Kick starting sales

Redflow’s ZBM is commercial in key applications. While trials are going well, conversion to revenue is slower than expected, which prompted the recent A$16.1m capital raising. In the last 12 months RFX has reduced its selling price by 36% to US$4.4cents per kilowatt hour and we believe it’s well placed to slide down the cost curve at a faster pace than competitors (including the well promoted Tesla Powerwall). If the ZBM follows the ~20% pa cost reduction that solar experienced, then we believe it has the potential, within a couple of years, to be one of the most economically compelling energy storage products in the market.

Use of the A$16m recently raised

Slower-than-expected sales have led us to reduce our FY16 sales targets by 20% and have led RFX to allocate the majority the recent capital raised to improving sales. The company has said fifty percent will go towards operating expenses (increasing sales capabilities and covering an additional 12 months of cash burn); twenty five percent will go towards demonstration units; fifteen percent towards inventory (for faster delivery times); and the balance to machinery and offer costs.

Product performance and cost reductions are the key

RFX’s product is competitive in target markets (for example when combined with solar it’s cheaper than diesel and other decentralised generation). However, the ongoing cost trajectory should see the ZBM become competitive with many other applications within the next 24 months, in our view. We also note that Tesla’s recent entry into the household energy storage market demonstrates strong consumer interest. However, we believe the economics for households do not currently work. Importantly, RFX has the potential to outpace Tesla in this market. Tesla, for example, has committed US$4.5 billion to building its “Gigafactory” but expects this to reduce battery costs by just 30% over a five year period. RFX reduced battery costs by 36% in the last 12 months and should comfortably continue to reduce end user costs.

Investment view

The key deliverables for RFX are improving sales in the current target markets and delivering ongoing reductions in the cost per kilowatt hour so as to make mass market adoption a possibility. Upside and downside risk revolves around these key items. We are comfortable with management’s ability to deliver so retain our Add recommendation and upgrade our price target to A$0.39.
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INTRODUCTION

In this report we review RFX’s product positioning with respect to cost, competitors, the end user economics and where costs could ultimately go.

Our key findings are:

1) **RFX already has a commercial product with good economics in target markets** including telecommunications infrastructure, remote power and micro-grids. In these instances the cost of alternatives can be more than US$1.50 per kWh so renewable generation combined with RFX’s ZBM (Zinc Bromine battery Module) already makes commercial sense. A number of trials for these applications has been completed or are underway and the company is making progress in converting these from trials to revenue generating commercial sales. Conversion of these sales are, in our view, the key deliverable over the next 12 months.

2) Overall, energy storage competition is intense but despite this **the economics do not yet stack up for household energy storage (the mass market) in Australia**. For the economics to work, the cost per kilowatt hour needs to almost halve from current levels. The Net Present Value (NPV) of energy storage is currently negative, on our estimates. While this negative NPV may discourage the majority of consumers, the environmentally conscious and early adopters are likely to be quick to adopt and, as storage costs decline, the mass market is likely to open up.

3) Tesla’s recent release of the Powerwall (which is currently considered to be the leading household energy storage product) generated a lot of media attention. It is based around the Lithium-Ion battery used in Tesla’s electric cars but this has been modified and is now also targeting household energy storage. Details of this product are still scarce (no warranty terms are available), it’s not yet commercially available in Australia (the ZMB is), and we don’t think the economics currently work. If Tesla’s Powerwall is warranted for 365 days pa over 10 years then it is currently a more compelling product than RFX’s ZBM. However, if it’s warranted for 220 days pa over 10 years (which is more often the case with renewable solutions given the average number of days of available sunshine) then RFX’s ZBM already has more compelling economics.

4) It is important to note that Tesla’s car and household energy storage solutions both use Panasonic’s 18650 batteries and Panasonic is also selling direct. Tesla itself admitted “While we recently entered into various formal agreements with Panasonic on the Gigafactory, we have very little experience in building a factory of the size and scope planned for the Gigafactory, and no experience directly in the production of lithium-ion cells.” Source: Page 18 of Tesla’s FY14 Annual Report. Consequently, Tesla’s costs are dictated by Panasonic. RFX on the other hand already has product expertise, manufacturing capability and is in control of its costs (including inputs and RRP).

5) Regardless of the current economics, the Powerwall has less room to move on costs than the ZBM, in our view. **According to Tesla, its Gigafactory is expected to reduce battery costs by 30% over the next five years. RFX by contrast reduced its costs by 36% last year and has more room to move on both costs and energy throughput.** This is due to the ZBM being based on commonly available and therefore cheap input costs combined with the technology being in its infancy and therefore having much more room to move on both cost reductions and energy throughput. Consequently, we think the ZBM remains the key disruptive technology.
We conclude that while RFX’s ZBM is already commercial in a number of applications, mass market penetration (grid parity for household energy storage) is possible, and could be achieved by either halving ZBM manufacturing costs or doubling energy throughput. More likely this will be a combination of both.

RFX reduced costs (capex per kilowatt hour) by 36% in the last 12 months which is an impressive feat and, in our view, the first of many cost improvements. This exceeds the average 20% pa cost reduction that experienced across solar PV over the last seven years and reinforces our thesis that the ZBM is at the start of a sharp cost reduction curve. **If cost reductions and increased energy throughput as demonstrated in CY14 continue to be achieved, then RFX’s product could achieve grid parity in a couple of years.**

Importantly, RFX has just commenced contract manufacturing (aka mass market manufacturing) of the ZBM with global manufacturing giant Flextronics. The unique product characteristics of the ZBM when combined with mass market manufacturing and ongoing product improvements should see the ZBM continue to slide down the cost curve at a faster rate than competitors.
PRODUCT POSITIONING

Product progress in CY2014

For RFX 2014 was all about finalising the product for manufacturing and progressing to a mass market contract manufacturing. Over this period RFX more than doubled energy throughput to 22,000 kw hours (ZBM 3), which effectively halved the cost per kw hour (the key financial metric) that is relevant for energy storage. This makes the ZBM competitive in a number of applications already.

Figure 1: The new and improved product range

ZBM
Telco & Residential
- High energy density at 8kWh
- Warranted total energy throughput 10kWh
- Ideal for telco & residential applications at 48Vdc

ZBM 2
Telco, Residential & Commercial
- High energy density at 10kWh
- Warranted total energy throughput 20kWh
- Ideal for telco and residential applications at 48Vdc

ZBM 3
Commercial & Residential
- High energy density at 11kWh
- Warranted total energy throughput 22kWh
- Ideal for commercial and residential applications at 53Vdc

SOURCES: COMPANY REPORTS

Figure 2: The Large Storage battery (on the left) comprises of 60 ZBMs (on the right)

SOURCES: COMPANY REPORTS
SALES

How RFX is selling its currently economic products

With the product and manufacturing process now commercially viable, the key deliverable for RFX (other than ongoing cost improvements) we see is generating sales revenue. While much of this report explores the household energy storage market (aka the mass market), the reality is that RFX’s small scale Zinc Bromine battery Model (ZBM) 5kw/11 kilowatt hours (kwh) and Large Scale Battery (LSB) 660 kwh are both already commercial in a number of applications including:

- Telecommunications infrastructure (particularly powering off-grid mobile phone towers);
- Remote power and micro-grids; and
- Larger scale renewable integration for peak shaving.

With respect to current applications, RFX has engaged with eight System Integrators (SIs) across five continents. Trials and testing are currently underway in Africa, Europe, the United States of America, Central and South America, the Philippines and Australasia. The start dates of these trials vary materially with the USA being the first and Africa being the last of the trails to commence. Importantly, RFX has engaged across several styles of organisations. RFX has been in conversations with larger global SIs and smaller local SIs for some time. This is important as global SIs can be slow moving (but open up a much bigger sales opportunity) while smaller SIs can be faster moving but the opportunities tend to be smaller in scale. We expect the smaller operators will be faster to market and therefore represent the more immediate revenue generating opportunities and that over time the larger SIs will deliver the bigger prize.

RFX’s current sales channels

RFX’s sales model consists of a three-pronged approach comprising of:

1) Partnering with large global System Integrators (like Emerson);
2) Partnering with smaller domestic System Integrators (like BlueSky in Austria); and
3) Collaborations with not-for-profit organisations such as the CSIRO. This ensures RFX remains at the forefront of technical development through ongoing R&D and also ensures media and academic focus on RFX.

RFX has beach heads or distribution points (staffed with RFX and SI employees) in four key locations:

1) USA (Austin, Texas)
   - SIs include Raytheon and Emerson;
   - RFX has technical sales staff on location.

2) Europe (Frankenburg, Austria)
   - SIs include BlueSky and Emerson;
   - RFX recently appointed a Sales Manager and a technical sales resource in Europe;
   - RFX has “CE” product certification for sale of the ZBM in Europe.
3) **Asia Pacific (Australia)**
- SIs include Schneider, Emerson and SMS Global Technologies;
- RFX has technical staff from its Australian operations.

4) **Africa and the Middle East**
- RFX has relationships with four SIs;
- These SIs have existing facilities and channels to market.

**The Multinational System Integrators**

**WHO:** Multinational System Integrators (SIs) including Emerson and Raytheon.

**WHY:** These SIs are building the electronics controller (aka inverter and/or controller) that integrates the ZBM into the end application. They bring to RFX a combination of: 1) technical expertise to match the ZBM to the end application (remembering that every country and in some cases every state has different electrical requirements and certifications); 2) sales channels (they typically have hundreds of sales staff across many different countries); 3) the allure of large orders over time; and 4) credibility. While it takes these global SIs significant time to get moving, once they start selling through their channels, the expectation is that volumes should be significant.

**WHAT:** Currently these SIs are testing the ZBM and LSB (Large Storage Battery) and have not committed to any substantial orders. It is difficult to second guess what these SIs are doing, but we imagine they are typically in field testing mode. We think that since they are likely to warranty any joint product for the total energy throughput, then they are likely to test the product extensively before moving to larger rollouts. These SIs can perform accelerated testing of the end product to fast track testing but if they chose to wait until they have 100% field tested their business case, then it could take some time before orders flow.

Generally speaking, given the size of the Global SIs, their interest in RFX is likely to be part of a broader portfolio approach to energy management. We think they are reviewing and assessing a number of alternative technologies to understand how they work and how they can be incorporated into products for targeted applications. More specifically, we expect they are trialling the technology because they can see that in a few years the market is growing, should be very large and RFX’s technology could be globally disruptive. Both are still evolving and they don’t want to miss out, but we think many are unlikely to have a specific sales focus. There are of course some that would have a very targeted focus already.

In our view, once the first global SI starts to sell ZBMs in size, the others are likely to follow suit. Consequently, it is important that RFX also works closely with the smaller local companies who typically have faster turnaround times. Smaller SIs should result in faster sales and should also hopefully put some pressure on the larger SIs to get moving.
Smaller scale System Integrators

WHO: Smaller scale SIs including Blue Sky and SMS Global Technologies.

WHAT: These smaller SIs are typically taking the electronics (inverters and controllers) from multinational system integrators (like those listed above) and integrating the electronics with RFX’s ZBM into specific end-user applications in specific countries. As a result of more focused applications, the trial periods are likely to be much quicker and we generally don’t expect these to be part of a broader portfolio approach. They would likely have one or two targeted applications (based around solving a pain point of their existing customers). Volumes are not likely to be as large as Global SIs but, more importantly, neither are the waiting times. These domestic SIs can move quickly once the business case has been proven (and customer capex approved). In our view, these customers are likely to be the driver of the first meaningful sales for RFX.

WHY: Given they are smaller companies, they don’t have big product development budgets so are typically very commercially focused with specific application and goals in mind. We understand, for example, that some business cases are based on field trials that have already been successfully completed (and the commercial case and economics were proved to be successful). With this in mind, we’d expect that in the fairly immediate future, orders should start to flow from the smaller domestic SIs. Since a number of trails were successfully completed in FY15, we expect that the end customers (not the domestic SI but their customer that trialled the ZBM in the field) should be budgeting to purchase more ZBMs in FY16. Assuming capex budgets get approval, then we’d expect orders to flow in FY16 (i.e. the latter half of CY 2015).

COST REDUCTIONS TO DATE

Quantifying the ZBM improvements achieved recently

The key takeaway from Figure 3 below is the ZBM cost per kw hour declined by 36% over the last 15 months. From a cost perspective the highlight of the Flow Battery technology is that it’s based on common materials (unlike competitors) and it’s early days in the cost reduction curve (since it’s an emerging technology). We expect the cost declines for ZBMs to exceed peers over the coming years (especially in context of the fact that the ZBM has just been outsourced to a contract manufacturer whose key focus is quality and costs).
We view the cost reductions illustrated above as significant as they prove to us that RFX has made progress along the path to cost reductions. These ongoing savings are crucial to getting the product to a position where it is economically viable for mass market adoption, in our view.

**COST CURVE LESSONS LEARNT FROM SOLAR PV**

**Improvements experienced with Solar**

We expect that Recommended Retail Price (RRP) cost reductions in ZBM battery storage should follow the trends experienced across Solar Photovoltaics (PV) RRPs. According to Germany Trade & Invest and a number of Australian sources including APVI, PV costs have on average dropped around 20% per annum from 2011 to 2015, and are expected to continue this 20% pa decline over the next two years. PV was not initially economic relative to purchasing power directly off the grid, but the ongoing price deflation has made solar a good economic return.

The cost reductions for PV have come from a combination of different factors including: 1) better operating efficiency (creating more energy throughput); and 2) higher production volumes (lower input costs and improving the manufacturing process). ZBM cost reductions should follow a similar trend over the coming years as most components are plastic and/or are readily available.

In Australia purchasing power off the grid costs on average 30c per kilowatt hour (varying from 22 cents to 33 cents) including a fixed supply charge. For the sake of argument, we’ve looked at what would be required to get ZBM costs (for energy storage) to grid parity.

To see whether these cost reductions are achievable, in light of historical changes in the technology manufacturing cost curve, we review the solar PV saving achieved over the last five years (and expectations for cost trends in the next two years) to overlay this with the ZBM cost trajectory. Assuming a 20% pa reduction in the RRP could see the ZBM below grid parity four years from now (that is at 28c per kilowatt hour, fully installed, by 2019). This assumes no increase in the retail price of electricity, which would decrease this timeframe to 2-3 years depending on the rate of increase.

The potential ZBM pricing trends mentioned above are modelling around the Solar PV trends that have been experienced. This trend, on a five-year basis, is depicted below in Figure 5. Pricing for the average 2.5kw solar PV system has declined from nearly A$7,000 per kilowatt in 2010 to around A$2,000 in 2015. The consumer can now buy a 5kw system for less than A$5,000 installed. This is a 22% per annum reduction in kilowatt prices. **RFX should, in our view, show similar trends over time (i.e. higher throughput and a lower cost per kw hour of installed capacity). This is the key reason, in our view, that RFX investors should be excited about the medium-term outlook for RFX’s energy storage products.**
Tesla's recent household energy storage solution (the Powerwall) created a great deal of consumer excitement with respect to storing solar energy (for later use). We think this proves there is consumer interest and that ultimately there will be demand for such a product. Early adopters will be prepared to pay for non-commercial outcomes now but, for mass market appeal energy, storage costs need to be lower than buying power off-grid. We explore this opportunity below.

**The mass market**

The reasons our aforementioned aspiration target (28c per kilowatt hour) is important for us is that it solves the key utility issue of peak demand by using battery storage as an economic alternative for later reuse (i.e. using battery storage rather than the grid for power). This is illustrated below in Figure 6.

There is a clear time gap between when solar energy is generated and used; and battery storage is perfect for bridging this gap. That is using the PV energy to charge a battery (when the sun is shining) and releasing the energy from the battery when it's required. Not only does this solve the utilities capex dilemma (which is causing rising household energy costs) but it also makes PV substantially more useful for households as on average only one-third of residential PV is used by that household (with the remaining two-thirds being sold back into the grid as its not needed at the time of production).
Currently in Australia it is still cheaper to buy off the grid than store PV power in a battery and reuse it when needed at a later date. Once grid parity is achieved, PV panels that have already paid for themselves can be plugged into a storage device and solar can be used as needed.

**The flip side – oversupply**

RFX Director Simon Hackett recently published a paper highlighting the issues with the crossover of legacy and renewable energy. The key issue is that renewables ramp-up but they are intermittent and consequently base or legacy generation doesn’t necessarily stop. In many cases base generation needs to keep running in case the sudden appearance of cloud rapidly cuts solar energy generation and consumers fall back to the grid to seek supply. Consequently, without energy storage to smooth the rapidly changing supply side, there is an overbuild / oversupply issue. The full article can be found at: [https://simonhackett.files.wordpress.com/2015/05/the-new-power-game-sns2015-05-20.pdf](https://simonhackett.files.wordpress.com/2015/05/the-new-power-game-sns2015-05-20.pdf)
The duck curve below illustrates the oversupply gap in California which is due to over generation as renewables contribute to supply but base load doesn’t turn off in case it’s needed.

The same applies in QLD, with the gap expanding as solar uptakes increases.

Figure 7: The duck curve below illustrates the oversupply gap in California which is due to over generation as renewables contribute to supply but base load doesn’t turn off in case it’s needed.

Figure 8: The same duck curve applies in QLD.

SOURCES: http://instituteforenergyresearch.org/solar-energys-duck-curve/ MORGANS ESTIMATES; COMPANY REPORTS

SOURCES: Genex Prospectus; Grattan Institute, Energex.
As Figure 9 below illustrates, 68% of QLD energy generation is from coal, which cannot scale up or down quickly.

![Figure 9: Queensland’s current energy generation mix based on 12,434 MW of wholesale supply](image)

SOURCES: Genex Prospectus; Grattan Institute, Energex

Given coal generation cannot scale up or down quickly, it is often left running. This impacts the wholesale price, which peaks around 6pm.

![Figure 10: QLD demand and pricing](image)


Where does RFX fit into this?  
RFX does not currently offer a household targeted energy storage solution but we expect it will come to market over the next 12 months.

THE APPLICATIONS AND ECONOMICS OF HOUSEHOLD ENERGY STORAGE  
Given increased interest in household energy storage, we have reviewed the applications and economics of this potential market. We compare the pros and cons of the Powerwall (since it’s currently the most topical and perceived to be the competitive household energy storage solution) versus the ZBM. We also review (at a later point in this research) energy storage in context of a QLD household application (the economics of an average QLD household with a 5kw solar PV system).
Pros and cons of the Powerwall versus the ZBM

It is important to note that Tesla’s car and household storage solution both use Panasonic i8650 batteries and that Panasonic is also now offering a storage product. Panasonic has agreed to trials with RedEnery (the retail arm of Snowy Hydro) as well as Ergon Energy and ActewAGL. The product specifications look very similar to the Tesla Powerwall.

“While we recently entered into various formal agreements with Panasonic on the Gigafactory, we have very little experience in building a factory of the size and scope planned for the Gigafactory, and no experience directly in the production of lithium-ion cells.” Source: Page 18 of Tesla’s FY14 Annual Report. Tesla does not have its own battery and the Gigafactory is based around the Panasonic product. Consequently, its costs are dictated by Panasonic.

The Powerwall is ideal for short-term power spikes (e.g. you get home and turn on every appliance in your house for a short period of time) but it’s not ideal for running a steady long-term energy base load. The ZBM, on the other hand, is ideal for running a steady long-term energy base load but not ideal for large /peaky power spikes. The Tesla power rating of 2kW is not sufficient to meet most household demands such as an electric kettle, hair dryer or electric oven, each using at least 2kW. A clothes dryer uses around 4kW.

We liken the benefits of the Powerwall to peak energy generation through gas turbines or sprinting (to paraphrase RFX’s Director and major shareholder Simon Hackett). The ZBM is more akin to base load energy generation or marathon running. Consequently you can get a greater distance or more kilowatt hours of energy throughput from a ZBM.

In reality most households are running marathons not sprints and consequently the amount of energy throughput a battery offers per day is an important factor to consider. The average Australian household uses around 20kw hours of power per day and less than one-third of the power generated by the average solar PV system. Consequently, we think a 10kWh battery system is the most suited system size for the average Australian household.

Tesla’s Powerall is built for a daily throughput of 5.6kWh, so to make use of solar or shave a meaningful amount off peak prices requires two Powerwalls (11.2kW hours per day). One ZBM on the other hand can cater for 9.9 kW hours per day. In this context the average household would need to purchase two Powerwalls or one ZBM. In this case the ZBM cost is potentially already lower the Powerwall (based on the key requirement for around 10kw hours of daily throughput). The key swing factor for the economics (whether or not a ZBM is cheaper than a Powerwall) is the warranted kw hours on a Powerwall.

Given the Powerwall is not yet available in Australia we haven’t been able to get the warranty details. We have registered for a Powerwall and will update our research to reflect the facts when they become available. What we do know is that it has a 10-year warranty but what we don’t know is whether the warranty is for 365 days per year on 220 days per year (the typical number of days that solar is generated and renewables are often warranted for). This is a key component in the economies.

Comparing the economics of the ZBM versus the Powerwall

Figure 11 below shows that if the Powerwall is warranted for 365 days per annum, then the ZBM is around 57% more expensive per kilowatt hour and RFX would need to drop its RRP by 45% (or increase the warranted throughput by 56%) to match the Powerwall economics. However, if the Powerwall is warranted for 220 days per annum, the ZBM is already 5.3% cheaper (in the context of requiring 10kw hours per day of household energy storage). Regardless, we think the ZBM has more room to move with respect to lowering costs.
We also note the key point of product differentiation is the number of years warranted. RFX’s is effectively 6 years with a higher daily throughput. Given the ZBM has lower degradation over the battery life, it’s possible that the ZBM warranty gets extended to 10 years. Should this happen (as illustrated below), then the ZBM economics are much more compelling.

The key inputs to our cost assessment are illustrated in Figures 13 and 14 below.

Figure 14 illustrates the energy throughput of each solution. If we assume the Powerall is 365 days per annum warranty over ten years, then the energy...
throughput that is warranted is higher. However, the Powerwall battery has a high rate of degradation over a ten-year period (than the ZBM). Consequently, if RFX extended its warranty to ten years, it would produce nearly double the energy throughput (36,184 kw hours for the ZBM) versus (20,502 kw hours for the Powerwall).

The key point from Figure 14 is that after 5 years, the Tesla energy capacity reduces to below 6kW capacity whilst the Redflow product is still at 10kW capacity due to the higher and quicker degradation of the Tesla product.

**Economic comparison**

If we assume the worst case from RFX’s perspective (that the Powerwall is warranted for 365 days per annum), then the ZBM is currently not cost competitive with the Powerwall. The ZBM is however better suited to a number of specific applications such as remote telco sites in salty environments. Furthermore, the ZBM is now commercially available whereas the Powerwall is not. We have registered for a Powerwall and it looks like they won’t be available in Australia until the end of CY15.

If it’s a cost game that RFX is pursuing, we estimate it would require a 25% increase in energy throughput and a 25% reduction in RRP to match the Tesla price. This would be similar to what RFX achieved in the last 12 months. Consequently, we think this is comfortably achievable and that Tesla has probably already put forward close to its best price (for the next few years).

Alternative levers for cost competitiveness with the Powerwall include a 36% cost reduction assuming no increased energy throughput or a 56% increase in energy throughput. We believe a combination of both, with each offering a 25% improvement, is most likely.

**FINANCIAL IMPLICATIONS (OF ENERGY STORAGE WHEN COMBINED WITH SOLAR) FOR THE AVERAGE QLD HOUSEHOLD**

The average consumer can get around 5.6kw hours per day out of Powerwall or 9.9kw hours per day out of a RFX ZBM (over a 10-year period). For context, the average Australian household consumes 20kw hours per day of power.

The smaller solar PV system of 2.5 kw hours should generate around 10kw hours of energy per day. Of course, some days it is raining or not very sunny so solar generates very little power.

For a practical case study we have reviewed the economics of energy storage in the context of my own 5kw household solar unit in QLD, which generates around 20kw hours per day (based on 90% efficiency over a 4.5 hour optimal PV
power generation period in summer). When the sun is shining (and solar power is generated) it costs about 6c per kilowatt hour for solar power versus around 32c to buy power directly off grid. Installing solar has reduced my quarterly power bill by around 25% but the big problem is I’m selling the unused solar back to the grid for around 8c and buying back the same thing later for around 32c. This is based on 2014 feed in tariffs, grid prices and includes a pro-rata allocation of the daily supply charge / connection fee.

Because my Solar was installed recently, there is 24c difference between the rebate I get for selling into the grid and what I pay for buying off the grid. If I could reuse my solar power at an economic price (through batteries), it would be a good environmental and economic outcome. Once my solar has paid for itself (3-4 years), I will be getting free power and the ability to reuse this at a later time to the full value of 32c that I would be otherwise paying.

**What the economics really are, based on our estimates**

We have based the below NPVs on the price of a single energy storage unit (one Powerwall versus one ZBM). As we mentioned above we think the average household would really need two Powerwalls (assuming that 10kw hours per day is their target for energy storage). However, we’ve attempted to keep this simple for illustrative purposes.

The key outcome of the below exercise is to work out at what point storing household solar for later use becomes economic.

The key inputs for our NPV calculations are consistent across the five key data points / below figures. There are:

1) A 10% weighted average cost of capital;
2) Buying power off grid at 32c per kilowatt hour;
3) Selling solar power to the grid at 8c per kilowatt hour;
4) Generating a 24c saving per kilowatt hours using storage (2-3); and
5) No escalation in grid prices (which is contrary to current trends).

Dollars saved simply represents 24c multiplied by the number kilowatt hours drawn from the battery each year.

Figure 15 below illustrates that if the Powerwall has a 365 day warranty, consumers would spend $9,038 today to save $3,151, which is clearly far from an economic outcome.

**Figure 15: Powerwall currently generates a negative NPV**

<table>
<thead>
<tr>
<th>Powerwall - 10 year warranty at 365 days pa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saving per kw hour</td>
</tr>
<tr>
<td>Year</td>
</tr>
<tr>
<td>Efficiency</td>
</tr>
<tr>
<td>Daily throughput warranted</td>
</tr>
<tr>
<td>Days pa warranted</td>
</tr>
<tr>
<td>Annual throughput warranted</td>
</tr>
<tr>
<td>Dollars saved</td>
</tr>
<tr>
<td>NPV (10% WACC)</td>
</tr>
<tr>
<td>Year 1 capex</td>
</tr>
<tr>
<td>NPV vs capex</td>
</tr>
</tbody>
</table>

Figure 16 illustrates that if the Powerwall has a 220 day warranty, consumers would spend $9,038 today to save $1,899, which is an even poorer investment decision.
### Figure 16: Powerwall currently generates a negative NPV

<table>
<thead>
<tr>
<th>Powerwall - 10 year warranty at 220 days pa</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Saving per kw hour</td>
<td>0.24</td>
</tr>
<tr>
<td>Efficiency</td>
<td>100% 96% 91% 87% 82% 76% 74% 69% 65% 60%</td>
</tr>
<tr>
<td>Daily throughput warranted</td>
<td>7.0 6.7 6.4 6.1 5.8 5.5 5.2 4.8 4.5 4.2</td>
</tr>
<tr>
<td>Days pa warranted</td>
<td>220 220 220 220 220 220 220 220 220 220</td>
</tr>
<tr>
<td>Annual throughput warranted</td>
<td>1,540.4 1,472.4 1,404.8 1,337.2 1,269.6 1,202.0 1,134.4 1,066.8 999.2 931.5</td>
</tr>
<tr>
<td>Dollars saved</td>
<td>$369.6 $353.4 $337.1 $320.9 $304.7 $288.5 $272.2 $256.0 $239.8 $223.6</td>
</tr>
<tr>
<td>NPV</td>
<td>$1,899.6</td>
</tr>
<tr>
<td>Capex</td>
<td>$9,038.0</td>
</tr>
<tr>
<td>NPV vs capex</td>
<td>21%</td>
</tr>
</tbody>
</table>

**SOURCES:** MORGANS, COMPANY REPORTS

Unfortunately, the economics for the ZBM are also not currently attractive (for household energy storage). Consumers would spend A$15,241 to save A$5,464. But as we mentioned, the ZBM has much more room to cut costs and improve the economics, in our view.

### Figure 17: Economics of the ZBM 3.0 (the current offering with 6 year warranty)

<table>
<thead>
<tr>
<th>ZBM 3.0 - currently on offer with 365 days over 6 year warranty</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Saving per kw hour</td>
<td>0.24</td>
</tr>
<tr>
<td>Years</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Efficiency</td>
<td>100% 98% 96% 93% 91% 89%</td>
</tr>
<tr>
<td>Daily throughput warranted</td>
<td>11.0 10.8 10.5 10.3 10.0 9.8</td>
</tr>
<tr>
<td>Days pa warranted</td>
<td>365 365 365 365 365 365</td>
</tr>
<tr>
<td>Annual throughput warranted</td>
<td>4,015.0 3,928.9 3,838.7 3,750.6 3,662.5 3,574.4</td>
</tr>
<tr>
<td>Dollars saved</td>
<td>$963.6 $942.4 $921.3 $900.1 $879.0 $857.8</td>
</tr>
<tr>
<td>NPV</td>
<td>$3,991.9</td>
</tr>
<tr>
<td>Capex</td>
<td>$15,241.8</td>
</tr>
<tr>
<td>NPV vs capex</td>
<td>26%</td>
</tr>
</tbody>
</table>

**SOURCES:** MORGANS, COMPANY REPORTS

Simply extending the warranty of the ZBM 3.0 from 6 to 10 years nearly halves the loss.

### Figure 18: ZBM 3.0 economics if the warranty gets extended to 10 years

<table>
<thead>
<tr>
<th>ZBM 3.0 economics if the warranty gets extended to 10 years</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Saving per kw hour</td>
<td>0.24</td>
</tr>
<tr>
<td>Efficiency</td>
<td>100% 98% 96% 93% 91% 89% 87% 85% 82% 80%</td>
</tr>
<tr>
<td>Daily throughput warranted</td>
<td>11.0 10.8 10.5 10.3 10.0 9.8 9.6 9.3 9.1 8.8</td>
</tr>
<tr>
<td>Days pa warranted</td>
<td>365 365 365 365 365 365 365 365 365 365</td>
</tr>
<tr>
<td>Annual throughput warranted</td>
<td>4,015.0 3,926.9 3,838.7 3,750.6 3,662.5 3,574.4 3,486.2 3,398.1 3,310.0 3,221.8</td>
</tr>
<tr>
<td>Dollars saved</td>
<td>$963.6 $942.4 $921.3 $900.1 $879.0 $857.8 $836.7 $815.5 $794.4 $773.2</td>
</tr>
<tr>
<td>NPV</td>
<td>$5,436.7</td>
</tr>
<tr>
<td>Capex</td>
<td>$15,241.8</td>
</tr>
<tr>
<td>NPV vs capex</td>
<td>36%</td>
</tr>
</tbody>
</table>

**SOURCES:** MORGANS, COMPANY REPORTS

Recently AGL hosted an investor day where it commented that the rule of thumb for utilities is that energy storage would need to have a 7-year payback before it becomes attractive to the mass market.

We believe the RFX has potential to generate a 7-year payback. The figure below illustrates the key requirements to get there. **By increasing throughput by 50% and lowering capital costs by 33%, the economics turn very favourable.** This sort of offering could achieve mass market adoption, in our view, as we estimate the average household would spend $6,631 to save $13,026.
**Figure 19: One possible outcome for a 7-year payback**

ZBM? - if RFX extended the 365 days warranty from 6 to 10 years, increased the throughput and decreased the cost - this is NOT on offer now

<table>
<thead>
<tr>
<th>Years</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>100%</td>
<td>98%</td>
<td>96%</td>
<td>93%</td>
<td>91%</td>
<td>89%</td>
<td>87%</td>
<td>85%</td>
<td>82%</td>
<td>80%</td>
</tr>
<tr>
<td>Days pa warranted</td>
<td>365</td>
<td>365</td>
<td>365</td>
<td>365</td>
<td>365</td>
<td>365</td>
<td>365</td>
<td>365</td>
<td>365</td>
<td>365</td>
</tr>
<tr>
<td>Annual throughput warranted</td>
<td>4,015.0</td>
<td>3,926.9</td>
<td>3,838.7</td>
<td>3,750.6</td>
<td>3,662.5</td>
<td>3,574.4</td>
<td>3,486.2</td>
<td>3,398.1</td>
<td>3,310.0</td>
<td>3,221.8</td>
</tr>
<tr>
<td>Savings per kw hour</td>
<td>0.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td>100%</td>
<td>98%</td>
<td>96%</td>
<td>93%</td>
<td>91%</td>
<td>89%</td>
<td>87%</td>
<td>85%</td>
<td>82%</td>
<td>80%</td>
</tr>
</tbody>
</table>

**SOURCES: MORGANS, COMPANY REPORTS**

**REVIEW OF THE TESLA OFFERING**

On our estimates the ZBM is not currently competitive with the well marketed Tesla Powerwall and neither provide an economic return for small scale storage. However, we expect the ZBM has substantially more room to drive costs lower than the Powerwall. For example, Tesla has committed billions of dollars and years of construction time to get its battery costs 30% lower (via its Gigafactory). RFX dropped its battery cost 36% last year and we expect it has ample room to continue at a similar rate, which could comfortably put it at a lower cost than Tesla within 24 months. We also note that the Tesla Powerwall is not currently commercially available in Australia.

**RFX’s ZBM cost versus the Tesla Powerwall**

The Tesla Powerwall has received a great deal of publicity given its cheap headline cost of around US$3,000. At face value (and relative to peers) this looks like a very compelling product. However, the headline costs are not the real, infield costs.

In reality, the cost is closer to US$7,100 as the Powerwall requires a costly inverter and installation. Interestingly, the only installer of the Powerwall in the United States is SolarCity which is directly related to Tesla. Elon Musk, founder of Tesla, is also the Chairman of SolarCity. SolarCity was founded by his relatives, which leads us to believe there may be some cost allocation between the two.
The Powerwall costs are likely to fall over time as Tesla opens its “Tesla Gigafactory” in Nevada, USA in 2017. Construction of this facility began in June 2014 and the primary goal is to build batteries in scale to support Tesla motors. Despite taking five years to reach full capacity, costing US$4-5 billion to build, and being the largest facility of its kind in the world, Tesla’s Gigafactory will result in just a 30% reduction is the cost per kilowatt hour (kWh) of its battery according to the company.

To quote Tesla directly “By 2020, the Gigafactory will reach full capacity and produce more lithium ion batteries annually than were produced worldwide in 2013, ... In cooperation with Panasonic and other strategic partners, the Gigafactory will produce batteries for significantly less cost using economies of scale, innovative manufacturing, reduction of waste, and the simple optimization of locating most manufacturing process under one roof. We expect to drive down the per kilowatt hour (kWh) cost of our battery pack by more than 30 percent.” Source: http://www.teslamotors.com/gigafactory
WHY TESLA HAS LESS ROOM TO MOVE ON COSTS

The three key constraints of the Lithium Ion battery are:

1) It’s based on rare earths which by their very nature are rare and therefore are expensive inputs costs;

2) The technology has been commercial for a number of years. It’s a key input that led to more usability and therefore mass adoption of laptops/iPads and smart mobile phones. As a result of being commercial for a number of years, a large portion of the technology and manufacturing improvements (and consequent cost reductions for consumers) have already been achieved;

3) The chemistry of the battery means it cannot be fully discharged without damage. Consequently, it’s overbuilt and then runs a lower throughput. For example, we estimate the 7kw daily discharge Powerwall is actually the 10kw battery technology constrained to 70% depth of discharge and then warranted for an average of 5.6kw per day; and

4) The materials are not environmentally friendly and the cost to recycle lithium batteries is rarely considered in the total cost of ownership.

As a result of these constraints and less room to cut costs, we think the Powerwall isn’t ultimately the best technology for household consumption. It’s perfect for powering electric cars as it requires high energy throughput at times, which is the key benefit of the Lithium Ion battery (and a shortfall of the Zinc Bromine Battery).
SOME OVERSEAS EXAMPLES

An American example of packaged solar

Once the mass market for household energy storage becomes reachable, we are likely to see new products and new financial instruments built around it. NASDAQ listed Sun Power (NASDAQ:SPWE) offers some insight into what end user products might look like as they package solar solutions and sell these to households at a cost per kilowatt hour. Sun Power is effectively taking upfront capex (the cost of installing solar PV) and repackaging it as opex, which works as a substitute for what utilities currently do.

Solar PV and energy storage trends from Germany

Germany is the largest Photovoltaics market in the world. Around 20% of Germany’s renewable energy comes from PV and it leads the world in terms of government support for the industry and R&D in the field (both in terms of renewable generation and adoptions of energy storage solutions).
In Germany the cost of solar PV has declined from €0.50 per kw hour in 2007 to €0.10 in 2015 (this is an 18% pa decline in the kw price). At the same time, grid electricity prices have increased by a CAGR of 5% from €0.20 per kw hour in 2007 to €0.30 per kw hour in 2015. Consequently, solar is less than half the cost of grid (a €0.20 per differential). The German government is now subsidising energy storage (in an attempt to lower peak prices). As such RFX’s product The ZBM 3.0 is priced at €0.32 after including a €3,000 (30% of RRP) government subsidy. It is currently within a whisper of having a positive economic return for consumers.

Figure 24: What the end goal might look

Grid Parity Leading the Way to Battery Parity

SOURCE: Germany Trade & Invest
## Figure 25: RFX financials

### Key metrics/multiples

<table>
<thead>
<tr>
<th>Jun-14A</th>
<th>Jun-15E</th>
<th>Jun-16E</th>
<th>Jun-17E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P/E</strong></td>
<td>-16.5</td>
<td>-7.8</td>
<td>-13.6</td>
</tr>
<tr>
<td><strong>PEG</strong></td>
<td>0.3</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>EV/EBITDA</strong></td>
<td>-16.7</td>
<td>-7.0</td>
<td>-14.1</td>
</tr>
<tr>
<td><strong>Price/ Book Value</strong></td>
<td>6.0</td>
<td>4.9</td>
<td>9.0</td>
</tr>
<tr>
<td><strong>Price/ Net Tangible Assets</strong></td>
<td>6.2</td>
<td>5.0</td>
<td>9.3</td>
</tr>
<tr>
<td><strong>Operating cash flow yield</strong></td>
<td>-7.3%</td>
<td>-22.7%</td>
<td>-6.7%</td>
</tr>
<tr>
<td><strong>Free cash flow yield</strong></td>
<td>-7.4%</td>
<td>-23.3%</td>
<td>-7.1%</td>
</tr>
</tbody>
</table>

### Per share data

<table>
<thead>
<tr>
<th>Jun-14A</th>
<th>Jun-15E</th>
<th>Jun-16E</th>
<th>Jun-17E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diluted shares on issue</td>
<td>202.1</td>
<td>289.3</td>
<td>339.9</td>
</tr>
<tr>
<td>Earnings per share (A$)</td>
<td>-0.02</td>
<td>-0.04</td>
<td>0.02</td>
</tr>
<tr>
<td>Normalised EPS (A$)</td>
<td>-0.02</td>
<td>-0.04</td>
<td>-0.02</td>
</tr>
<tr>
<td>Dividends per share (A$)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Payout ratio</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

### Gearing

<table>
<thead>
<tr>
<th>Jun-14A</th>
<th>Jun-15E</th>
<th>Jun-16E</th>
<th>Jun-17E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Debt</td>
<td>-10.2</td>
<td>-10.5</td>
<td>-4.4</td>
</tr>
<tr>
<td>Net Debt / Equity</td>
<td>-98.7%</td>
<td>-57.4%</td>
<td>-37.5%</td>
</tr>
<tr>
<td>EBIT interest cover</td>
<td>n.m.</td>
<td>n.m.</td>
<td>n.m.</td>
</tr>
<tr>
<td>Invested Capital</td>
<td>-3.3</td>
<td>-1.3</td>
<td>8.5</td>
</tr>
<tr>
<td>Enterprise Value</td>
<td>52.4</td>
<td>79.2</td>
<td>101.0</td>
</tr>
</tbody>
</table>

### Growth ratios

<table>
<thead>
<tr>
<th>Jun-14A</th>
<th>Jun-15E</th>
<th>Jun-16E</th>
<th>Jun-17E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>22.0%</td>
<td>-45.1%</td>
<td>122.2%</td>
</tr>
<tr>
<td>Operating costs</td>
<td>0.0%</td>
<td>17.5%</td>
<td>-15.9%</td>
</tr>
<tr>
<td>EBITDA</td>
<td>-36.6%</td>
<td>-257.2%</td>
<td>36.1%</td>
</tr>
<tr>
<td>EBIT</td>
<td>-35.4%</td>
<td>217.1%</td>
<td>-35.0%</td>
</tr>
<tr>
<td>NPAT</td>
<td>-37.8%</td>
<td>221.7%</td>
<td>33.9%</td>
</tr>
<tr>
<td>EPS growth</td>
<td>-54.3%</td>
<td>110.7%</td>
<td>42.5%</td>
</tr>
<tr>
<td>Operating cash flow</td>
<td>59.3%</td>
<td>-211.3%</td>
<td>70.6%</td>
</tr>
</tbody>
</table>

### Margin analysis

<table>
<thead>
<tr>
<th>Jun-14A</th>
<th>Jun-15E</th>
<th>Jun-16E</th>
<th>Jun-17E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross profit margin</td>
<td>n.m.</td>
<td>-13.8%</td>
<td>29.6%</td>
</tr>
<tr>
<td>EBITDA margin</td>
<td>-58.9%</td>
<td>-383.1%</td>
<td>-110.2%</td>
</tr>
<tr>
<td>EBIT margin</td>
<td>-69.0%</td>
<td>-398.5%</td>
<td>-116.6%</td>
</tr>
<tr>
<td>NPAT margin</td>
<td>-67.5%</td>
<td>-395.6%</td>
<td>-117.8%</td>
</tr>
<tr>
<td>ROE</td>
<td>n.m.</td>
<td>n.m.</td>
<td>n.m.</td>
</tr>
<tr>
<td>ROIC</td>
<td>n.m.</td>
<td>n.m.</td>
<td>n.m.</td>
</tr>
<tr>
<td>Tax rate</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

### Financial summary

**Valuation details**

- **Share Price**: $0.31
- **Market Cap**: A$89.7m
- **Price Target**: $0.39
- **Capital upside**: 25.1%
- **Recommendation**: ADD

**WACC**

- **Valuation**: 15.0%
  - **DCF**: $0.39

**Key metrics/multiples**

- **P/E**: -16.5, -7.8, -13.6, -158.5
- **PEG**: 0.3, 0.1, 0.3, -1.7
- **EV/EBITDA**: -16.7, -7.0, -14.1, 564.3
- **Price/ Book Value**: 6.0, 4.9, 9.0, 8.6
- **Price/ Net Tangible Assets**: 6.2, 5.0, 9.3, 8.9
- **Operating cash flow yield**: -7.3%, -22.7%, -6.7%, 0.1%
- **Free cash flow yield**: -7.4%, -23.3%, -7.1%, -1.9%

### Per share data

- **Diluted shares on issue**: 202.1, 289.3, 339.9, 343.9
- **Earnings per share (A$)**: -0.02, -0.04, 0.02, 0.00
- **Normalised EPS (A$)**: -0.02, -0.04, -0.02, 0.00
- **Dividends per share (A$)**: 0.00, 0.00, 0.00, 0.00
- **Payout ratio**: 0.0%, 0.0%, 0.0%, 0.0%

### Gearing

- **Net Debt**: -10.2, -10.5, -4.4, -3.0
- **Net Debt / Equity**: -98.7%, -57.4%, -37.5%, -24.2%
- **EBIT interest cover**: n.m., n.m., n.m., n.m.
- **Invested Capital**: -3.3, -1.3, 8.5, 8.4
- **Enterprise Value**: 52.4, 79.2, 101.0, 103.6

### Growth ratios

- **Revenue**: 22.0%, -45.1%, 122.2%, 327.7%
- **Operating costs**: 0.0%, 17.5%, -15.9%, 5.1%
- **EBITDA**: -36.6%, -257.2%, 36.1%, 102.6%
- **EBIT**: -35.4%, 217.1%, -35.0%, -94.1%
- **NPAT**: -37.8%, 221.7%, 33.9%, 91.2%
- **EPS growth**: -54.3%, 110.7%, 42.5%, 91.4%
- **Operating cash flow**: 59.3%, -211.3%, 70.6%, 100.9%

### Margin analysis

- **Gross profit margin**: n.m., -13.8%, 29.6%, 35.0%
- **EBITDA margin**: -58.9%, -383.1%, -110.2%, 0.7%
- **EBIT margin**: -69.0%, -398.5%, -116.6%, -1.6%
- **NPAT margin**: -67.5%, -395.6%, -117.8%, -2.4%
- **ROE**: n.m., n.m., n.m., n.m.
- **ROIC**: n.m., n.m., n.m., n.m.
- **Tax rate**: 0.0%, 0.0%, 0.0%, -34.7%

**Sources:** Morgan's forecasts, company reports.
Forecast changes

The key forecast changes relate to RFX’s capital raising. We have consequently increased the cash balance and number of shares on issue. We have lowered our short-term revenue targets and increased them in the medium term. We have also increased operating costs slightly as a result of building out the sales team. The other material change is an increase in inventory held by RFX. We have now ramped up inventory (including demonstration equipment) to the value of A$6.5m. This has resulted in higher working capital requirements in FY15 (as inventory is built up and paid for by RFX this negatively impacts operating cashflow).

<table>
<thead>
<tr>
<th>2015F old</th>
<th>2015F revised</th>
<th>% change</th>
<th>2016F old</th>
<th>2016F revised</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>6.8</td>
<td>2.9</td>
<td>-56.9%</td>
<td>8.4</td>
<td>6.5</td>
</tr>
<tr>
<td>Gross profit</td>
<td>0.8</td>
<td>-0.4</td>
<td>-148.0%</td>
<td>2.4</td>
<td>1.9</td>
</tr>
<tr>
<td>EBITDA</td>
<td>-7.2</td>
<td>-11.2</td>
<td>-57.0%</td>
<td>-5.6</td>
<td>-7.2</td>
</tr>
<tr>
<td>EBIT</td>
<td>-7.7</td>
<td>-11.7</td>
<td>-51.0%</td>
<td>-6.2</td>
<td>-7.6</td>
</tr>
<tr>
<td>NPAT</td>
<td>-7.9</td>
<td>-11.7</td>
<td>-48.9%</td>
<td>-6.2</td>
<td>-7.7</td>
</tr>
<tr>
<td>EPS</td>
<td>-3.3</td>
<td>-4.0</td>
<td>-21.9%</td>
<td>-2.5</td>
<td>-2.3</td>
</tr>
<tr>
<td>Shares on issue</td>
<td>289.3</td>
<td>339.9</td>
<td>17.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCF</td>
<td>$0.33</td>
<td>$0.39</td>
<td>17.5%</td>
<td></td>
<td></td>
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<tr>
<td>Weighted valuation</td>
<td>$0.33</td>
<td>$0.39</td>
<td>17.5%</td>
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<tr>
<td>Premium / (discount)</td>
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<td>0%</td>
<td>n.m.</td>
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<td></td>
</tr>
<tr>
<td>Price target</td>
<td>$0.33</td>
<td>$0.39</td>
<td>17.5%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SOURCES: MORGANS

Risks

The key downside risks for RFX relate to ongoing product improvements (to lower the cost per kw hour while improving product quality) and converting sales.

Following its recent capital raising, RFX has on our estimates, sufficient capital to increase its inventory position materially and cover over 12 months of cash burn. For this point it becomes reliant on increased sales of the ZBM product to fund the company. Should this not occur within the required timeframe then RFX may be forced to raise additional capital through either equity markets or partnership agreements.

RFX has partnered with global leader Flextronics for contract manufacturing of the ZBM. This process was completed in December 2014 and while quality assurance indicates the process has gone well changes to manufacturing create product and quality controls risks. We expect the manufacturing risk is to the upside rather than the downside as the whole point of contract manufacturing with Flextronics was to improve product quality and gain the benefits of large scale manufacturing to lower sales costs.

The key upside risks for RFX’s relate to the possibility of faster or higher than expected sales.

RFX have had a commercial product in the field for the number of years but have not yet converted these trials to commercial sales. Given the global organisations involved it is difficult to forecast when these may convert to sales and in what magnitude. It is possible that RFX convert sales in larger volumes or faster time frames than we are forecasting.

The ongoing interest in energy storage to harness renewable energy generation has resulted in significant consumer and corporate interest in the space. Given RFX’s competitive position and live product with superior traits, we believe RFX could become an acquisition target for a larger multinational looking to build exclusive expertise in this space.
BACKGROUND READING

Interesting reference material to consider

In compiling our research we found the following site useful for reference material.

- NASDAQ:SPWR
  http://investors.sunpower.com/
- International Energy Association
  http://www.iea.org/publications/
- Germany Trade and Invest
- Bloomberg
- US – Aluminium battery for smart phones
- Tesla Energy / Powerwall
- Bosch Solar Storage
  http://bosch-solar-storage.com/
- Global Sustainable Energy Solutions
- Panasonic investors
  http://www.panasonic.com/global/corporate/ir.html
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