

# **ARENA INSIGHTS SPOTLIGHT: ALKIMOS BEACH ENERGY STORAGE TRIAL**

AN INTERVIEW WITH SYNERGY

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Australian Government  
Australian Renewable  
Energy Agency

**ARENA**

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# INTRODUCTION

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The [Alkimos Beach Energy Storage Trial](#)<sup>1</sup> (ABEST) set out to test the feasibility of how customer distributed energy resources (DER), with a specific focus on rooftop solar, could be used in conjunction with a community-scale battery to deliver benefits for the stability of the electricity network and for customers.

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INTERVIEW WITH:

**COLIN SMITH**

SYNERGY GENERAL MANAGER CUSTOMER EXPERIENCE

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## ARENA: WHAT MAKES THE ALKIMOS BEACH ENERGY STORAGE TRIAL SIGNIFICANT OR UNIQUE?

**SYNERGY:** While there are many energy storage trials currently in market, the Alkimos Beach Energy Storage Trial (ABEST) was one of the first of its kind.

Western Australia (WA) has some of the highest levels of rooftop solar in the world. Around one in three homes currently have solar systems installed and there is the expectation for this to grow to one in two by 2030. Given this, WA was amongst the first to feel the effects of a shift in the Australian energy market that is now widely recognised to be driving rapid change across the landscape.

With our project partners, Synergy launched the ABEST in April 2016. The project was designed to help explore and better understand the impact that increased uptake of rooftop solar and associated DER assets was having on:

- › the electricity system's stability;
- › the daily load profile of generation; as well as
- › how generators, retailers and customers were changing the way they managed electricity in response.

At the time the ABEST was entirely unique. It was the first project nation-wide to try and address the challenges of system security, large-scale energy storage and DER integration through the installation of a community battery, and the exploration of new customer products geared towards behavioural-change.

The Trial ran for five years, concluding in June 2021. The lessons learnt from this early work in the ABEST holds immense value, and have proven instrumental in shaping subsequent projects.

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## ARENA: WHAT WERE SOME OF THE KEY LEARNINGS?

**SYNERGY:** The recently published Knowledge Sharing for ABEST provides insight into a suite of learnings and discoveries obtained throughout the Trial's five-year period. Due to the project's broad scope this includes both technical and non-technical subject matter. For instance:

### › ACCESS TO ACCURATE CUSTOMER DATA

Over the course of the Trial it became apparent that access to accurate customer data would be critical for developing effective energy solutions in future. While this may seem a given, at the time of the ABEST's launch it did not have the benefit of smart technologies such as Advanced Metering Infrastructure (AMI)<sup>2</sup>, and so the significance of this insight was brought to the fore.

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<sup>1</sup> <https://arena.gov.au/projects/solar-and-storage-trial-at-alkimos-beach-residential-development/>

<sup>2</sup> \*AMI meters are able to digitally measure a customer's energy use and remotely send data to the network operator in half hour intervals.

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The data that was available, often obtained through manual reads of participants' electricity meter and at the end of each billing period - approximately every 60 days - was thoroughly examined. This information quickly became a key element used to inform the project's ongoing analysis. Access to customer data outside of these periods was challenging and the granularity and accuracy of the information was less sophisticated than what we can be gained today. The roll out of AMI did not commence in WA until 2020.

In the current and evolving energy market where there is a two-way flow of energy, and in which customers and their various DER assets play a more active role in their electricity use than ever before, understanding as much as we can about customer energy consumption patterns and behaviours is invaluable. Synergy has taken this on board as it continues to explore new energy solutions, products and services for our customers.

#### > TECHNICAL CONSIDERATIONS

The ABEST was trialling a new energy servicing system that virtually connected individual household solar photovoltaic systems directly to a community battery. This meant the battery was configured much like a home-battery would be in that it did not need to first go through an electricity meter before interacting with the trial participants' solar panels, which is how most utility-scale assets operate.

This concept was unexplored and so there were no firm guidelines, policy or regulations to support a project of this nature and scale. As a result a significant amount of technical investigation was required to understand how to best physically install the battery and operate it day-to-day, while ensuring it interacted with the existing infrastructure and system as it needed to.

Delving into how this configuration would work and gaining oversight of the steps required, has allowed the ABEST to share boiled-down learnings that support much more effective and efficient planning. For Synergy, it has also significantly helped our engagement with the network operator and in turn, our effort to develop energy solutions that are reliable, secure and affordable for our customers. Due to the ABEST, major initiatives we currently have underway now include technical working groups to ensure we work with the network operator to have oversight of all technical requirements and interdependencies.

#### > IMPORTANCE OF A FLEXIBLE PROJECT SCOPE

Throughout the ABEST and even more so today, the project serves as a reminder of just how quickly the market is evolving and how far the industry has come in such a short space of time. This applies not only to the rate of change in generation resources (here in WA the last three years has seen a 1600 per cent increase in large-scale renewable generation, and a 51 per cent increase in rooftop solar pV generation); or how quickly energy technologies have advanced (many home appliances now have in-built wi-fi where reliable connectivity was a challenge faced during the ABEST); but also in consideration of how the industry's relationship with the customer has matured, and how the role of customer is shifting to one that is increasingly more engaged in managing their energy use.

Being able to adapt in line with these shifts, adjust the focus of an investigation accordingly, and speak to customers about how we are doing that along the way - is crucial not only for Synergy but for how industry considers its approach to future trial and energy investment.

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## ARENA: WHAT ARE SOME NEW PROJECTS AND INITIATIVES THAT HAVE BENEFITED FROM THE ABEST?

**SYNERGY:** Synergy is currently working on several key, innovative projects with its industry partners including:

- > another Australian-first initiative, the PowerBank community battery trial;
- > WA's first virtual power plants for schools;
- > WA's first big battery; and
- > WA's biggest virtual power plant.

All of these align with work being undertaken as part of the WA State Government's Distributed Energy Resources Roadmap and Energy Transformation Strategy. All have also drawn from the ABEST in some way. One particular ABEST learning that has been consistently applied to all, is the significance of early and regular stakeholder and customer engagement.

Regular communication with ABEST participants and community groups was one of the major successes of the project and demonstrated the value in continued investment in these interactions. Initiatives such as community information sessions not only provided further customer insights for Synergy, it also worked to enhance the level of investment and interest in the project by participants and those around them.

All subsequent projects Synergy has undertaken now include additional touchpoints of a similar nature within our engagement plans. Some projects, such as the virtual power plants for schools, has taken this a step further by facilitating collaborative workshops with stakeholders for even greater engagement and learning.

## **ARENA: WHAT IS A KEY CHALLENGE TO ADOPTING AND ROLLING OUT COMMUNITY BATTERIES ON A MUCH LARGER SCALE?**

**SYNERGY:** Community batteries have so far demonstrated they can act as an effective means to even-out steep fluctuations in daily generation and provide stability to the network. They can also help deliver tangible benefits for customers by way of new energy products and access to technology that helps lower electricity costs, without the upfront investment in a behind-the-meter battery.

However, community batteries are also just one area of exploration and does not account for all of the elements being impacted in the market by the uptake of rooftop solar. If you are a customer, generator, trader, retailer, or any other energy service provider, there are unique and conflicting issues to address, and the key is finding the right balance so all have a clear pathway forward.

There is a tremendous amount of exploration and reform taking place in these different areas to try and reach a practical and sustainable outcome for the industry as a whole. An example that helps put the level of complexity of this issue into perspective, is by looking at a simple yet significant challenge in the customer space.

At a very basic level, for customers to support investigation into the use of community energy storage devices such as a large-scale batteries, or the increased integration of their DER assets to the network, an understanding of what all that means and why it is important is required. Further, a view of how this could benefit them and the advantages it may provide, must be clear.

This level of buy-in and engagement is an entirely new concept and a change from the more passive model of the past. In the future energy market customers will have the opportunity to play an active role in their energy management and be able to embrace technologies to optimise their energy savings. As a result, building customer literacy at a foundational level is a priority to ensure conversation can eventually advance to what active market participation may look like.

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## **ARENA: WHAT ROLE DO YOU SEE COMMUNITY BATTERIES HAVING IN THE FUTURE OF AUSTRALIAN ENERGY?**

**SYNERGY:** Batteries will play a significant role and that transition has already begun. When considering just the current Synergy projects mentioned earlier, they collectively involve approximately 30 or so community-scale batteries. This is not to mention other large-scale battery initiatives being progressed by broader industry and across the country.

In addition to this, the interaction between battery energy storage and solar resources is a big component in the global discussion on climate change and environmental impact mitigation measures. As technologies continue to advance and conversations around sustainable operations pick up pace, investment in new energy solutions such as community batteries will only increase.

Synergy intends to be at forefront of this discussion, and looks forward to continue working with Western Australians toward their intelligent energy future.

Further information is available at  
[arena.gov.au](http://arena.gov.au)

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