alternative Project	Bidding Strategy	Load	Discount Rate	Value of USE $k/MWH	ME Cost	2005	Sept 2004
0,1,2	SRMC	Medium	7%	10.0	100%	40,423	20,121
				29.6	100%	44,227	58,351
			9%	10.0	100%	43,967	30,439
				29.6	100%	45,868	57,248
			11%	10.0	100%	42,154	35,752
				29.6	100%	42,989	55,065
	Historical or LRMC	High	7%	10.0	100%	301,455	220,396
				29.6	100%	275,535	234,113
			9%	10.0	100%	174,063	186,986
				29.6	100%	156,789	197,113
			11%	10.0	100%	94,035	162,697
				29.6	100%	82,308	170,458
		Low	7%	10.0	100%	23,817	44,451
				29.6	100%	25,216	23,320
			9%	10.0	100%	22,834	60,504
				29.6	100%	25,702	45,409
			11%	10.0	100%	20,991	65,264
				29.6	100%	24,556	54,203
		Medium	7%	10.0	90%	156,011	
					100%	46,409	108,361
					110%	23,250	
				29.6	90%	153,001	
					100%	87,140	143,272
					110%	102,524	
			9%	10.0	90%	79,857	
					100%	40,429	107,888
					110%	15,914	
				29.6	90%	76,844	
					100%	69,413	135,130
					110%	75,606	
			11%	10.0	90%	35,060	
					100%	36,750	102,928
					110%	11,368	
				29.6	90%	32,076	
					100%	57,923	124,836
					110%	57,580	

Historical bidding provides different results from LRMC bidding, as expected. As indicated previously, TEUS intended the SRMC and LRMC bidding strategy scenarios to “bracket” the likely outcome of a realistic bidding strategy scenario. Table 9 presents the average market benefits for the three different bidding strategies across the most comparable September 2004 cases and 2005 cases: Alternative 0-1-2 with Medium Growth and 100% Market Entry costs.

Table 9

Average Market Benefits

	Value of Unserved Energy	
Bidding Strategy	$10k/MWH	$29.6k/MWH
LRMC	106,392	134,413
Historical	41,196	71,492
SRMC	35,476	50,625

For these cases, it can be seen that the benefits for historical bidding lie between the LRMC and SRMC results.

7 Conclusions

TEUS completed analysis of seven additional scenarios using assumptions agreed to with the AER and IES. After providing the results to IES, responding to questions, and providing further detailed information (such as hourly prices and flows) as requested, it is TEUS' understanding that IES has found the results reasonable, appropriate, and useful for the AER's determination of interregional market benefits for Directlink's Alternative Projects.

TEUS notes that in completing the analysis of the additional scenarios, the methodology was unchanged. Only assumptions were altered or updated — in particular, assumptions regarding network topology, generation developments, market entry costs, and generator bidding strategies.

The original September 2004 results for Alternatives 0-1-2, and the January 2005 revised results for Alternative 3 therefore still provide valid and useful information as scenarios reflecting different, but still reasonable, assumptions. These results, including in particular the LRMC bidding scenario results, can further helpfully inform the AER's determination of the Directlink Alternative Projects' market benefits.