BLUE OCEANS CAPITAL

SolarEdge - World leader in Solar Energy.

Introduction

Solar power is now the cheapest form of energy production 2nd only to wind. Those economics have seen rapid grid defection leading to rises in grid power costs and huge latent demand for battery storage. SolarEdge has ridden that rise in demand, and with its unique capabilities in innovation, has become one of the world's leading inverter manufacturers. They now look to leverage those capabilities into battery storage and virtual grid solutions. The company has revenue growth of 42% CAGR over the last three years, produced $189m USD in cash flows from operations in FY19, and funds all its growth from internal cash flows.

Subsidisation unlocks wave of economic surplus

Years of PV subidisation led to rapid uptake of solar, increasing sales volumes and in-turn greater competition amongst solar manufacturers and installers. That competition lowered the price of PV to a point where it became a cheaper source of power than grid supply. At that time the velocity of solar uptake really took off, as did its viability, with the price of unsubsidised solar now significantly lower than coal, gas, or nuclear power. Chart One below shows the rise in installed capacity of solar energy and it’s decrease in cost in $/MWh as compared to power produced by coal.

Installed Solar Capacity (GW), Unsubsidised Solar ($/MWh) and Coal ($/MWh). Trends Over 8 Years

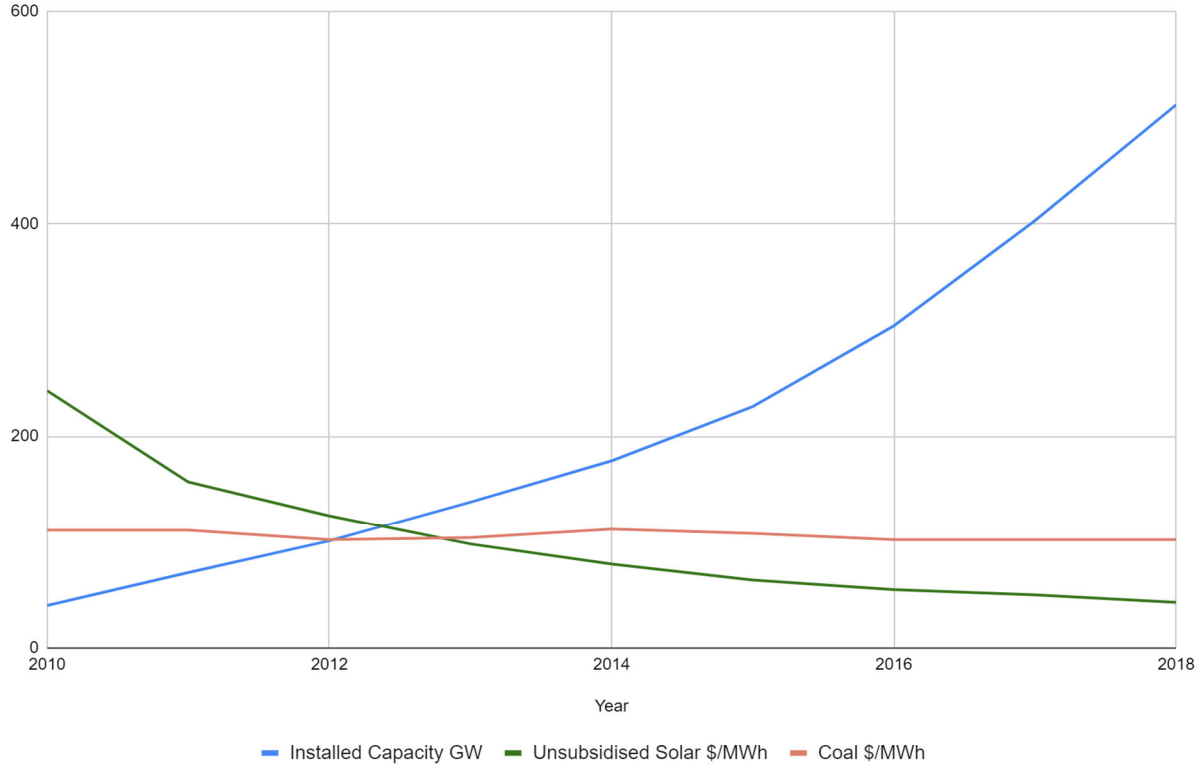

Chart 1. Cost of unsubsidised solar and growth of installed solar Capacity VS cost of coal over 8 years (Source: Lazard Levelised cost of energy analysis, 2018).

Chart 1 above illustrates the influence of the reduction in the cost of solar once it became less than coal. Installed capacity begins to spike upwards from around 2014 which is shortly after the cost of solar falling below coal. The continual downward pressure on pricing means that solar subsidisation is no longer a part of its economic viability.

Less revenue for grid suppliers to spread enormous fixed costs over

Rapid uptake of PV, by default, results in less usage of grid supply. That means less revenues to absorb the massive fixed costs of utilities and forces them to increase prices, especially at night when solar can't compete.

"Every minute on average, 6.5 solar panels are installed on Australian rooftops"
(ABC News. Oct, 2018.)

PV Demand Excellerating

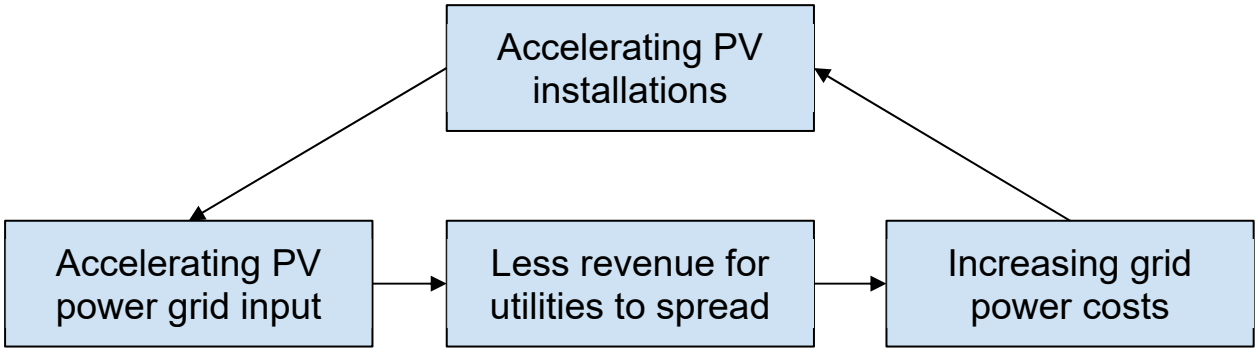

Figure One. Drivers of PV demand acceleration.

Figure One above shows the relationship between solar installations, increased COGS as a portion of revenue for utilities and subsequent rises in grid power costs further accelerating demand for PV installations. This situation has led to huge latent demand for batteries.

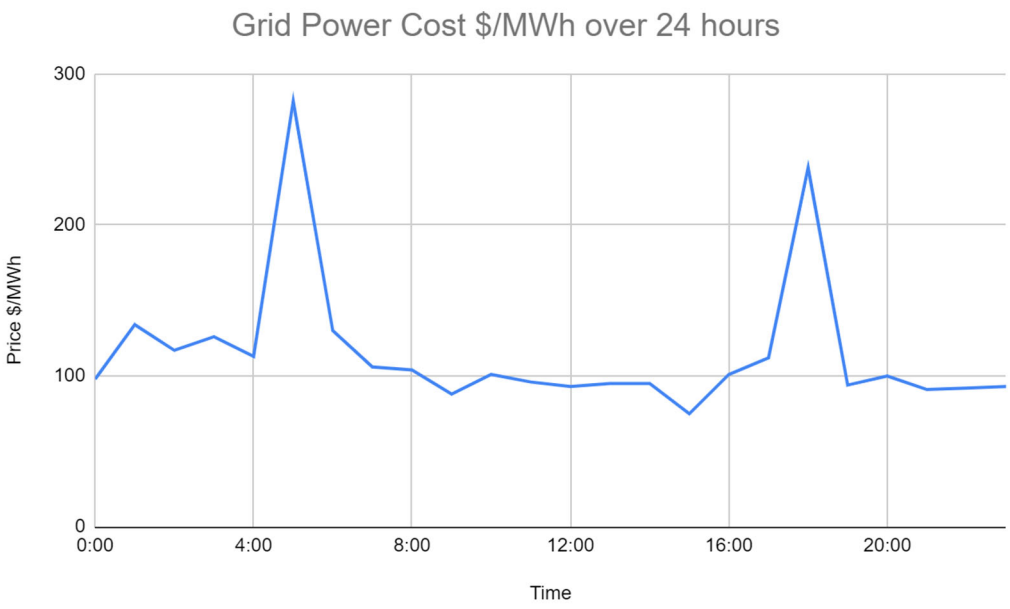

Chart 2. Peak pricing relationship with demand and daylight (Source: Australian Energy Market Operator).

Chart 2 above highlights the spiking of power prices outside of daylight hours when usage peaks. The situation had led to huge latent demand for batteries waiting to be realised the moment they become economically feasible in residential applications.

SolarEdge exceptional growth

The effects above had led to remarkable growth for SolarEdge with revenues growing by 42% CAGR over the last 3 years. It is now the largest inverter manufacturer in the world. SolarEdge has maintained a focus on maintaining margins as it has lowered the price of its products.

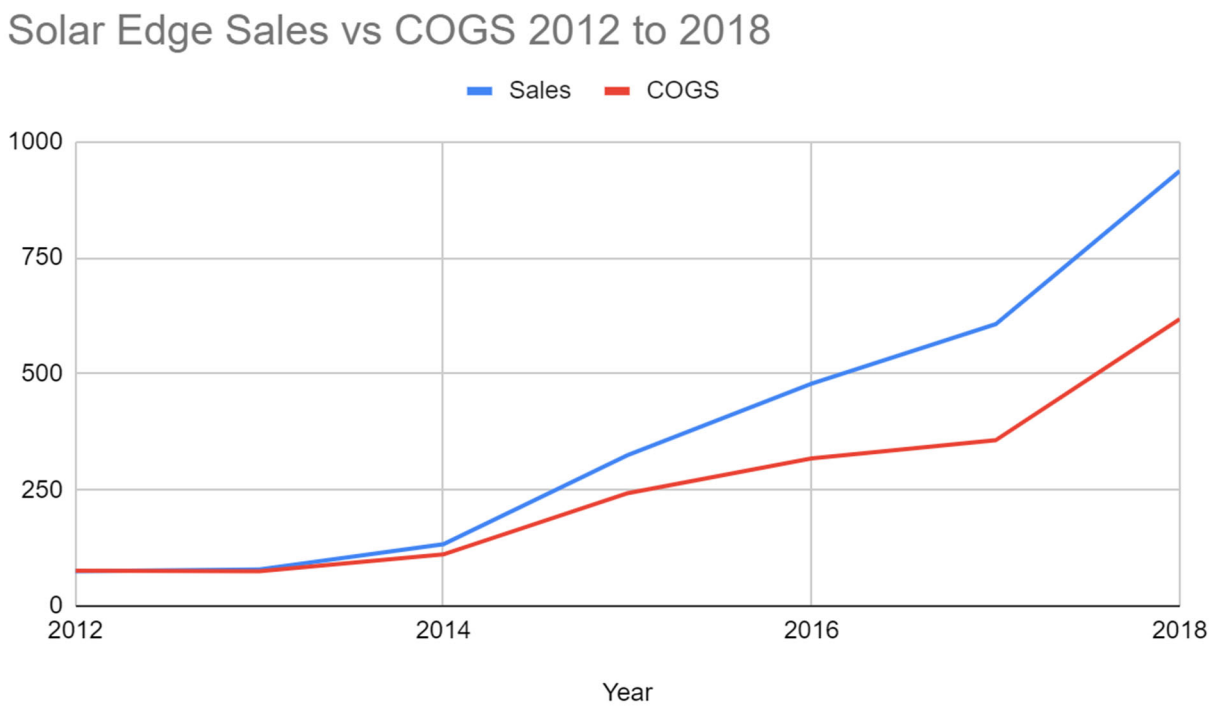

Chart 3. SEDGE sales and cost of goods sold (COGS) from 2012 to 2018. (Source: Factset)

Chart 3 above shows growth in sales and COGS from 2012 (when GOGS were higher than sales) to 2018. A focus on maintaining margins whilst creating a larger market by lower prices has given SEDGE scaling effects. Revenues over the last three years have grown by 42% CAGR while funds from operations has grown at 78% CAGR. Lowering prices has been necessary to increase the addressable market of solar making it more viable in more areas. Europe was not traditionally a native solar application due to its low number of daylight hours per year. However solar is now growing very quickly and Europe made up over 40% of SEDGE total revenues in FY18.

Diverse revenue geographies and products

53% of revenues in Q1 FY19 were generated outside of the US made up of:
US - 47%
Europe - 40%
Rest of World (Mostly Australia) - 13%

SEDGE is diversifying its revenue streams outside of the residential market with 44% of revenues now coming from commercial installations and SEDGE now winning utility scale tenders. SEDGE currently offers:

- Single phase inverters for residential applications ranging from 2.5 to 6.0 kW
- Single phase commercial inverters ranging from 8.0 to 10 kW
- Three phase inverters ranging from 5 to 8 kW
- Hybrid inverter
- Residential battery storage using LG Chem battery
- Commercial battery storage by Kokam
- Power optimisers
- Solar Panels
- Smart energy hot water systems

Significant replacement market coming

The life-span of an inverter is approx. 10 -15 years. A significant replacement market is emerging as the first wave of inverts installed approach replacement age.

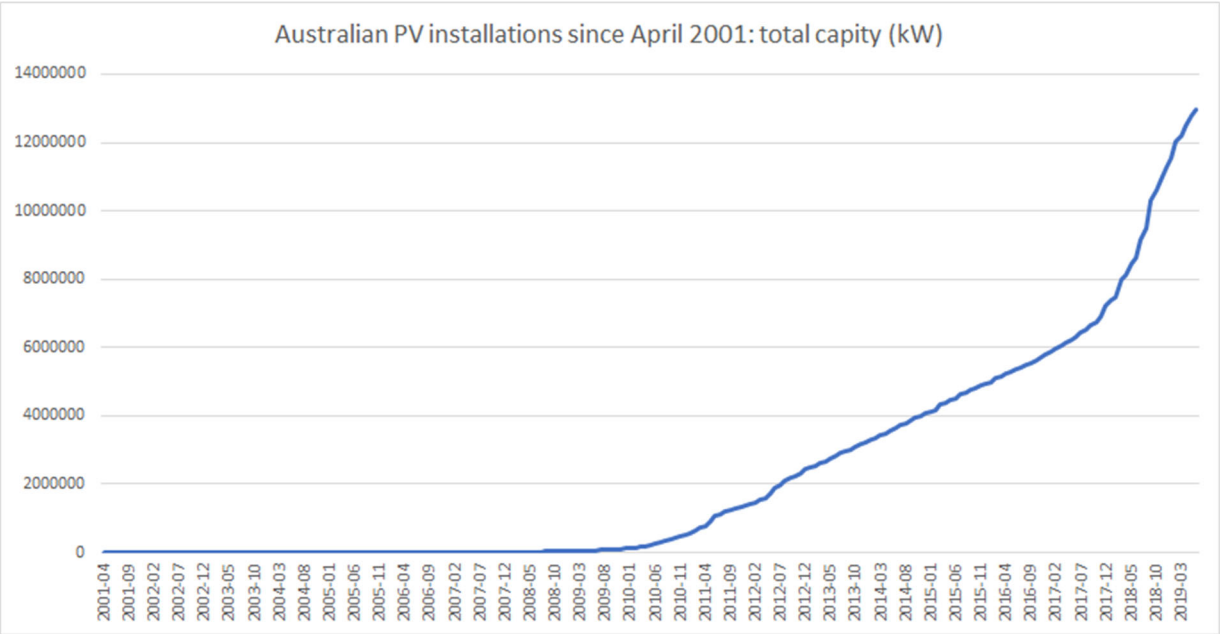

Chart 4. Total installed PV capacity (kW) since April 2001. (Australian PV Institute, 2019)

Chart 4 above shows the significant increase in PV installations from 2010. Using Australia as an example we can see how the first wave of inverters installed are approaching replacement age from next year. The number of inverters requiring replacement will dramatically increase every year proportional to the installed capacity 10 - 15 years prior. This time, people will be looking for an option that can handle both PV and battery.

Strategy

Solaredge is diversifying away from pure solar into battery storage (residential, commercial, & UPS), e mobility and virtual grid solutions.

Residential and commercial battery storage solutions

Battery production is set to begin H1 2020 with the operation of the autonomous Kokam factory in South Korea. McKinsey research (2015) stated that "the market for distributed battery installations in the United States is set to expand by as much as 50% per year." In 2018, SolarEdge took a bold move into the energy storage market with the purchase of Kokam Batteries in South Korea. Around the same time they purchased a SMRE, a producer of electric mobility, automated production machines, and telematics software. They are using capabilities of SMRE to build their own robots for autonomous battery production lines at Kokam and to enter the e mobility market.

E Mobility

With extensive R&D, Solar, and Battery capability, SolarEdge sees itself as being well positioned to be competitive in the e-mobility market. E-mobility is expected to grow at over 30% CAGR to 2030, with the fundamentals transport systems being battery capitility (storage, cost, and power output) and powertrains (efficiency and cost). To win in batteries a manufacturer will need vast scale with technical supremacy. SolarEdge is already the largest inverter manufacturer in the world. They are at the point of sale for more opportunities for battery commercial and residential installations than anyone else. They have already built extensive R&D capabilities that have seen them become the market leaders in PV and inverter innovation. It makes a lot of sense to apply these capabilities to batteries and furthermore to e-mobility batteries. It is the cost of batteries that prevents mass adoption of EV's. Today, EVs often cost $12,000 USD more to produce than comparable internal-combustion engine vehicles with the biggest contributor to this difference being battery cost (Baik, et al, 2019). SolarEdge appears to be tackling this problem by beginning battery production in a market where its already viable, commercial on-site storage, and then rolling out to residential and EV applications. In applying the same R&D capability that allowed them to maintain margins whilst lowering the cost of PV panels and inverters they have the potential to unlock massive latent demand for battery applications at home and in EV's.

Right Time - Commercial & Residential Battery Storage

Economics for battery installation has become viable in some applications. McKinsey estimate that, as of June 2017, 43% of commercial and industrial usage applications in the US were economically viable as shown in figure two below.

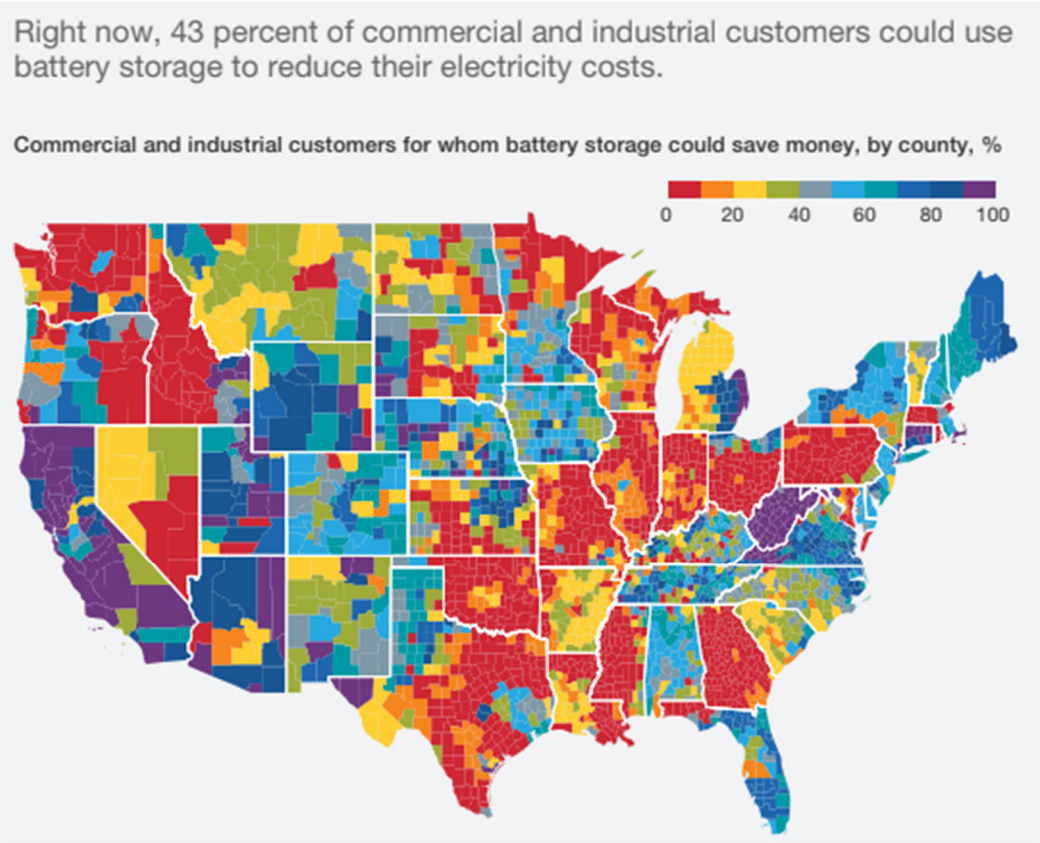

Figure Two. Viability of battery storage in commercial and industrial usage application USA (McKinsey Research, June 2017).

Virtual Grid

There's a lot of sense in SEDGE creating a virtual grid solution. As the world's largest inverter manufacturer no one else has the ability to connect more inverters together than they do. With the move into storage solutions a SEDGE virtual grid becomes even more compelling.

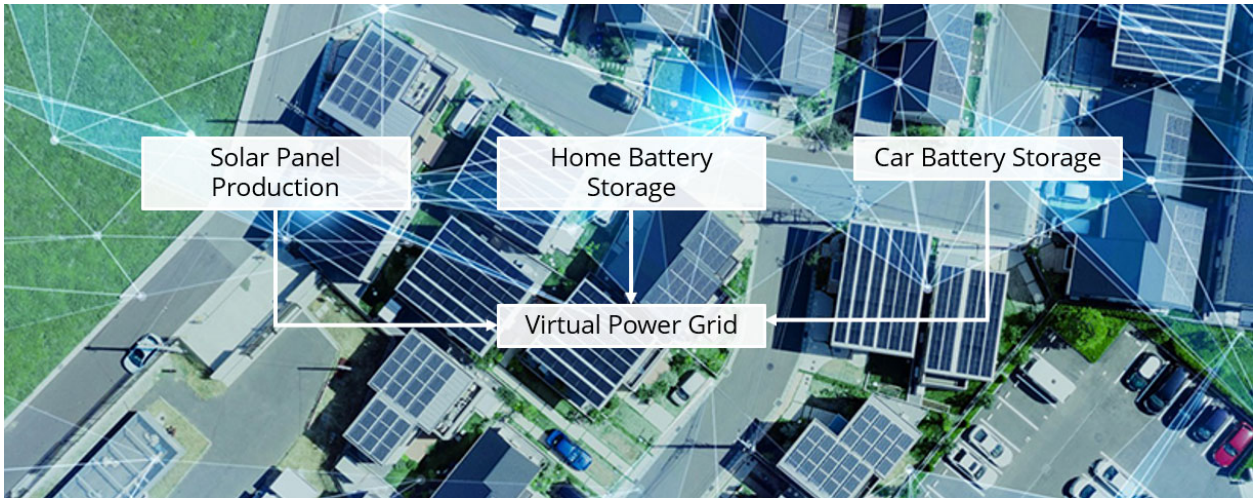

Figure 3. SEDGE connection of PV panels, battery storage and EV storage into a virtual grid.

As shown in figure 3, SEDGE is moving towards connecting various supplies of production and storage into a virtual grid solution. In Q2 FY19 over 1 million solar systems were monitored on their portal with Q2 19 seeing 115,000 systems added. The first virtual trial grid solution is expected to be in place sometime around the end of 2020 and to be offered to the market in 2021.

Self funding

With net margins of 18% producing cash flows from operations of $173m USD in FY18, SolarEdge has no debt and funds it growth through its own cash flows. Net investing cash flows in FY18 including the purchase of Kokam and building out of the new battery factory was only $166m in FY18 while operating cash flows were $189m.

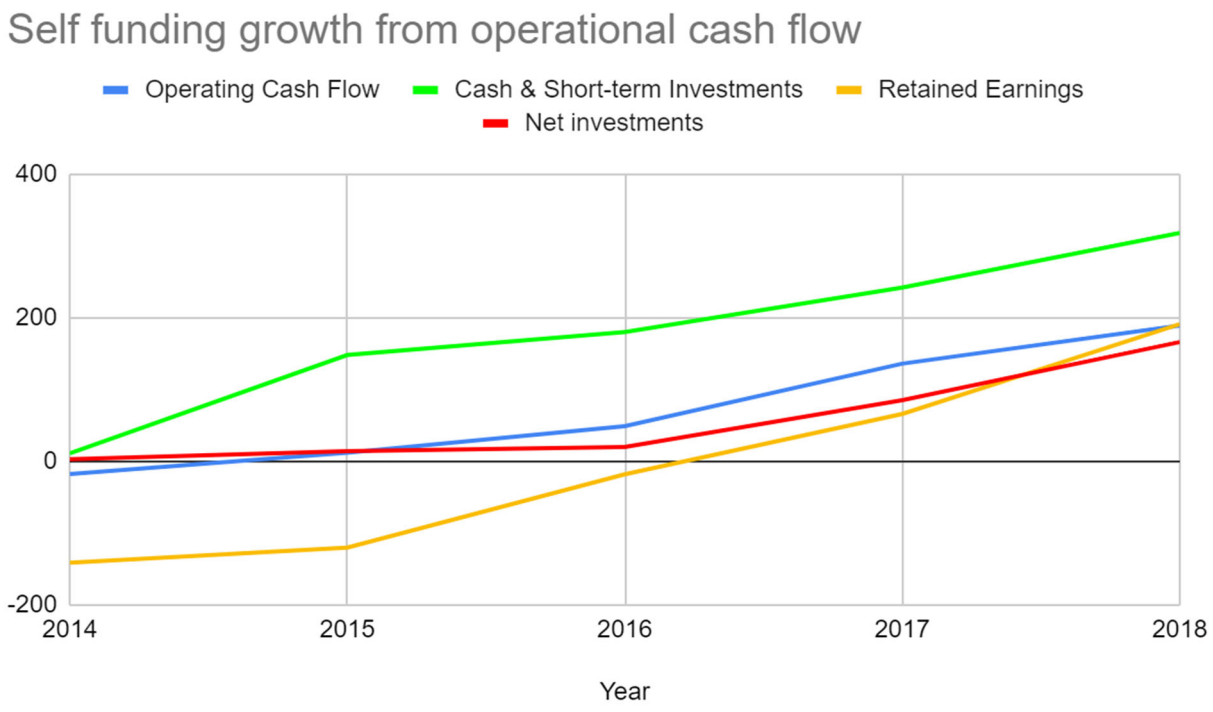

Chart 5 . Net investing cash flow relative to operating cash flow, cash & short-term investments, and retained earnings.

Chart 5 shows the conservate nature of capitalisation at SEDGE. Net investments is less than cash flow from operations while the company has significant cash reserves and building retained earnings.

Valuation and entry point

We became aware of SEDGE through our March 2018 screening. Our valuation indicated a fair price at around $100 per share and with the market at around $40 we condensed our analysis covering the most important aspects. No major red flags presented and so we entered positions in the stock at $42.00 on the 17/04/2019 and $44.59 on 24/04/2019 as shown in chart 6 below. We then completed our analysis over the next few weeks. We were able to get to a good level of understanding of the company and its operating environment and no indicators were found to warrant selling the stock. (We have employed this technique on other occasions and found significant red flags on complete analysis (Wirecard) forcing us to then sell that position a few weeks after making it. The market can move quickly and if the fundamentals look right it can make sense to take a position while finishing analysis).

Chart 6. SEDGE stock price and entry points on the 17/04/2019 and 24/04/2019.

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Australian PV Institute, June 2019. *Australian PV market since April 2001.* Retrieved from:https://pv-map.apvi.org.au/analyses

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