



APSE, June, Leeds Energy Storage

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Green Acorn Energy Solutions

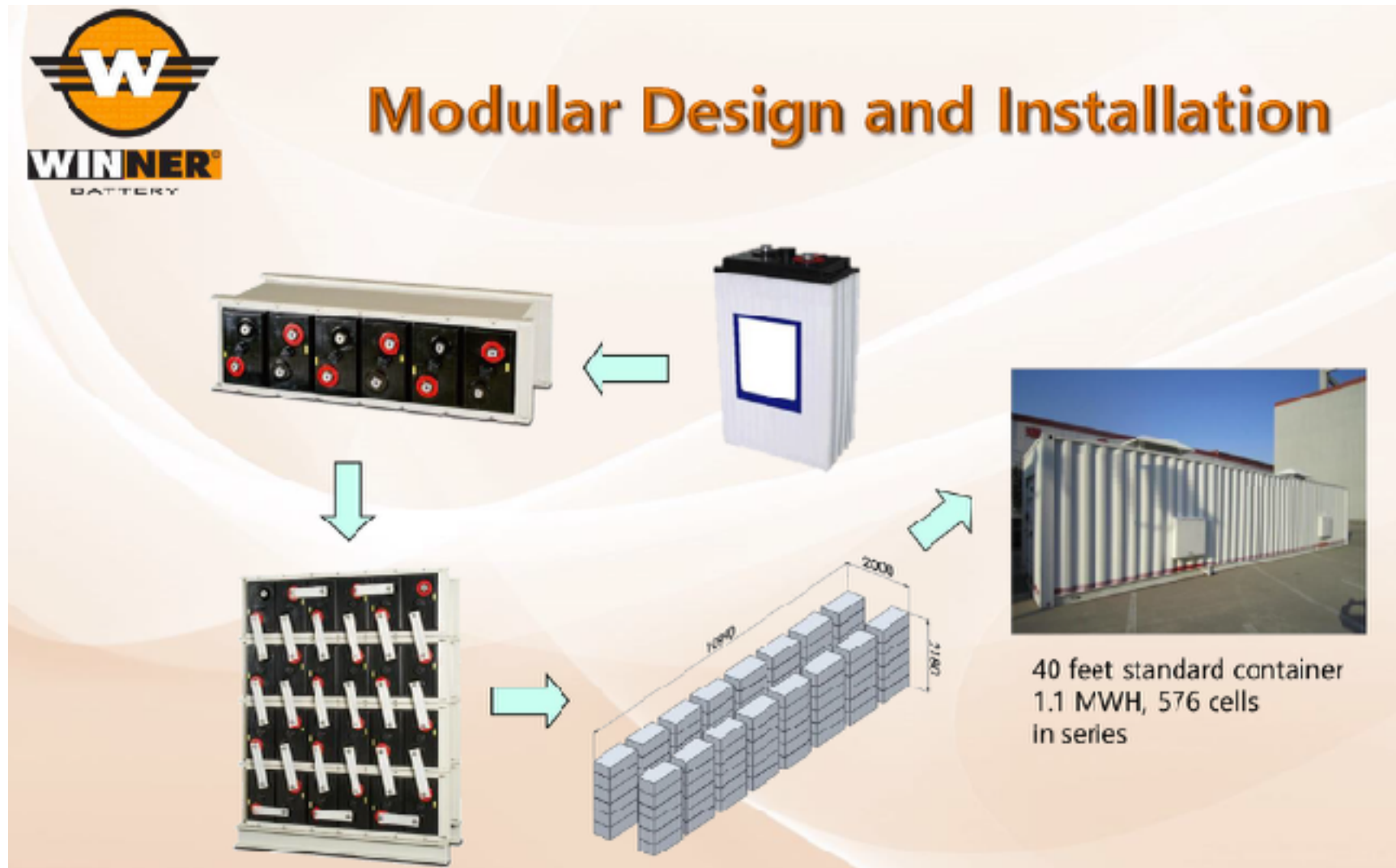


CREDIBILITY OF OUR PROPOSITION

- ✓ We have been in the renewable space for 10 years and 4 years in the UK Energy Storage, in which time we have modelled out over 300 sites, advised on grid / planning and the future on 217 sites
- ✓ Our site security side of Green Acorn is well developed and works with some large corporations to understand the short, medium, long term availability on their sites and the best technology to use
- ✓ We have our first 1mw site coming on line in September this year and depending on Grid installation and trading patterns being awarded a further 7 mw sites, we have a further 27 sites in progression
- ✓ Our 2 aggregators Limejump & Kiwi Power are leaders in the UK supply and power aggregation market space, both work in harmony with the client to deliver a clear end to end power provision with detailed modelling and both own / operate their own sites
- ✓ We have well healed finance options available for our clients and this ranges from Scottish Equity Partners, Lancea Partners, Energy Saving Finance & the Funding Portal which see Local Authorities as a excellent partner to fund projects
- ✓ Currently as we know amendments are coming through on the energy storage space and this means models are changing, so there is a need for robust forward planning in line with DNO, National Grid and being awarded contracts and obtaining the battery equipment.

Typical System Costs

- ✓ Standard Lead Acid per Mw cost is £425,000, yearly maintenance and monitoring £12,500, 4 - 5 year life
- ✓ Lead Carbon per Mw cost £550,000, yearly maintenance and monitoring £11,250, 6-8 year life
- ✓ Lithium Ion, LifePo5 per Mw cost £595,000, yearly maintenance and monitoring £11,250, 8-10 year life



REVENUES – OPERATIONAL REQUIREMENTS

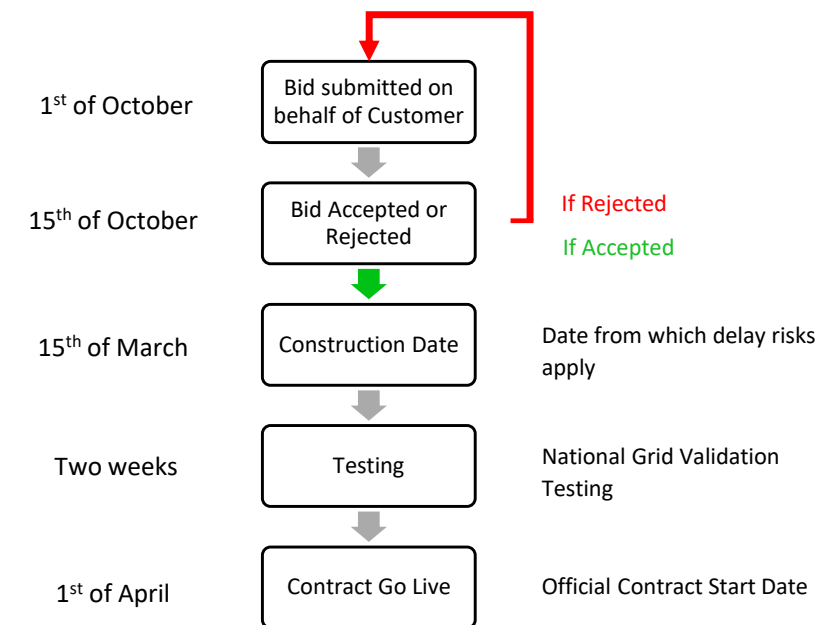
Portfolio Frequency Response

- 24 month contract maximum
- 5 month maximum build from awarded contract
- Delays to build time risk contract termination and liquidated damages. Any delays that are accepted will net off the initial term

Capacity Market

- 15 year maximum term
- Requires Prequalification in August of each year
 - Must be a new build asset (not energised)
 - Must have Grid connection, planning and legal right to use the land
- Price confirmed in December of that prequalification year in an open tender
- 15 year term starts on 4th year out
- 1 year contracts available for October of the following year from the December Auction
- 18 year contract maximum (3 rolling years and 15 year fixed)

Example Frequency Timeline



Per Mw revenue stream

Battery Size – 1000kw/1000kwh

Constraint - 0%

Limejump Portfolio Benefit - Yes

Full Stack 10 year average £/MW - £156,194

Net Frequency Price £/MWh - £18.43

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
VPP Frequency	£155,548	£155,548	£139,993	£125,994	£119,694	£113,709	£108,024	£102,623	£97,492	£92,617
Capacity Market	£15,000	£15,300	£15,606	£25,000	£25,500	£26,010	£26,530	£27,061	£27,602	£28,154
CM Avoidance	-	-	-	-	-	-	-	-	-	-
GDUoS	-	-	-	-	-	-	-	-	-	-
Triad	£51,430	£58,770	£38,788	£19,394	£2,600	£2,652	£2,705	£2,759	£2,814	£2,871
Running Costs	-£6,014	-£6,134	-£6,257	-£6,382	-£6,510	-£6,640	-£6,773	-£6,908	-£7,046	-£7,187
Total	£215,964	£223,484	£188,131	£164,006	£141,285	£135,732	£130,487	£125,535	£120,862	£116,455
	Rolling Contract			Market	£1,561,938					
	Fixed Contract			Contracted	£542,859					

10 year financial overview per MW

Revenue Stream	Local Authority Fully Own	50 / 50 Joint Venture	80% private owned 20% LA Owned	Privately Owned LA Paid Rental
Trading Revenue Stream	£1,564,440 (£156,444pa)	£782,220 (£78,222pa)	£312,385 (31,238pa)	None
Development Costs	£795,000	£397,500	£159,000 (can be land value)	None
Yearly Opex (ave 10yrs)	£212,500 (21,250pa)	£106,250 (10,625pa)	£42,500 (4,250pa)	None
Net Diference	£556,940 (£55,694pa)	£278,470 (£27,847pa)	£55,690 (£5,569pa)	£50,000 (£5,000pa)
Private Wire per kw	9.8p	4.9p	1.96p	None
EV Charging per kw	18.2p	9.1p	3.64p	None

Cost Responsibilities

Site Cost Responsibilities	Local Authority Fully Own	50 / 50 Joint Venture	80% private owned 20% LA Owned	Privately Owned LA Paid Rental
<i>Exclusivity contract</i>	<i>Both</i>	<i>Both</i>	<i>Both</i>	<i>Both</i>
<i>Complete Grid Offer</i>	<i>Either</i>	<i>Both</i>	<i>Green Acorn</i>	<i>Green Acorn</i>
<i>Complete Initial Model</i>	<i>Local Authority</i>	<i>Both</i>	<i>Green Acorn</i>	<i>Green Acorn</i>
<i>Identify Land & Survey</i>	<i>Local Authority</i>	<i>Both</i>	<i>Green Acorn</i>	<i>Green Acorn</i>
<i>On Board Aggregator</i>	<i>Local Authority</i>	<i>Both</i>	<i>Green Acorn</i>	<i>Green Acorn</i>
<i>Planning Consent</i>	<i>Local Authority</i>	<i>Both</i>	<i>Green Acorn</i>	<i>Green Acorn</i>
<i>All Legals</i>	<i>Local Authority</i>	<i>Both</i>	<i>Green Acorn</i>	<i>Green Acorn</i>
<i>Technology & Installation</i>	<i>Local Authority</i>	<i>Both</i>	<i>Green Acorn</i>	<i>Green Acorn</i>
<i>Complete Final Model</i>	<i>Local Authority</i>	<i>Both</i>	<i>Green Acorn</i>	<i>Green Acorn</i>
<i>Complete Final Contracts</i>	<i>Local Authority</i>	<i>Both</i>	<i>Green Acorn</i>	<i>Green Acorn</i>
<i>Sign Up Aggregator</i>	<i>Local Authority</i>	<i>Both</i>	<i>Green Acorn</i>	<i>Green Acorn</i>
<i>Complete Time Line Plan</i>	<i>Local Authority</i>	<i>Both</i>	<i>Green Acorn</i>	<i>Green Acorn</i>
<i>On Board EPC</i>	<i>Local Authority</i>	<i>Both</i>	<i>Green Acorn</i>	<i>Green Acorn</i>
<i>Complete O&M Contacts</i>	<i>Local Authority</i>	<i>Both</i>	<i>Green Acorn</i>	<i>Green Acorn</i>
<i>Overview end to end</i>	<i>Local Authority</i>	<i>Both</i>	<i>Green Acorn</i>	<i>Green Acorn</i>
<i>Final sign off's</i>	<i>Local Authority</i>	<i>Both</i>	<i>Green Acorn</i>	<i>Green Acorn</i>



Site options

- ✓ Identify all possible grid services including
 - Frequency response
 - Capacity Market (CM)
 - Energy arbitrage
 - TRIAD / STOR / DMR
 - Private Wire
 - Future revenue options

- ✓ Specify & design site layout with storage system
- ✓ Consider ownership options, O&M possibilities & finance options
- ✓ Complete the detailed site modelling to identify the best options to maximise the investment per project
- ✓ Group sites into A, B, C & D portfolios

Site Secure

View all possible sites now to evaluate what grid is available, prospects for the short, medium, long term.

Timeline can be 12months + to obtain Grid & Statement of Works via the DNO and planning before the site is progressed to development (not including aggregator timeline)

Due to the changes happening over the next couple years with regulation we look to future proof our sites and clients alike and for non stand alone sites, leisure centres, County Halls etc so therefore on these sites a “Availability Payment Plan” - “Net supply” - “Demand Response” all fit well going forward.

Monitoring the buildings asap ensures the site loads, generation, time of use and availability are understood so we can maximise the power throughout the year this may / will include battery storage to aid the profile.

Consider technologies like CHP, lighting systems, heating & ventilation, load optimisation & others possibilities

Considering the ability to Private Wire and adding EV / Hybrid charging as the sector expands.

Park & Rides are a key area for us and EV's as we all know are gaining ground quickly now and this is expanding with excellent medium term expectations which means these sites will have medium to long term income stream viability, which we have partnered with EO vehicle charging to be able to offer a turn key possibility.

Therefore now is the time to be securing grid if nothing else and we are able to offer “site secure” to understand each & every site, we are also able to offer an insurance policy that covers pre development expenses if the site fails to be developed due to planning, grid retraction.



www.greenacornenergy.co.uk