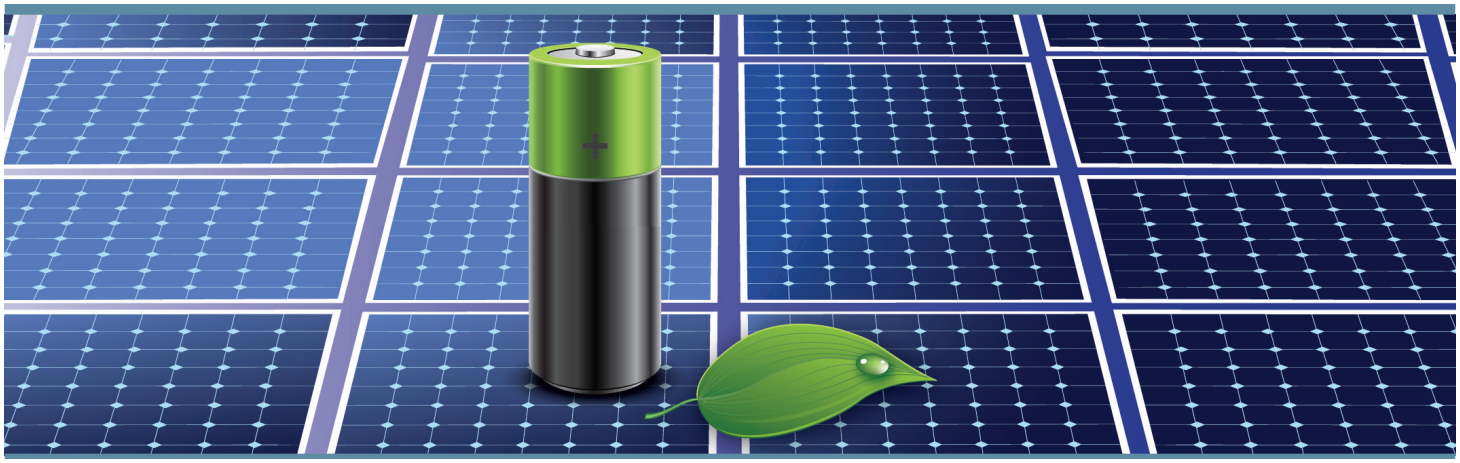


Executive Insights

Volume XIX, Issue 56

Australian Energy Policy & Economic Rationalism

Introduction

Many market commentators consider that the Australian energy market is in crisis. One only has to read the main newspapers semi-regularly to get a sense of industry participants' frustrations and policy makers' desperation to address the problems.

Crafting coherent energy policy among the myriad of issues at play is deeply complex. We believe that policy makers must place themselves in the shoes of industry participants and ask themselves, *'How will consumers and industry participants react to the policy settings we put in place?'* In this very uncertain environment, one thing is certain: Industry participants will respond to the inherent price signals in an economically rational manner, and often in ways that policy makers have not considered.

Consider the evolution of the residential solar PV and residential battery markets. Both provide stark case studies on how policy settings can have dramatic and unintended influences — both positive and negative — on market development.

Residential solar PV — overstimulated

In 2007, the residential solar PV market barely existed — it was not on the radar of the average Australian energy customer, and total installed capacity was less than 6MW. However, by 2010, total installed capacity had grown more than eitghtyfold, to c.495MW.

The explanation for this phenomenal change does not lie in some kind of technological revolution — the effectiveness and efficiency of solar PV technology did not change radically during this period. Rather, it was Australian energy consumers reacting very responsively and rationally to changes in policy settings. Through this three-year period, a range of demand-stimulating policies were made. There was a federal rebate worth up to $8,000, and then the states progressively introduced feed-in tariffs (FITs), with NSW offering a particularly generous FIT, which, at 60c/kWh, was not only very high, but was also gross, rather than net, of energy consumed. These policy instruments were reinforced by rapidly increasing power prices and a general reduction in solar PV system prices. Collectively, these policy instruments and market forces led to payback periods for residential solar PVs crashing — in the case of NSW, from c.35 years in 2007 to a low of c.2 years in 2010 (figure 1).

Australian Energy Policy & Economic Rationalism was written by **Simon Horan**, **Tim McGrath** and **Natasha Santha**, Partners in L.E.K. Consulting's Melbourne office.

For more information, please contact **strategy@lek.com**.

L.E.K. INSIGHTS@WORK

Figure 1: Residential solar PV annual installations

(CY2007, 10)

Source: Clean Energy Council 'Clean Energy Australia Report 2015'; L.E.K. analysis

Policy makers were trying to stimulate the growth of the residential solar PV market, but they did not foresee the speed and magnitude of consumers' response. For example, NSW's Solar Bonus Scheme was overwhelmingly popular — it resulted in 2.5x more systems installed than the original scheme was designed for, leading to scrambling policy responses to curb the blowout in rebate costs. However, in hindsight, it is perfectly rational for consumers to behave the way they did, and had policy makers asked themselves 'How will consumers react?', they would most likely have developed a more balanced suite of policy settings rather than so significantly overstimulating the market.

Residential batteries – stifled

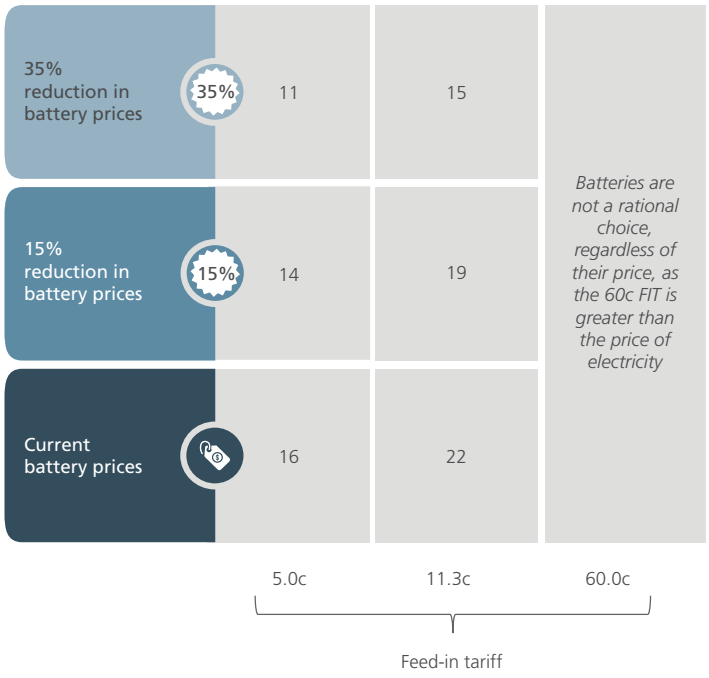
There is much anticipation that the market for batteries to complement residential solar PV will follow a path similar to the solar PV market itself. While many consider this growth to be imminent, the market has not yet shown signs of developing — although it's hard to estimate, it's believed that only a few thousand residential batteries have been deployed to complement the c.1.6M residential solar PV units currently installed. Translating the drivers of residential solar PV growth to the residential battery market suggests that a rapid change in the residential battery market is not imminent. Moreover, several recent policy decisions have unintentionally dampened the already-muted forces supporting growth.

An examination of residential solar PV installations relative to payback period indicates that there was a major increase in demand when paybacks reached c.7 years. Intuitively this makes sense, as this timeframe is within the timeframe that one typically owns a home and is materially less than the typical lifespan of a solar PV unit.

Taking Victoria as a case study (figure 2), the current payback times for adding a battery to complement a standard 3kW solar PV unit are currently prohibitively high — batteries are simply 'out of the money'. All other factors being equal, for those on the typical 11.3c FIT, the cost of an installed battery will need to drop by more than 50% in order to reach the c.7-year payback threshold. Indeed, for the Victorian solar PV owners fortunate enough to be on the 60c FIT, the economics of batteries simply will never stack up.

Figure 2: Battery payback period

Batter Payback (years) – adding a battery to an existing solar PV system



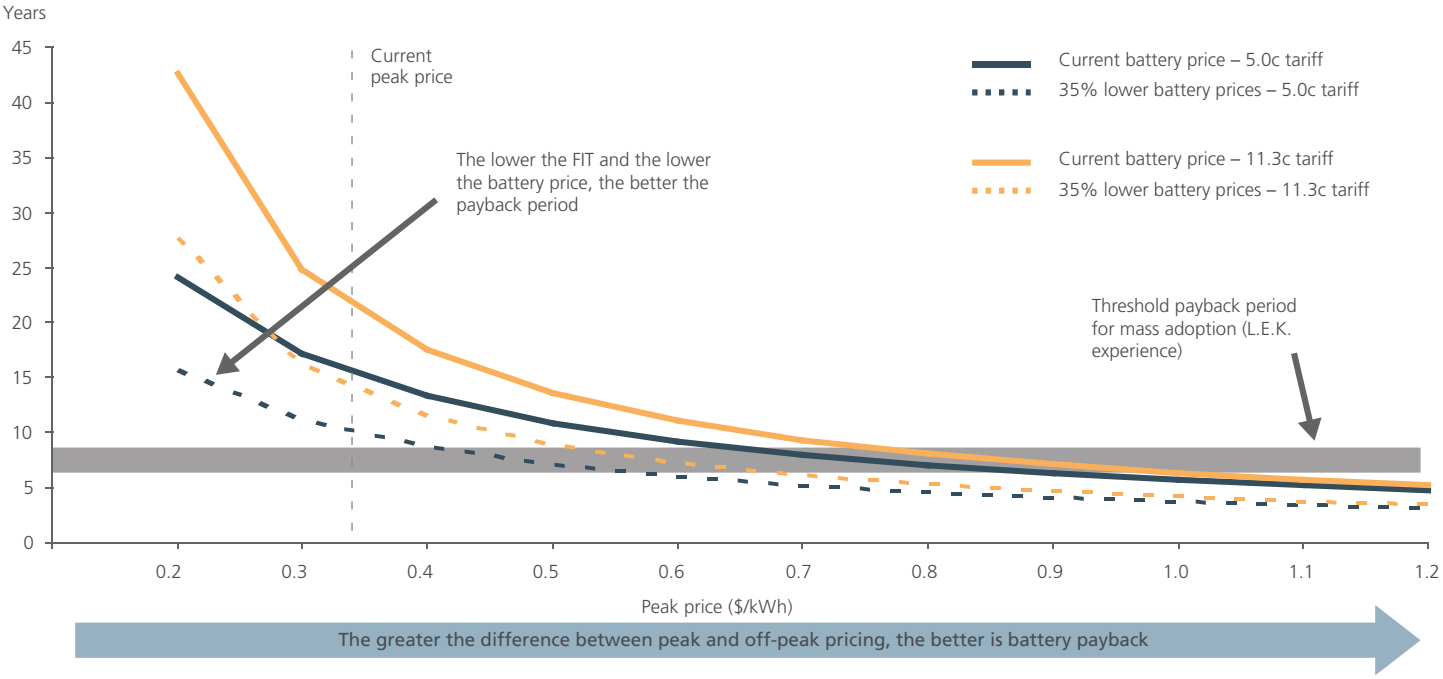
Moreover, recent Victorian government energy policy decisions are stifling the development of the battery market — namely the increase in the minimum FIT from 5c to 11.3c and the decision to make true time-of-use pricing an 'opt-in' choice for consumers.

The economic case for batteries is centred on the ability to store excess energy generated when prices are low and consume that energy later, when prices are higher (figure 3). The more than doubling of the minimum FIT to 11.3c undermines this ability, as it reduces the

price delta between low-price and high-price periods. The more than doubling of the minimum FIT has increased the payback on a battery by c.6 years. Similarly, not enabling a true time-of-use pricing regime dulls the arbitrage of storing excess energy in low-price periods and consuming it in high-price periods, as it once again reduces the price delta (and duration delta) between low-price and high-price periods.

Whilst it is a complicated combination of factors at play, had the minimum FIT been retained at 5c and a true time-of-use pricing regime been enacted, it would have only required very believable reductions in battery price for the addition of a battery to an existing solar PV system to have reached the c.7-year payback threshold.

Figure 3: Payback — adding a battery to an existing solar PV system



Conclusion

The path forward to a coherent energy policy will be slow and complicated, and a multitude of trade-offs will inevitably be required. However, taking a simple, economically rational approach and considering beforehand how consumers and industry participants will react to any policy settings put in place will aid in designing policies that will enable their intended goals and avoid unanticipated consequences.

About the Authors

Simon Horan is a Partner of L.E.K. based in the Melbourne office. He has over 20 years of experience in management consulting in Australia and Asia, and co-leads L.E.K.'s Energy and Environment practice in Australia. Simon's consulting experience is primarily with industrials and energy businesses. His energy experience covers electricity generation, transmission, distribution and retail, and renewable energy.

Tim McGrath is a Partner with L.E.K. Consulting and is the head of the Melbourne Office. He also has co-leadership responsibility of the Energy and Environment practice in Australia. Tim has over 7 years of experience working with clients in the energy and utilities sectors in Australia and has led a number of significant strategy and performance improvement projects across all parts of the value chain.

Natasha Santha is a Principal in L.E.K.'s Melbourne office and has over 10 years of business consulting and engineering experience. Natasha works across a number of asset intensive industries, having led numerous strategic business projects covering performance improvement, strategy activation, mergers and integrations.

About L.E.K. Consulting

L.E.K. Consulting is a global management consulting firm that uses deep industry expertise and rigorous analysis to help business leaders achieve practical results with real impact. Our approach helps clients consistently make better decisions, deliver improved business performance and create greater shareholder returns. The firm advises and supports global companies that are leaders in their industries — including the largest private and public sector organizations, private equity firms, and emerging entrepreneurial businesses. Founded more than 30 years ago, L.E.K. employs more than 1,200 professionals across the Americas, Asia-Pacific and Europe.

For more information, go to www.lek.com.