

Delta's Electricity Storage Service
Highlights of the Electricity Storage
Association Conference
May 2009, Washington DC



As part of Delta's research for its Electricity Storage Service, Analyst Cian McLeavey-Reville presented at the Electricity Storage Association's Annual Conference in May. This note presents some key highlights from the event.

The electricity storage sector is suddenly attracting increased government and venture capital funding, and interest in the sector is skyrocketing. This will accelerate storage development, resulting in better developed and more mature product being available for European utilities.

With over 300 attendees, this year's event has been the largest ESA conference by quite some margin – around double last year's attendance. The reason for the sudden spotlight on storage? In one word; money.

Table 1: Funding allocated to storage projects in the American Recovery and Reinvestment Act 2009

Applications are now being received, with contracting planned to begin in September

Project Category	Storage Specifications	No. of Projects to be Funded	Allocated Funding (\$ million)
Utility-scale Battery Storage	8 – 15 MW 4 – 8 hours	1 – 2	40 – 50
Frequency Regulation	10 – 20 MW	1 – 2	40 – 50
Compressed Air Energy Storage	10 – 50 MW 2 – 5 hours	1 – 4	50 – 60
Distributed Storage for Grid Support	1 – 3 MW 0.5 – 8 hours	4 – 5	25
Demonstration of Promising Technologies	As appropriate	5 – 6	25

US Department Of Energy, 2009

HOT TOPIC: MONEY, MONEY, MONEY

The 2009 American Recovery & Reinvestment Act looks likely to be the kick-start that electricity storage has needed. This year around \$200 million is available for storage projects (50% costshare funding) and developers are now racing to get a piece of the pie. The financial sector has also picked up on the scent, with a remarkably large turnout of venture capitalists.

Another big announcement from Dr. Imre Gyuk of the US Department of Energy (DOE) was that a Bill was introduced to Congress to introduce a 20% tax credit for electricity storage, such as those currently available for renewable technologies. This incentive would be available to all grid-connected storage, on-site storage and even residential-scale units (where a 30% tax credit is proposed). If passed, this will be another milestone for storage in the US and should further accelerate project development.

HOT TOPIC: COMMUNITY ENERGY STORAGE (CES) – THE 'SWEET SPOT' OF STORAGE?

American Electric Power, the champion of utility-scale storage in the US, kicked off the conference with an update on its CES program. This involves connecting distributed storage units (50 kWh electric vehicle batteries) to transformers serving a few houses or small commercial loads.

The advantages of the CES approach are:

- ▶ It offers all the values of a battery at a substation when aggregated, including voltage correction, load levelling, power factor correction and ancillary services.
- ▶ It offers backup power to customers (very attractive to regulators)

- ▶ It buffers customer renewable generation (the long-term driver for AEP's storage program)
- ▶ It buffers customer EV charging

Figure 1 – AEP's Community Energy Storage

The programme is to be rolled out from summer 2009, funded by AEP in collaboration with its partners



AEP, 2009

An interesting point was raised about the 'sweet spot' for storage location – our view is that the value of storage increases the closer it gets to the end user. However, there is an economy of scale when it comes to the final conversion of AC to DC power. CES takes this into consideration, converting 4 - 5 homes at a time.

So, is CES the sweet spot? We believe so, and the roll out of the first demonstration units this summer is well worth watching.

“Pending the successful market penetration of electric vehicles, AEP forecasts CES costs over the next five years will fall to \$1,000/kW (or \$500/kWh).”

HOT TOPIC: COMPRESSED AIR ENERGY STORAGE (CAES) – A SLEEPING GIANT AWAKES

The first CAES plant was commissioned in Germany in 1978. Since then, just one other plant has been built. It seems odd that a technology as old as CAES has seen so little development, and this sentiment was echoed at ESA's conference. The reason is that the economics

have simply favoured the storage of gas rather than air. But this is changing, and a raft of proposed plants are now in the pipeline and should start rolling out from 2010. Iowa Stored Energy Park is the first likely candidate.

“Dave Marchese from Haddington Ventures calculates that CAES can reduce wind integration costs in the US by up to 30%.”

The core driver is the sheer amount of wind power expected to connect to electricity networks, and the associated instability issues that this can bring. CAES is now seen as a viable way of integrating large quantities of wind capacity, and reducing the new transmission capacity required to deliver this power to load centres.

Despite the fact that CAES has been around for so long, there is still a significant perceived technical risk (the lack of projects on the ground does not inspire huge confidence in its viability), and the large up-front capital investment can be daunting. Developers are therefore hoping to get a piece of the \$60 million or so allocated in the stimulus package to lessen this risk of investment.

THE BOTTOM LINE: MORE UTILITY ENGAGEMENT REQUIRED

The 2009 ESA conference was certainly full of optimism. However, in Delta's opinion there was one important group of stakeholders that was worryingly thin on the ground: electric utilities. Developers, consultants and venture capitalists all sniff the scent of opportunity as a result of the stimulus package. However, this opportunity can only be realised on a large scale once utilities come on board. Crucially, one criterion of funding is that the project be developed in close collaboration with a utility or system operator.

Through the stimulus package, electricity storage is being given a chance to play a key role in the development of the US smart grid. For the market to take off, it is now up to developers to work with utilities to bring robust and commercially viable projects to fruition. All eyes are for now on the US, as 2009/10 could be the time that utility-driven electricity storage projects begin to take off.

Questions About this Report

We welcome your questions and comments on this report, and would be pleased to discuss aspects of it with you. Please contact our Storage Team: Cian McLeavey-Reville (cian.reville@delta-ee.com or +44 131 625 3332), Stephen Harkin (stephen.harkin@delta-ee.com or +44 131 625 1005) or Jon Slowe (jon.slowe@delta-ee.com or +44 141 227 3982).

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