

Intelligent Revenue positive Carbon negative

DSR & VPPs in a changing market

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Energy Landscape

Demand

- + Electricity demand increasing whilst traditional generation is in decline – ‘**Capacity Margin**’ falling rapidly to single digits
- + Variable output and demand throughout the day, has potential to **exceed Peak BASELOAD generation**
- + Additional resources and capacity needed at times of **distress in the system**
- + **Peak demand profile** changing in next decade - emergence of EV charging



DEMAND is outstripping SUPPLY; providing FLEXIBILITY is essential to enable National Grid to balance UK's electricity system cost-effectively, while energy landscape changing rapidly

Supply

- + **Renewables**
 - Unpredictable
 - Wind and solar intermittent
 - Not easy to forecast
- + **Traditional Base Load**
 - Inflexible coal & nuclear take a long time to ‘turn on’, but provide constant output or baseload
- + **Additional Capacity**
 - Hydro and gas play a part
 - Some electricity is also imported
- + **New Capacity**
 - Next generation nuclear is expensive.
 - Take > 10 years to build - 2035 onwards

DSR Overview

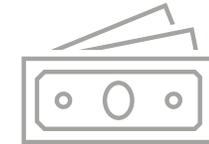
Demand-side response (DSR) plays an important role in ensuring National Grid can keep the lights on by balancing supply and demand



DSR incentivises I&C consumers of energy to turn down or shift non-essential electrical plant in their buildings, during times of stress on the grid



National Grid ESO and **DSO** operate several DSR schemes known as balancing and ancillary services to incentivise customer participation



Customers who participate can generate a new form of **revenue** and reduce their **CO₂** footprint at the same time by providing flexibility, only available through a NG/DSO approved DSR aggregator such as Pearlstone





The Opportunity

- + This fast-growing market is all about using energy more intelligently. Providing **FLEXIBILITY** enables NGESO to balance UK's electricity system cost-effectively, while energy landscape changing rapidly.
- + Businesses of all shapes and sizes can make money, reduce their energy bills and cut their carbon footprint by getting involved in DSR. There is no cost or additional outlay to the customer who will also benefit from the share of long-term savings and revenues.
- + Once customer site is connected, as well as additional energy savings, your business gets a share of all the revenues secured through participation in various NGESO & DSO flexibility services which amounts to approx. £70-£100k and a reduction of just over 120 tonnes of CO₂e for every 1MW of load shed per annum.

Leveraging on excess capacity in power markets

Pearlstone Energy is an approved National Grid DSR aggregator tech company providing Flexibility services to Commercial & Industrial customers

- + Technology company and DSR Aggregator
- + 100% cyber secure - Plug & Play using internationally recognized OpenADR standards
- + Innovative IoT and cloud-based Technology
- + Value creation through kW critical mass, traction & triple bottom line:
Social, Environmental, and Economic benefits for customers
- + Aggregating underused flexibility with no impact on customer operations or comfort levels in buildings
- + Creating a new source of revenue for its clients with positive environmental benefits – providing NGENSO and DSO Flexibility services
- + Speed of adoption and early to an emerging and increasingly critical market on the path to net zero emissions target
- + DSR solution is the perfect alternative to costly, carbon-intensive gas or diesel generation (peak shaving), giving us excellent “ESG” credentials



VISION

To generate Negawatts not Megawatts. We recognise that the cleanest and greenest energy is the energy that is not used



MISSION

To be the UK leader in providing clean demand-side response technology and services to the widest range of buildings in the UK

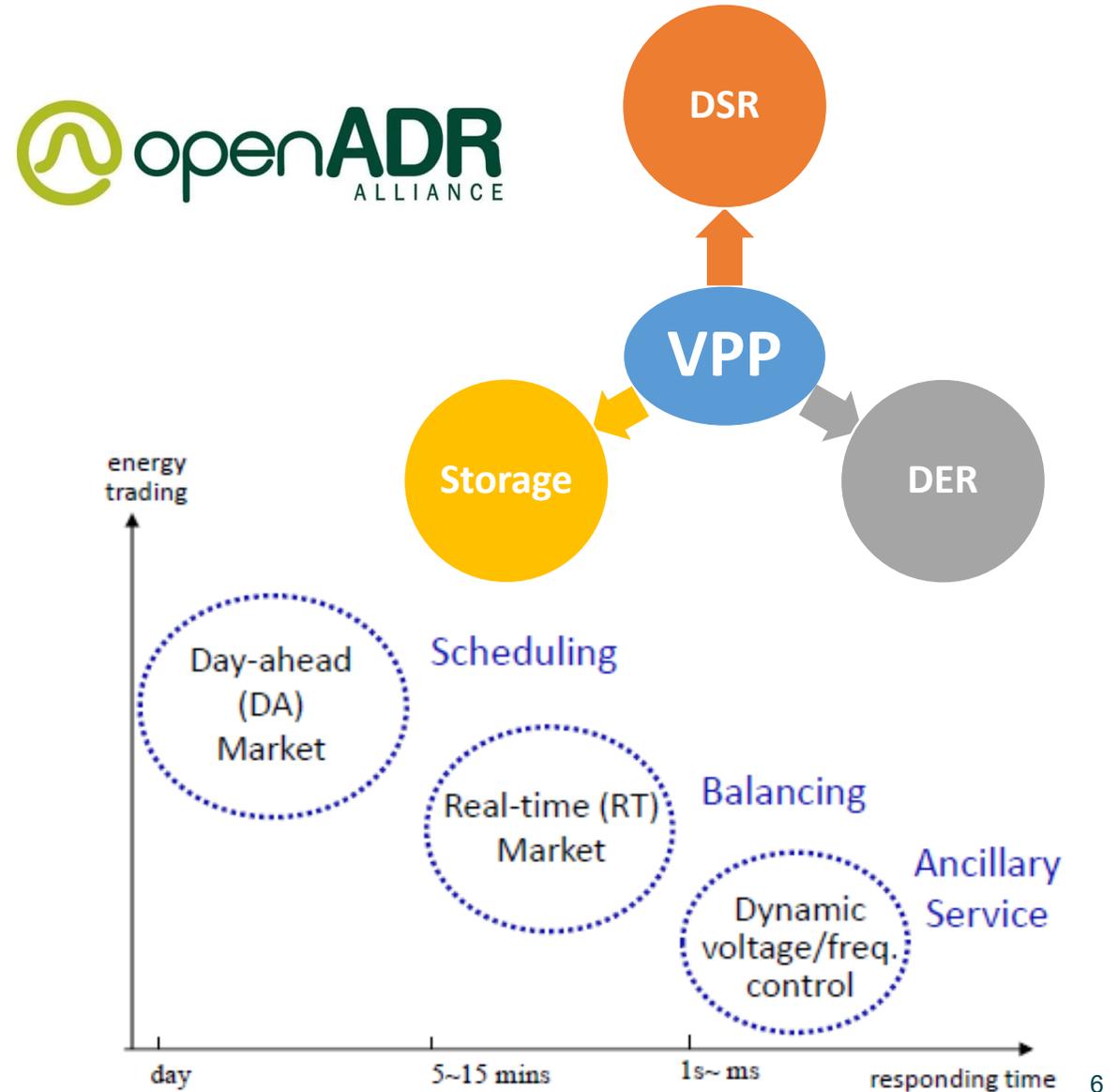


VALUE

We enable customers to make money from unused energy, increase their energy efficiency and reduce their carbon footprint

VPP & OpenADR Alliance

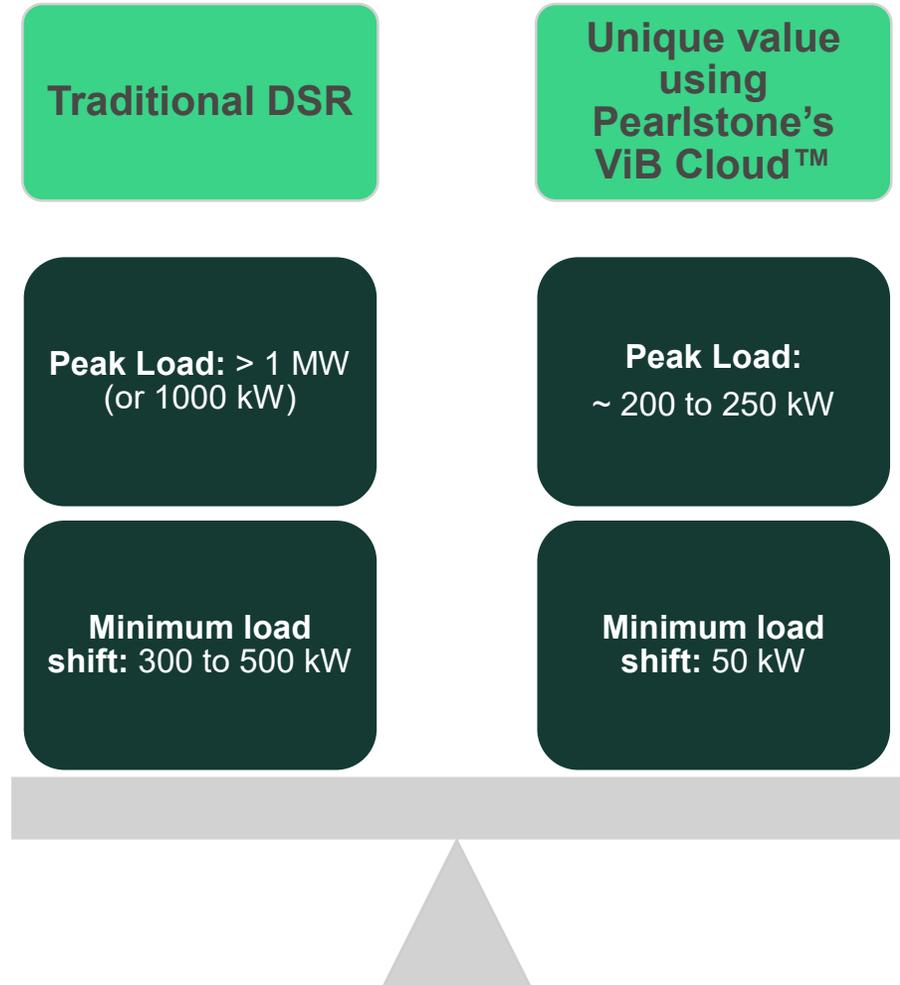
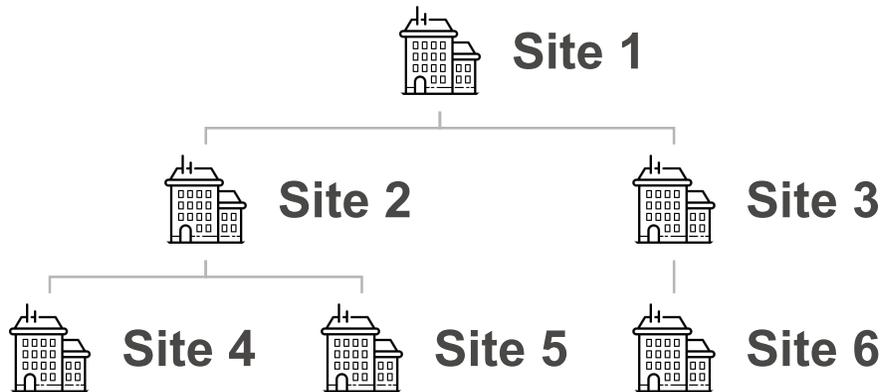
- NGENO is in the process of introducing minimum standards around sales and marketing, cyber security, proposals, contracts and complaints, giving customers the confidence to make an informed decision about the aggregator they work with.
- Our aim is to develop a Virtual Power Plant (VPP) using the OpenADR 2.0b communication protocol to securely and reliably operate Demand Response (DR) and distributed energy resources (DERs) over public Internet infrastructure, providing ancillary services to the TSO and DSO.
- OpenADR benefits are clear. It provides a non-proprietary, open standardised DR & DER interface that allows DSR service providers to communicate DR, DER, and TE (Transactive Energy, Blockchain & IoT) signals directly to existing customers using a common language & existing communications such as the Internet.
- Cyber Security is an important component of the Smart Grid and customers are getting more concerned about it. OpenADR global standards helps to fulfil our role in ensuring strong Cyber Security in the Smart Grid.



Pearlstone ViB

Who can benefit from the Pearlstone solution

- + Universities
 - + Hotel chains
 - + Commercial buildings
 - + Retail
 - + Airports
- Businesses with multi-site portfolios, previously not considered commercially viable for DSR, can now be connected and DSR ready, enabling savings to be accumulated across the different sites.



Simple Customer Journey



1. Energy evaluation analysis & report

- + We start the onboarding process by analysing your energy data to find patterns, such as daily average energy consumption, and estimate the financial and carbon reduction benefits offered by Pearlstone ViB.



2. Site Survey

- + Our highly experienced engineers will visit your facility to perform an in-depth audit and work with your business to produce and agree on a flexibility load shed strategy.



3. Energy Services Agreement

- + All information from analysis to audit will be compiled along with the agreed flexibility strategy and an energy services agreement will be created.



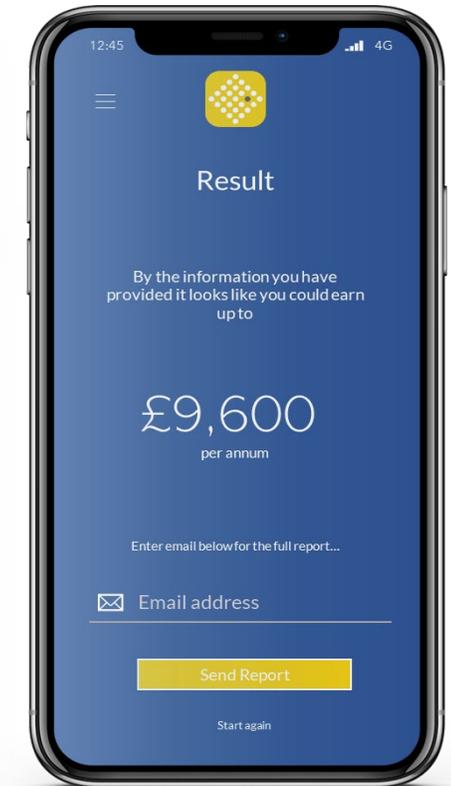
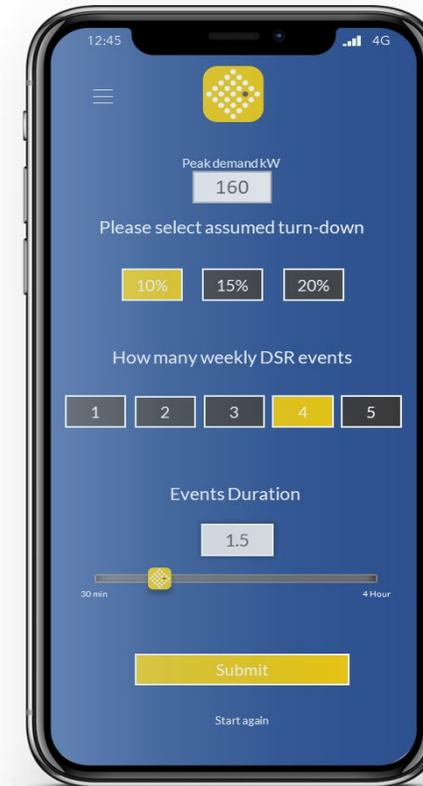
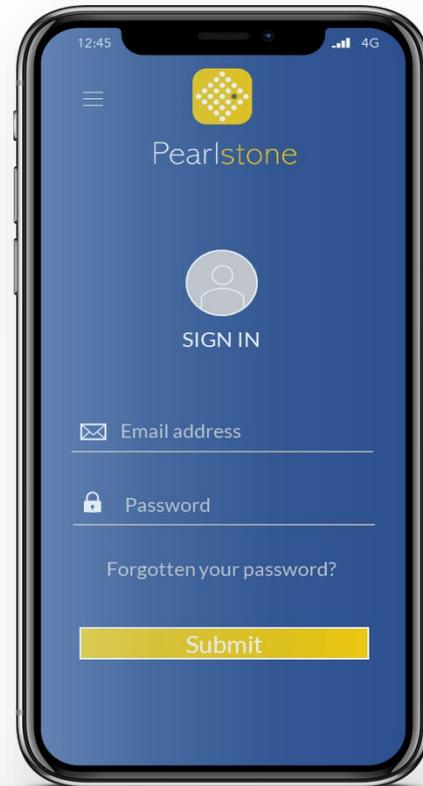
4. Installation & Completion

- + As soon as the energy services agreement is signed, our engineers will work with your facilities team to get you connected at no cost to your business.

ViB Application

A unique, intuitive app being developed in-house giving significant competitive advantages:

- + Brand enforcement
- + Fast access to real time data: capacity, potential revenue and savings, carbon footprint
- + Simple to use, customer can see immediate added value
- + Useful tool for PE sales team and channel partners to demonstrate DSR potential to new prospects
- + Important: Potential to grow functionality to fit future NG services using our own expertise



Key Partnerships

- + **Generac Grid Services and Pearlstone Energy** collaborate to provide flexible capacity to the GB electricity grid.
- + Utilising Generac Grid Services' **Concerto™ platform** for cost-savings and enhanced power grid stability for large facility owners.



Customers & Partners



THE LOWRY HOTEL
MANCHESTER



- + **'Sustainability'** remains a first tier priority on the political, corporate and consumer agenda despite recent economic and geopolitical turbulence.
 - *Clean DSR "ESG" credentials stand out - this has become a key barometer when measuring the sustainability and ethical impact of an investment in a business or company. DSR market remains immature, so timing is still favourable.*

- + NGENSO and DSO's are driven by the same priorities and despite recent fundamental structural changes to flexibility markets has ensured access and an attractive income to early stage entrants/disruptors.

- + OpenADR Alliance was created to standardize, automate, and simplify DSR and DER to enable utilities and aggregators to cost-effectively manage growing energy demand & decentralized energy production, and customers to control their energy future.

- + OpenADR is an open, highly cyber secure, and two-way information exchange model and Smart Grid standard.
 - *Various technology solutions have been trialled resulting in exclusive strategic partnership with a global SaaS house capable of responding to the most complex and dynamic requirements of the flexibility market.*
 - *There is **no reliance on big brand proprietary technology**.*
 - *Ability to viably shift and aggregate loads down to 50kW with ViB Cloud™.*

What's next?

Contact us at:
support@pearlstoneenergy.com

Arrange an onsite
survey and discuss
how DSR can benefit
your business



Sign Energy Services
Agreement, get your
site connected, and
start your savings