

Redflow

RFX AU / RFX.AX

Market Cap
US\$42.56m
 A\$45.87m

Avg Daily Turnover
US\$0.05m
 A\$0.06m

Free Float
71.6%
 239.6 m shares

Current **A\$0.21**
 Target **A\$0.31** 
 Prev. Target **A\$0.20**
 Up/Downside **47.6%**

STOCK RATING**ADD**

HOLD

REDUCE

Morgans Analyst(s)

Nick HARRIS
 T (61) 7 3334 4557
 E nick.harris@morgans.com.au

Share price info

Share price perf. (%)	1M	3M	12M
Relative	-26.1	66.4	113.5
Absolute	-27.5	65.6	120.8

Major shareholders	% held
Simon Hackett	10.0

Recharging the bank balance

Over the last 18 months the revised RFX Board have: 1) improved their battery (✓ it's now commercial ready); 2) signed up three major System Integrator partners (✓ system developers and distribution channels); 3) completed stage 1 of scalable manufacturing with stage 2 to be completed by December; and 4) replenished the bank balance (✓ the Board expects RFX to be cash flow positive at the end of CY15). We expect SI's to test the outsourced product over 3-18 months and gradually begin increasing volumes.

Capital raising ▶

In June RFX completed a placement to entrepreneur Simon Hackett and a 2 for 7 entitlement offer. Consequently RFX should hold ~A\$10m in net cash at 30 June 2014. The Board of RFX commented that this "will ensure the Company is funded until approximately the end of 2015 (entering 2H FY16) by which time the company is expected to be cash flow positive." Morgans Corporate Limited was the Joint Lead Manager to the placement and rights issue for Redflow Limited and received fees in this regard.

Recap of where RFX is ▶

RFX's proprietary Zinc Bromine battery Module (ZBM) is now stable, represents a compelling business case in select markets, and should be commercially produced by specialist manufacturer Flextronics by the end of CY14. RFX's current channels to market are through three multi-billion dollar global System Integrators (SI's) - Raytheon, Emerson and Schneider Electric; and a smaller integrator SMS Global Technologies in the Philippines. In the short term these SI's are focussed on niche applications where the ZBM is already commercially viable and overtime could reach into mass markets. Once SI's progress from trials (we estimate 3-24 month trials depending on the application) then sales volume should increase materially. Raytheon has already launched its RK10 and RK30 Energy Storage Systems so this could happen sooner than we think.

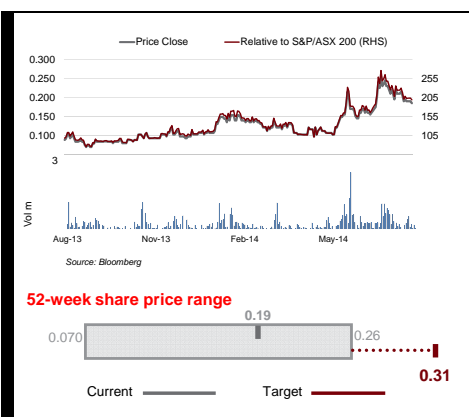
Investment view – Add retained, price target increased ▶

After including the capital raising and increasing our sales forecasts our target price increases to A\$0.31 (from A\$0.20). While RFX is not without risk, we see considerable upside if success is achieved. In our view, successful outcomes in SI trials should lead to niche markets adoption now and mass markets later on.

Financial Summary

	Jun-12A	Jun-13A	Jun-14F	Jun-15F	Jun-16F
Revenue (A\$m)	2.65	4.38	5.71	2.10	6.30
Operating EBITDA (A\$m)	-11.81	-5.24	-0.29	-5.46	-4.48
Net Profit (A\$m)	-12.91	-5.77	-0.44	-5.38	-4.99
Normalised EPS (A\$)	-0.16	-0.04	-0.00	-0.02	-0.02
Normalised EPS Growth	42%	(76%)	(96%)	1286%	(9%)
FD Normalised P/E (x)	NA	NA	NA	NA	NA
DPS (A\$)	-	-	-	-	-
Dividend Yield	0%	0%	0%	0%	0%
EV/EBITDA (x)	NA	NA	NA	NA	NA
P/F/CFE (x)	NA	NA	NA	NA	NA
Net Gearing	(50.3%)	(67.5%)	(77.8%)	(73.8%)	(84.1%)
P/BV (x)	2.16	4.58	2.72	5.10	10.00
ROE	(113%)	(90%)	(3%)	(47%)	(73%)
% Change In Normalised EPS Estimates			(29.3%)	(17.8%)	(7.9%)
Normalised EPS/consensus EPS (x)				0.77	

SOURCE: MORGANS, COMPANY REPORTS



CAPITAL RAISING

Use of funds ▶

RFX has raised A\$8m and should consequently end FY14 with around A\$10m in net cash. The Board has commented that the additional capital “will ensure the Company is funded until approximately the end of 2015 by which time the company is expected to be cash flow positive”.

The capital will primarily be used for:

- Operating costs and overheads (\$6.0m);
- Additional machinery and equipment (\$0.75M)*;
- Additional inventory (\$0.6m);
- ZBM research and development (\$0.5M); and
- Capital raising costs (\$0.35M)

* Some machinery and equipment purchased are for use by Flextronics.

PROGRESS REPORT

Product progress ▶

The ZMB has been improved substantially over the last 18 months.

- A failure mode and effect analysis program was introduced and methodically resolved over 54 issues;
- The design has been simplified to reduce the number of parts;
- Changes have been made to extend the electrode life to well over 1,000 cycle or 3 years of 100% usage on a daily basis;
- DC components including the pump has been introduced allowing the ZBM to power itself (including the battery controller which requires power); and
- A higher voltage solution (MW scale applications) has been funded by the Australian Governments' Cleantech grant.

Future product developments ▶

- The Board of RFX have targeted **cost reductions** of at latest 40% by the end of 2015. More specifically this relates to: 1) improvements in the manufacturing process and a more stringent quality assurance process (less waste material); and 2) better component purchasing power (due to better procurement practises).
- As we understand it, the targeted 40% cost reductions do not come from an increase in sales volume. This comes from a number of unrelated product improvements, for example, purchasing cheaper goods which also have the added benefit of improving product performance. Up until recently RFX had been focussed on R&D and had spent limited time on optimising its raw materials. Over the last six months a focus on raw material optimisation (tweaking the inputs and suppliers) has shown a 40% cost reduction is achievable.
- In addition to lowering the cost to manufacture, the ZBM cost per kw hour can be materially decreased by prolonging its useful life. For example doubling the number of cycles per ZBM would half the cost per kw hour.
- We highlight that RFX is currently price competitive in specific applications and is not aimed at being grid competitive in Australia.

Manufacturing ►

Outsourcing to Flextronics is progressing with the first stage completed. The second stage is expected to be completed by the end of CY 2014. Once outsourced the manufacturing will be completed by Flextronics in a plant in Juarez, Mexico.

System Integrators ►

Four system integrators have agreed to build energy storage systems for commercial trials for major customers for identified market applications. RFX is also in discussion with other SI's.

THE BLUE SKY STORY

The million dollar question relates to volumes and timing ►

The Board of RFX have commented that they have "forecasted sales of at least 250-300 batteries per month by the end of 2015". In an annualised basis, and assuming a USD\$7,000 sale price, this would mean 2H16 revenue of A\$12.3m (based on a 94c exchange rate) or annualised revenue of A\$25m. Assuming gross profit margins are around 30% and operating costs are flat at A\$6.0m pa, then RFX would generate annualised EBITDA of A\$1.5m. Our forecasts are based around this scenario but we have commenced sales ramp-up 6 months later than the Boards suggested date.

At the mid-point of their guidance range, RFX would be generating annualised EBITDA of A\$1.5m. Given the substantial fixed cost leverage in RFX, **from this breakeven point, every 10% increase in volume (ZMB's sold) adds 50% to EBITDA.**

Lux Research estimate that the zinc-bromide flow batteries market will continue to mature and that revenue should be around US\$21bn by 2017. If RFX could capture just 1% of this market they would make A\$40-50m of EBITDA pa on our forecasts. This would justify a RFX valuation well above A\$1.00 per share, in our view. This is a substantial stretch target and our forecasts are nowhere near this, however, it does illustrate there is substantial upside upon successful execution.

Germany is the largest PV market in Europe with 3,330 MW if installed capacity. Germany is currently installing ~125k PV systems pa. If RFX was able to sell to just 2.2% of this market (2,700 ZBM installs pa) this alone would move RFX into an EBITDA positive position. From this point every 10bps increase in penetration (e.g. 2.2% to 2.3%) increases revenue by 5% and EBITDA by 115%.

Changes to our forecasts and valuation ►

Figure 1: Change to our forecasts

	2014F			2015F		
	2014F old	revised	% change	2015F old	revised	% change
Revenue	5.7	5.7	n.m.	1.5	2.1	42.9%
Gross profit	0.0	0.0	n.m.	0.0	0.6	n.m.
EBITDA	-0.3	-0.3	n.m.	-4.5	-5.5	20.5%
EBIT	-0.6	-0.5	n.m.	-4.5	-5.2	15.1%
NPAT	-0.1	-0.1	n.m.	-4.3	-4.9	14.2%
EPS	-0.1	0.0	n.m.	-2.5	-2.0	20.2%
DCF	\$0.26	\$0.31	20.0%			
Weighted valuation	\$0.26	\$0.31	20.0%			
Premium / (discount)	0%	0%	n.m.			
Price target	\$0.20	\$0.31	60.0%			

SOURCES: MORGANS ESTIMATES

RFX - Financial summary

Profit and loss						Valuation details				
	Jun-13A	Jun-14E	Jun-15E	Jun-16E	Jun-17E					
Revenue	4.4	5.7	2.1	6.3	27.3	Share Price	\$0.21	Market Cap	A\$51.0m	
Gross profit	4.4	0.0	0.6	1.9	8.2	Price Target	\$0.31			
Operating Costs	6.0	6.0	6.1	6.4	6.7	Capital upside	49.3%			
EBITDA	-5.2	-0.3	-5.5	-4.5	1.5	Total shareholder return	49.3%			
Depreciation	-0.6	-0.1	0.0	0.0	0.0	Recommendation	ADD			
Amortisation & impairments	-0.1	-0.1	-0.1	-0.1	0.0					
EBIT	-6.0	-0.5	-5.6	-4.6	1.5					
Net Interest Income	0.2	0.1	0.2	0.1	0.1					
Pre-tax Profit	-5.7	-0.3	-5.3	-4.4	1.6					
Tax	0.0	0.0	0.0	-0.5	-0.8					
Reported Profit	-5.8	-0.4	-5.4	-5.0	0.8					
Exceptional items	0.0	0.0	0.0	0.0	0.0					
Normalised Profit	-5.6	-0.3	-5.3	-4.9	0.8					
FY14 revenue includes a A\$2.9 R&D tax credit and A\$2.4m Clean Tech Grant										
* the Board has guided for achieving cash flow positive status at the end of CY 2015										
Cash flow statement						Key metrics/ multiples				
	Jun-13A	Jun-14E	Jun-15E	Jun-16E	Jun-17E		Jun-14E	Jun-15E	Jun-16E	Jun-17E
EBITDA	-5.2	-0.3	-5.5	-4.5	1.5	P/E	-95.7	-9.5	-10.4	63.4
Net interest	0.0	0.0	0.0	0.0	0.0	PEG	1.0	0.0	-1.2	0.5
Tax	0.0	0.0	0.0	0.0	-0.5	EV/EBITDA	-109.6	-8.1	-10.7	30.6
Changes in working capital	-2.6	-1.0	1.4	1.5	0.7	Price/ Book Value	3.1	5.8	11.4	9.2
Operating cash flow	-4.4	-1.2	-4.0	-3.0	1.8	Price/ Net Tangible Assets	3.2	5.9	11.4	9.3
Capex	-0.2	-0.2	-0.8	-0.1	-0.1	Operating cash flow yield	-2.4%	-7.9%	-5.8%	3.5%
Free Cash Flow	-4.6	-1.4	-4.9	-3.0	1.7	Free cash flow yield	-2.8%	-9.5%	-5.9%	3.4%
Acquisitions and divestments	0.1	0.0	0.0	0.0	0.0					
Other Investing cash flow	0.0	0.0	0.0	0.0	0.0					
Investing cash flows	-0.1	-0.2	-0.8	-0.1	-0.1					
Increase / decrease in Equity	4.8	8.0	0.0	0.0	0.0					
Increase / decrease in Debt	0.0	0.0	0.0	0.0	0.0					
Dividends paid	0.0	0.0	0.0	0.0	0.0					
Financing cash flows	4.8	8.0	0.0	0.0	0.0					
Balance Sheet						Per share data				
	Jun-13A	Jun-14E	Jun-15E	Jun-16E	Jun-17E		Jun-14E	Jun-15E	Jun-16E	Jun-17E
Assets						Diluted shares on issue	202.1	242.6	246.6	250.6
Cash And Deposits	3.9	10.7	6.5	3.8	5.7	Earnings per share (A\$)	0.00	-0.02	-0.02	0.00
Debtors	0.4	2.3	1.0	0.3	1.2	Dividends per share (A\$)	0.00	0.00	0.00	0.00
Inventory	0.9	0.0	0.0	0.0	0.1	Payout ratio	0.0%	0.0%	0.0%	0.0%
Other current assets	0.1	0.1	0.1	0.1	0.1					
Total Current Assets	5.4	13.1	7.6	4.2	7.1					
Fixed Assets	1.1	1.4	2.2	2.3	2.3					
Intangibles	0.4	0.3	0.2	0.0	0.0					
Other non-current assets	0.0	0.0	0.0	0.0	0.0					
Total Non-Current Assets	1.5	1.7	2.4	2.3	2.3					
TOTAL ASSETS	6.9	14.7	9.9	6.5	9.5					
Liabilities										
Short Term Debt	0.0	0.0	0.0	0.0	0.0					
Creditors	0.3	0.2	0.4	1.2	3.0					
Other current liabilities	0.7	0.7	0.7	0.7	0.7					
Total Current Liabilities	1.0	1.0	1.1	1.9	3.7					
Long Term Debt	0.0	0.0	0.0	0.0	0.0					
Other Non current liabilities	0.1	0.1	0.1	0.1	0.1					
Total Non -Current liabilities	0.1	0.1	0.1	0.1	0.1					
TOTAL LIABILITIES	1.0	1.0	1.1	2.0	3.8					
Equity										
Issued capital	0.0	0.0	0.0	0.0	0.0					
Retained earnings	-38.9	-39.0	-43.9	-48.1	-47.0					
Other reserves and FX	44.7	52.7	52.7	52.7	52.7					
TOTAL EQUITY	5.8	13.7	8.8	4.6	5.7					
Gearing						Growth ratios				
	Jun-14E	Jun-15E	Jun-16E	Jun-17E		Jun-14E	Jun-15E	Jun-16E	Jun-17E	
Net Debt	-10.7	-6.5	-3.8	-5.7	Revenue	30.3%	-63.2%	200.0%	333.3%	
Net Debt / Equity	-77.8%	-73.8%	-84.1%	-99.3%	Operating costs	0.0%	1.5%	4.5%	4.5%	
EBIT interest cover	n.m.	n.m.	n.m.	n.m.	EBITDA	-94.5%	-1782.8%	18.0%	134.3%	
Invested Capital	2.1	3.7	2.2	0.8	EBIT	-91.3%	972.2%	-17.6%	-133.4%	
Enterprise Value	31.8	44.5	48.0	47.0	NPAT	-94.4%	1563.3%	7.5%	117.1%	
					EPS growth	-94.5%	911.0%	8.9%	116.4%	
					Operating cash flow	-72.1%	-229.8%	26.7%	160.7%	
Margin analysis						Margin analysis				
	Jun-14E	Jun-15E	Jun-16E	Jun-17E		Jun-14E	Jun-15E	Jun-16E	Jun-17E	
Gross profit margin	n.m.	30.0%	30.0%	30.0%	Gross profit margin	n.m.	30.0%	30.0%	30.0%	
EBITDA margin	-5.1%	-260.0%	-71.0%	5.6%	EBITDA margin	-5.1%	-260.0%	-71.0%	5.6%	
EBIT margin	-9.1%	-266.1%	-73.1%	5.6%	EBIT margin	-9.1%	-266.1%	-73.1%	5.6%	
NPAT margin	-5.5%	-250.2%	-77.1%	3.0%	NPAT margin	-5.5%	-250.2%	-77.1%	3.0%	
ROE	n.m.	n.m.	n.m.	n.m.	ROE	n.m.	n.m.	n.m.	n.m.	
ROIC	n.m.	n.m.	n.m.	n.m.	ROIC	n.m.	n.m.	n.m.	n.m.	

RISKS AND REWARDS

There is still execution risk within the RFX business but we believe this has been materially reduced over the last 18 months and the risk/ reward profile looks attractive. If RFX is successful in 2/4 niche markets the company should move into profitability. If highly successful in several of these niche markets then there should be meaningful upside for shareholders and if RFX succeeds in the mass markets then the upside is material. The next 6-18 months should mark a turning point in the business and sure up the pathway to success. We believe that while there is still execution risk (predominately around commercial viability) this should gradually diminish with time.



The reward is large ►

The flow battery market is forecast to grow to US\$21bn by 2017. If RFX can capture just 1% of the suggested market the company could generate A\$40-50m of EBITDA pa on our forecasts which would easily justify a valuation above A\$1.00 per share. We are not forecasting anywhere near this, rather trying to illustrate there is substantial upside upon successful execution. In our view, and that for the risk tolerant, this upside more than justifies the risks we have outlined below.

Risks look addressable ►

In our view the key risks relate to:

- 1) Completing the **commercial manufacturing** outsourcing;
- 2) System Integrators ensuring **commercial viability** of the ZBM; and
- 3) Achieving **volume sales**;

Commercial manufacturing

RFX is working with multinational specialist Flextronics for its commercial manufacturing. It has successfully completed stage 1 of the commercial manufacturing process and has progressed onto stage 2. We expect the manufacturing process to go well but acknowledge that the uniqueness of the ZBM raises the possibility of delays in this process until the ZBM becomes a more mainstream product. Manufacturing will be undertaken by Flextronics in Juarez, Mexico rather than Asia and this provides for quicker transportation to major markets and security around Intellectual Property.

Commercially viable

Manufacturing leads directly into the quality of the ZBM and its consequent commercial viability. While we understand the ZBM is commercially ready we cannot rule out the possibility of further product issues arising. That said, our understanding is that SI customers have provided extensive feedback and the product is now commercial. SI's have tested the Brisbane manufactured ZBM's for over one year. Raytheon for example is already selling its RK30 Energy Storage System which has a target life of "2,000- plus cycles" or ~5 years on daily charge/discharge. This illustrates, in our view, that they are comfortable with the quality of the ZBM.

Furthermore the quality will definitely improve as RFX moves from small scale in-house manufacturing to the best practises of global contract manufacturer Flextronics. Despite all of this positive feedback, until the process is complete and SI's have finalised tests of the final product in commercial applications, there remains some risk.

Commercial viability and achieving volume sales

Morgans believes that RFX still has a period of cost reductions and performance enhancements to achieve before the RFX ZBM is potentially a mass market product. We highlight that the ZBM is already commercially viable in niche markets and that success in these niche markets alone would turn RFX into a profitable company, and could be highly material.

THE MARKET OPPORTUNITIES

Our understanding is that RFX's sale strategy has two main stages.

The first stage involves firming up niche areas (discussed below) and converting these applications into medium sized volumes over the next 6-24 months. A lot of work has already occurred across this stage with SI's and trials under way.

The second stage involves accessing mass market opportunities. This is not currently a big focus for RFX as they need to deliver on stage 1 before moving to stage 2. Stage 2 is still in its infancy (and evolving at a rapid pace) but has the potential for much greater volume, albeit with longer lead times, than stage 1.

Stage 1 - Niche markets ▶

While these are niche applications rather than the mass market, they still have significant potential and success in just 2 is likely to transform RFX into a profitable and attractive business. The significance of these niche markets is that: 1) the ZBM economics already work; 2) they are faster moving markets which means progressing from trial sites to commercial rollouts can occur in months rather than years; and 3) they pave the path for RFX turning cashflow positive and greater commercial acceptance of the ZBM ahead of the mass market opportunities which are still evolving, albeit at a rapid pace.

As we understand it, the current trials with SI's reflect the more specific niche market applications where the ZBM is already commercially competitive. We estimate the total energy storage system costs incorporating a RFX product now (including system electronics which are provided by SI's) is A\$1.29 per kw hour. Targeted niche markets have power costs in excess of this and do not require a decline in ZBM costs or extending the batteries current useful life past ~1,000 cycles (nearly 3 years of daily use).

These niche applications in remote locations see the ZBM competing with a combination of diesel generators (and the cost of transporting fuel to site) and lead acid batteries operating in an air conditioned environment.

The pitfall of the current solutions and therefore the benefits of the ZBM include:

- 1) Many sites are high temperature and high humidity environments and consequently lead acid batteries need to be operated in air conditioned rooms which are expensive to run, maintain and operate. Lead acid batteries are not designed for hot, humid, corrosive environments and may require a physical replacement every 6 - 12 months; and
- 2) There are substantial operational costs in delivering diesel fuel to diesel generators situated in remote locations. Reducing the maintenance and replenishment costs is a significant value driver for ZBM adoption.

As we understand it these niche markets are where there is a compelling commercial business case for installation of ZBM's now; and include:

- **Remote telecommunications sites.** Typically Asian mobile phone towers in coastal regions where the current energy storage solution requires replacement every 3,6 or 12 months.
 - This is currently being targeted in the Philippines. SMS Global Technologies is seeking to provide ZBM products to Globe Telecommunications which is the second largest mobile phone operator in the Philippines.
 - Emerson is exploring similar options in Asia and Australia.
 - US telecommunications operator Sprint successfully completed a ZBM trial (solar &/or grid charged for peak shaving) and is looking to undertake further trials.

➤ **Off-grid and unstable-grid applications**

- Raytheon has already launched its RK10 and RK30 Energy Storage Systems which are built around RFX's ZBM. Details on the end applications are limited however given these are specified to fit US government shipping containers the applications are most likely off-grid power in remote/ arid locations.
- Other applications including helping with the continuity of power supply in emerging economies where grid power tends to be intermittent i.e. drops out for 1-4 hours at a time. The ZBM could be well suited here and SI Schneider Electric is currently exploring this option. The business case here is around removing business downtime rather purely a cost per kw hour.

➤ **MW off-grid applications**

- RFX was granted funding through the Australian Government's Cleantech grant and used this to develop a 0.5MWh energy storage solution that is containerised and couples to a HVDC inverter. This has substantial applications not only across Australia but in a number locations where the cost of providing power to remote mines and communities is substantial;
- RFX is on-track for completion of a fully functioning containerised solution. This is the final milestone of the Cleantech grant and is due by 30th September 2014; and
- RFX is in discussions with other SI's for further opportunities.

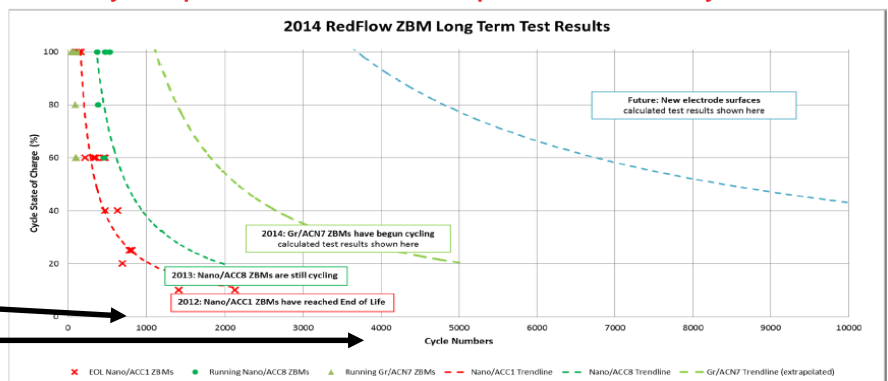
Part 2 – Mass markets

In our view, the big value uplift for shareholders would come from mass market acceptance e.g. households using renewable energy in conjunction with ZBM energy storage systems or to overcome peak power rates. The key to reaching this target lies in lowering the cost per kw hour and the most significant driver of this is cycle life. Including our assumption on the cost of the SI's system electronics (for total solution pricing), then the cost per kw hour would decline from currently US\$1.38 to US\$0.39.

The current ZBM's are "rated" for 1,000 cycles but as figure 2 illustrates RFX can demonstrate how the number of cycles per battery could increase from 1,000 now to ~4,000 over time.

Assuming the ZBM cycle life increases 4 fold, and nothing else changes, the cost per kw hour would decline from currently US\$0.87 to US\$0.21.

Figure 2: ZBM cycle life is currently >1,000. New materials should increase this useful life by multiples which lowers the cost per kw hour materially



As some of these long term test batteries are still operating their expected lives have been calculated

SOURCES: COMPANY DATA

ZBM ECONOMICS

Cost per kilowatt hour the key measure

The kilowatt hour costs for the ZBM are most sensitive to: 1) the number of cycles; and 2) the total kilowatt hour output. For example doubling the number of cycles halves the cost per kw hour (from A\$0.82 to A\$0.41).

As the sensitivities tables below illustrate, if RFX can increase the cycle life from 1,000 to 3,500 (vs 4,000 shown in figure 2 above), then their cost per kw hour will drop to 1/3rd of the current price. In conjunction with this, if RFX can then increase the output from 8 to 10 kw hours the cost per kw hour would be 23% of the current cost or A\$0.19.

Figure 3: Cost per kilowatt hour (kwh) for a naked ZBM (i.e. NOT including System Integrator (SI's) system electronics)

	Jun-14	Cycles increased 2x	Cycles increased 3.5x	Cycles increased 3.5x & kw hours increased from 8 to 10	Formulas
ZBM sale price (USD)	\$7,000	\$7,000.0	\$7,000.0	\$7,000.0	
SI provided system electronics (USD)	\$0	\$0	\$0	\$0	
Recommended Retail Price (USD)	\$7,000.0	\$7,000.0	\$7,000.0	\$7,000.0	A
1) Cycles	1,000	2,000	3,500	3,500	B
kw hours per cycle	10	10	10	12	C
Efficiency 75-80%	80%	80%	80%	83%	D
Effective kw hours per cycle	8	8	8	10	E
2) Total kw hour output per battery lifetime	8,000	16,000	28,000	34,986	F = B * E
Cost per kw hour USD	US\$0.88	US\$0.44	US\$0.25	US\$0.20	G = F / A
Change in price per kw hour		-50%	-43%	-20%	
EUR : USD	1.34				H
Cost per kwh EUR	€ 0.65	€ 0.33	€ 0.19	€ 0.15	I = G * H
USD:AUD	1.07				J
Cost per kwh AUD	AU\$0.82	AU\$0.41	AU\$0.23	AU\$0.19	G / J
Price vs current		50%	29%	23%	

SOURCES: COMPANY DATA & MORGANS ESTIMATES

But the ZBM doesn't work in isolation so all in costs are a more appropriate measure. We assume the System Integrator costs are ~US\$4,000 for a module which includes the system electronics, casing etc.. required for a complete and usable product.

Figure 4: Total System costs per kilowatt hour (kwh) including System Integrator (SI's) system electronics

	Jun-14	Cycles increased 2x	Cycles increased 3.5x	Cycles increased 3.5x & kw hours increased from 8 to 10	Formulas
ZBM sale price (USD)	\$7,000	\$7,000.0	\$7,000.0	\$7,000.0	
SI provided system electronics (USD)	\$4,000	\$4,000	\$4,000	\$4,000	
Recommended Retail Price (USD)	\$11,000.0	\$11,000.0	\$11,000.0	\$11,000.0	A
1) Cycles	1,000	2,000	3,500	3,500	B
kw hours per cycle	10	10	10	12	C
Efficiency 75-80%	80%	80%	80%	83%	D
Effective kw hours per cycle	8	8	8	10	E
2) Total kw hour output per battery lifetime	8,000	16,000	28,000	34,986	F = B * E
Cost per kw hour USD	US\$1.38	US\$0.69	US\$0.39	US\$0.31	G = F / A
Change in price per kw hour		-50%	-43%	-20%	
EUR : USD	1.34				H
Cost per kwh EUR	€ 1.02	€ 0.51	€ 0.29	€ 0.23	I = G * H
USD:AUD	1.07				J
Cost per kwh AUD	AU\$1.29	AU\$0.64	AU\$0.37	AU\$0.29	G / J
Price vs current		50%	29%	23%	

SOURCES: COMPANY DATA & MORGANS ESTIMATES

Mass market opportunities already in Germany

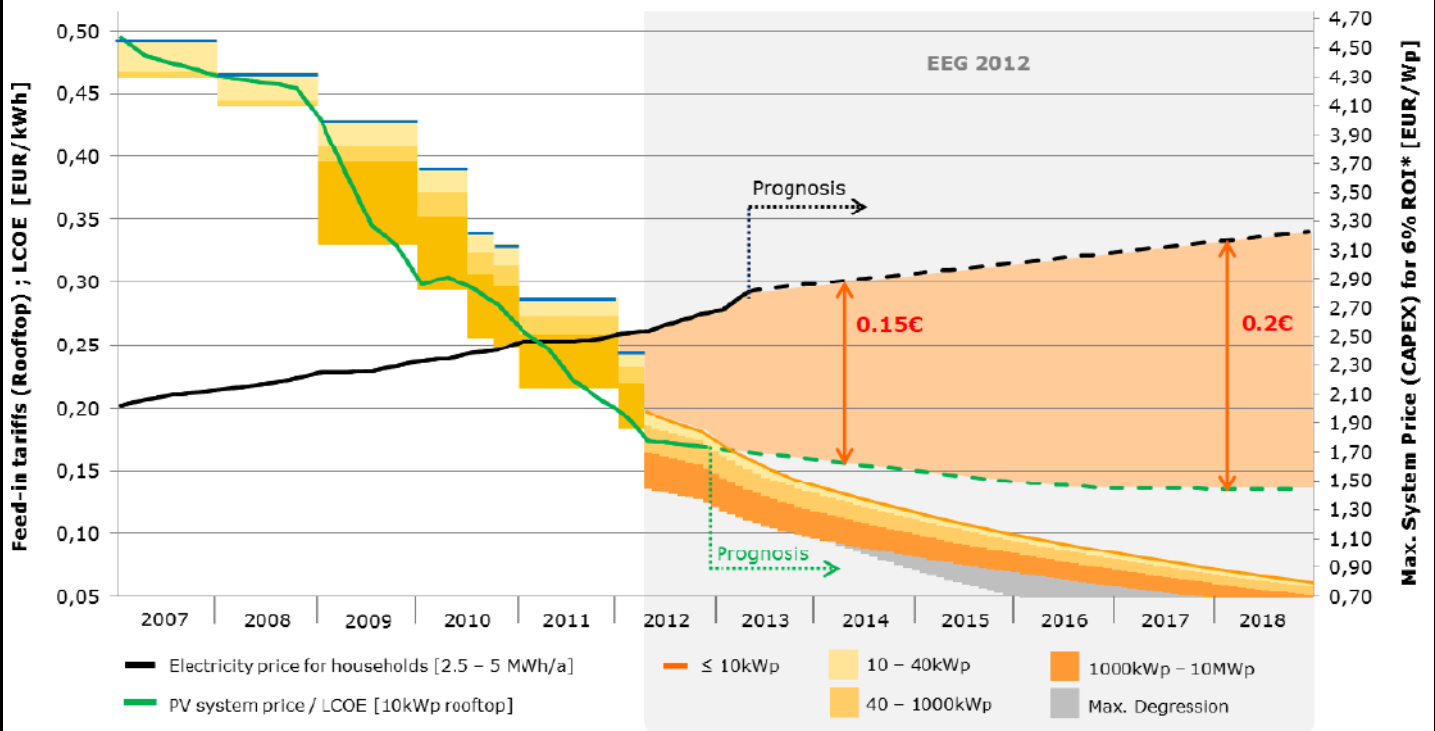
Despite this aspiration to further reduce costs, the ZBM is now commercially economic in Germany which leads the world in terms of household adoption and government support for renewables. In Germany the cost of household grid power is substantially higher (€0.30 per kw hour) and the government is now subsidising residential energy storage systems that are connected to solar systems. Given Germany's substantial adoption of solar PV their costs for solar power range from €0.10- €0.15 per kw hour (half the grid price) so when energy storage costs reach €0.15 -€0.20 this will mean renewable energy costs will be at parity with grid prices.

Figure 5: German grid vs solar and the energy storage equation

The „Battery-Parity“ is coming



With further increasing electricity prices and decreasing PV system costs, the business case for storage is becoming better and better



SOURCES: GERMANY TRADE AND INVEST; COMPANY DATA

Germany is a good example of what could happen

Germany has lead the world in terms of renewables and as illustrated below the German government is subsidising up to €3,000 for energy storage systems. The €0.15 - €0.20 per kw hour range (discussed above in figure 5) for energy storage costs combined with the German government's €3,000 subsidy for energy storage systems means the RFX ZBM will be competitive if they can triple the cycle life. In our view this should be achievable.

Figure 6: The ZBM economics already work in Germany

	Jun-14	Cycles increased 3x	Cycles increased 3.5x
RRP in USD	US\$11,000		
EUR : USD	1.34		
RRP in EUR	€ 8,195		
German government subsidy	€ 3,000		
Effective price EUR	€ 5,195	€ 5,195	€ 5,195
kw hours	8	10	10
capex per kw hour	\$649.38		
Number of cycles	1000	3000	3500
kw hours per battery life	8000	30000	35000
Battery cost per kw hour	€0.65	€0.17	€0.15

SOURCES: GERMANY TRADE AND INVEST ; COMPANY DATA & MORGANS ESTIMATES

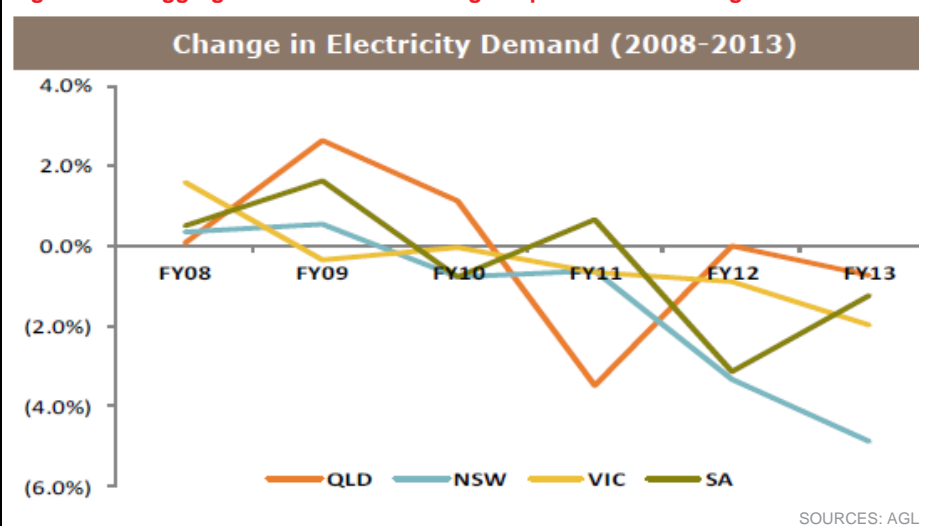
AUSTRALIAN ENERGY PRICING VS LARGE MARKETS

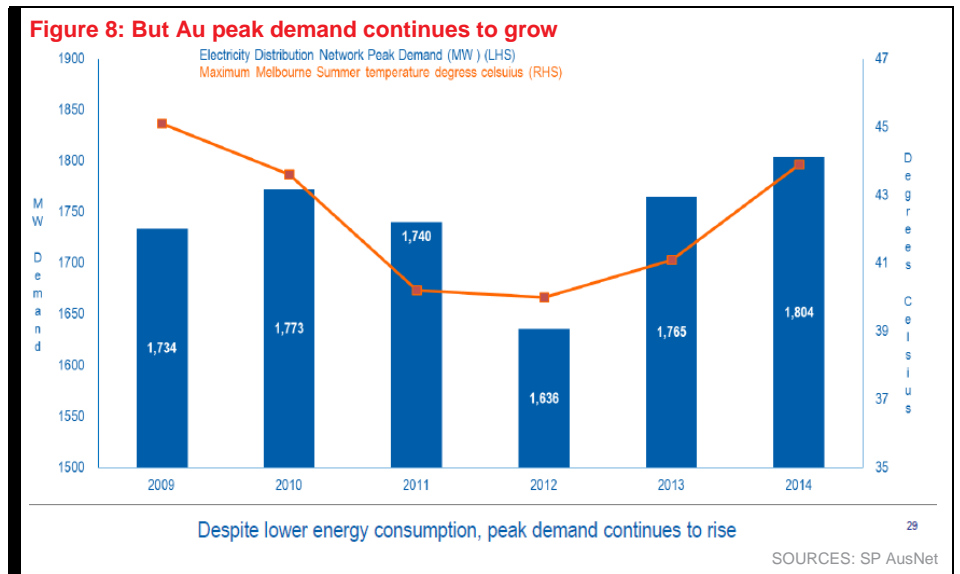
Australia still has relatively cheap energy when compared to other countries (ignoring PPP calculations). The large target markets for Europe are clearly in Europe and Asia and for different reasons in the USA. The analysis of the Australian market is for illustrative purposes only as the tariff in Germany is currently €0.30 or (A\$0.42 when converted to Australian dollars). This compares to the Australian average of \$0.28 for grid power.

THE AUSTRALIAN MARKET - PEAK IS THE PROBLEM

In Australia consumer adoption of solar has been significant and the next logical step is energy storage. The key reason for this is that while total energy demand in Australia is declining (figure 7) peak consumption continues to rise (figure 8 / page 11). The Australian grid is built for peak performance and consequently household costs per kw hour continue to rise. Thus distributed generation for utilities could be a viable option for Australia to reduce continued investment in a grid built for peak usage (typically 10 – 20 days per annum) and they should be questioned as to why this is not being actively explored.

Figure 7: Au aggregate demand is declining but peak continues to grow

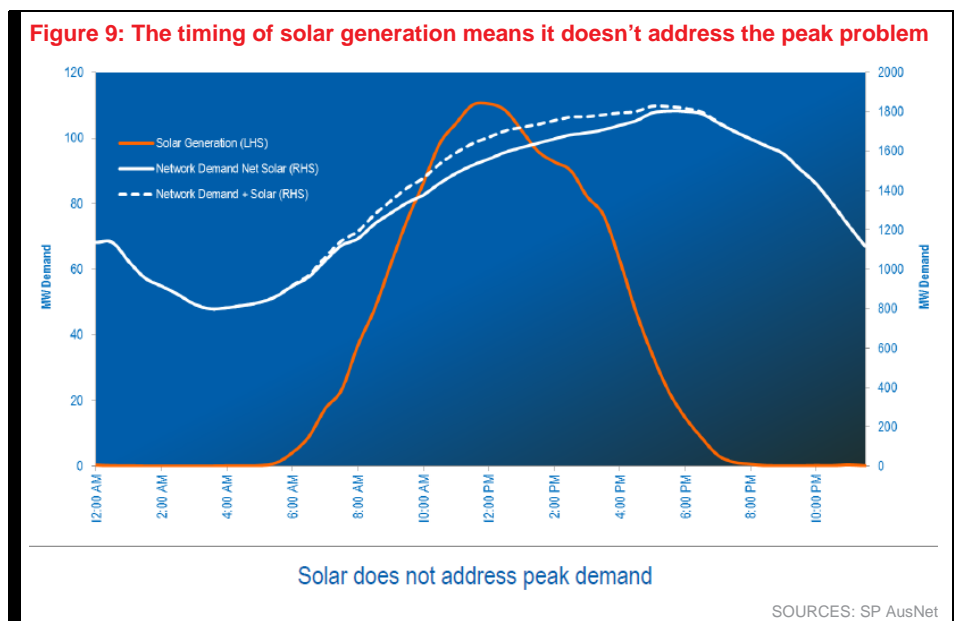




Unfortunately, in Australia, in the short term the economics of using a ZBM in conjunction with renewables at a household level doesn't look compelling. For ethically or environmentally motivated individuals the ZBM is still an option, just don't do the maths. The other alternatives that looks more likely over time is for the use of ZBM's for peak shaving (i.e. versus expensive peak rates rather than average grid rates) and for off-grid or remote locations. In Europe, the numbers do make sense as their grid power costs are 50% higher than Australia.

While the ZBM should be able to assist with some of Australia's peaking problems, in the short-medium term the more immediately accessible markets for RFX are Asian telco and off-grid applications (for continuity of supply), specific Australian off-grid applications in the high voltage space and the more advanced European markets which are actively promoting renewals and energy storage for renewables.

If Solar currently costs 10-12c (un subsidised) then Australian energy storage will not be competitive with average grid prices any time soon. However with storage costs of ~30c there could still be a commercial case for peak shifting.



QUEENSLAND

BRISBANE	(07) 3334 4888
BUNDABERG	(07) 4153 1050
CAIRNS	(07) 4222 0555
CALOUNDRA	(07) 5491 5422
CHERMSIDE	(07) 3350 9000
EDWARD STREET	(07) 3121 5677
EMERALD	(07) 4988 2777
GLADSTONE	(07) 4972 8000
GOLD COAST	(07) 5581 5777
IPSWICH/SPRINGFIELD	(07) 3202 3995
MACKAY	(07) 4957 3033
MILTON	(07) 3114 8600
MT GRAVATT/CAPALABA	(07) 3245 5466
NOOSA	(07) 5449 9511
REDCLIFFE	(07) 3897 3999
ROCKHAMPTON	(07) 4922 5855
SPRING HILL	(07) 3833 9333
SUNSHINE COAST	(07) 5479 2757
TOOWOOMBA	(07) 4639 1277
TOWNSVILLE	(07) 4725 5787
YEPPOON	(07) 4939 3021

NEW SOUTH WALES

SYDNEY	(02) 8215 5055
ARMIDALE	(02) 6770 3300
BALLINA	(02) 6686 4144
BALMAIN	(02) 8755 3333
CHATSWOOD	(02) 8116 1700
COFFS HARBOUR	(02) 6651 5700
GOSFORD	(02) 4325 0884
HURSTVILLE	(02) 9570 5755
MERIMBULA	(02) 6495 2869
NEUTRAL BAY	(02) 8969 7500
NEWCASTLE	(02) 4926 4044
NEWPORT	(02) 9998 4200
ORANGE	(02) 6361 9166

PORT MACQUARIE	(02) 6583 1735
SCONE	(02) 6544 3144
SYDNEY – LEVEL 9	(02) 8215 5000
SYDNEY – LEVEL 33	(02) 8216 5111
SYDNEY – HUNTER STREET	(02) 9125 1788
	(02) 9615 4500
SYDNEY – REYNOLDS EQUITIES	(02) 9373 4452
WOLLONGONG	(02) 4227 3022

ACT

CANBERRA	(02) 6232 4999
----------	----------------

VICTORIA

MELBOURNE	(03) 9947 4111
BRIGHTON	(03) 9519 3555
CAMBERWELL	(03) 9813 2945
CARLTON	(03) 9066 3200
FARRER HOUSE	(03) 8644 5488
GEELONG	(03) 5222 5128
RICHMOND	(03) 9916 4000
SOUTH YARRA	(03) 9098 8511
TRARALGON	(03) 5176 6055
WARRNAMBOOL	(03) 5559 1500

WESTERN AUSTRALIA

PERTH	(08) 6462 1999
-------	----------------

SOUTH AUSTRALIA

ADELAIDE	(08) 8464 5000
NORWOOD	(08) 8461 2800

NORTHERN TERRITORY

DARWIN	(08) 8981 9555
--------	----------------

TASMANIA

HOBART	(03) 6236 9000
--------	----------------

DISCLAIMER

The information contained in this report is provided to you by Morgans Financial Limited as general advice only, and is made without consideration of an individual's relevant personal circumstances. Morgans Financial Limited ABN 49 010 669 726, its related bodies corporate, directors and officers, employees, authorised representatives and agents ("Morgans") do not accept any liability for any loss or damage arising from or in connection with any action taken or not taken on the basis of information contained in this report, or for any errors or omissions contained within. It is recommended that any persons who wish to act upon this report consult with their Morgans investment adviser before doing so. Those acting upon such information without advice do so entirely at their own risk.

This report was prepared as private communication to clients of Morgans and is not intended for public circulation, publication or for use by any third party. The contents of this report may not be reproduced in whole or in part without the prior written consent of Morgans. While this report is based on information from sources which Morgans believes are reliable, its accuracy and completeness cannot be guaranteed. Any opinions expressed reflect Morgans judgement at this date and are subject to change. Morgans is under no obligation to provide revised assessments in the event of changed circumstances. This report does not constitute an offer or invitation to purchase any securities and should not be relied upon in connection with any contract or commitment whatsoever.

Although CIMB Securities (Australia) Ltd (ABN 84 002 768 701), its related bodies corporate, directors and officers, employees, authorised representatives and agents ("CIMB Securities Australia") may have been involved in the preparation of certain content for this Research Report, this Research Report constitutes general advice provided by Morgans to the recipient of this report under its Australian financial services licence and Morgans is solely responsible for the content of this report. CIMB Securities Australia do not accept any liability for any loss or damage arising from or in connection with any action taken or not taken on the basis of information contained in this report, or for any errors or omissions contained within.

DISCLOSURE OF INTEREST

Morgans and CIMB Securities Australia may from time to time hold an interest in any security referred to in this report and may, as principal or agent, sell such interests. Morgans or CIMB Securities Australia may previously have acted as manager or co-manager of a public offering of any such securities. Morgans' affiliates or CIMB Securities Australia affiliates may provide or have provided banking services or corporate finance to the companies referred to in the report. The knowledge of affiliates concerning such services may not be reflected in this report. Each of Morgans and CIMB Securities Australia advises that it may earn brokerage, commissions, fees or other benefits and advantages, direct or indirect, in connection with the making of a recommendation or a dealing by a client in these securities. Some or all of Morgans' Authorised Representatives may be remunerated wholly or partly by way of commission.

REGULATORY DISCLOSURES

Morgans Corporate Limited was the Joint Lead Manager to the placement and rights issue for Redflow Limited and received fees in this regard. The Analyst(s) own shares.

RECOMMENDATION STRUCTURE

For a full explanation of the recommendation structure, refer to our website at https://www.morgans.com.au/research_disclaimer.

If you no longer wish to receive Morgans' publications please advise your local Morgans office or write to Morgans, Reply Paid 202, Brisbane QLD 4001 and include your account details.