LCPDelta

Flexibility Research Service

About LCP Delta

Our mission is to enable a better, faster energy transition for all

Founded in 2004 and based across the UK, France, Norway, the Netherlands and beyond, LCP Delta provide data-driven research, consultancy, technology products and training services to companies investing in and navigating the energy transition.

We are a diverse team from a variety of backgrounds including engineers, data analysts, environmentalists and more.

LCP Delta is a mission driven organisation - all of us want to make a difference to the energy transition and accelerate the path to a low carbon future.

The energy market is becoming increasingly complex. As consumers become more empowered and as energy systems around the world decarbonise, there is a need to understand both the generation and demand side to effectively navigate the rapid changes occurring.

We know it's a complicated topic, and we're here to help.

Andy Bradly, Partner, LCP Delta

LCP Delta was formed through the merger of Delta-EE and LCP Energy to bring together deep generation and consumer-side expertise, to provide our clients with a single partner to help them on their journey and provide them with a 360° view across the energy spectrum.

Andy Bradley
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200+
Global clients

6
offices

110+
Colleagues

LCP Delta provides the best advice, support and tools to enable the energy sector to drive the energy transition

Subscription research services

Our portfolio of subscription research services offer in-depth insights across the energy transition landscape. We have been undertaking primary research with organisations active in the energy transition since 2004 – we have an unparalleled international network of contacts we can draw on. Each service focuses on a particular aspect of the energy transition.

Market and strategic advisory consulting

We provide support across the full energy value chain with bespoke research, insight, forecasts and advice tailored to them. Our consultancy offerings draws on expertise and data from across LCP Delta, from strategic market entry analysis through to detailed half-hourly revenue forecasting.

We support our clients in four ways

Technology & data

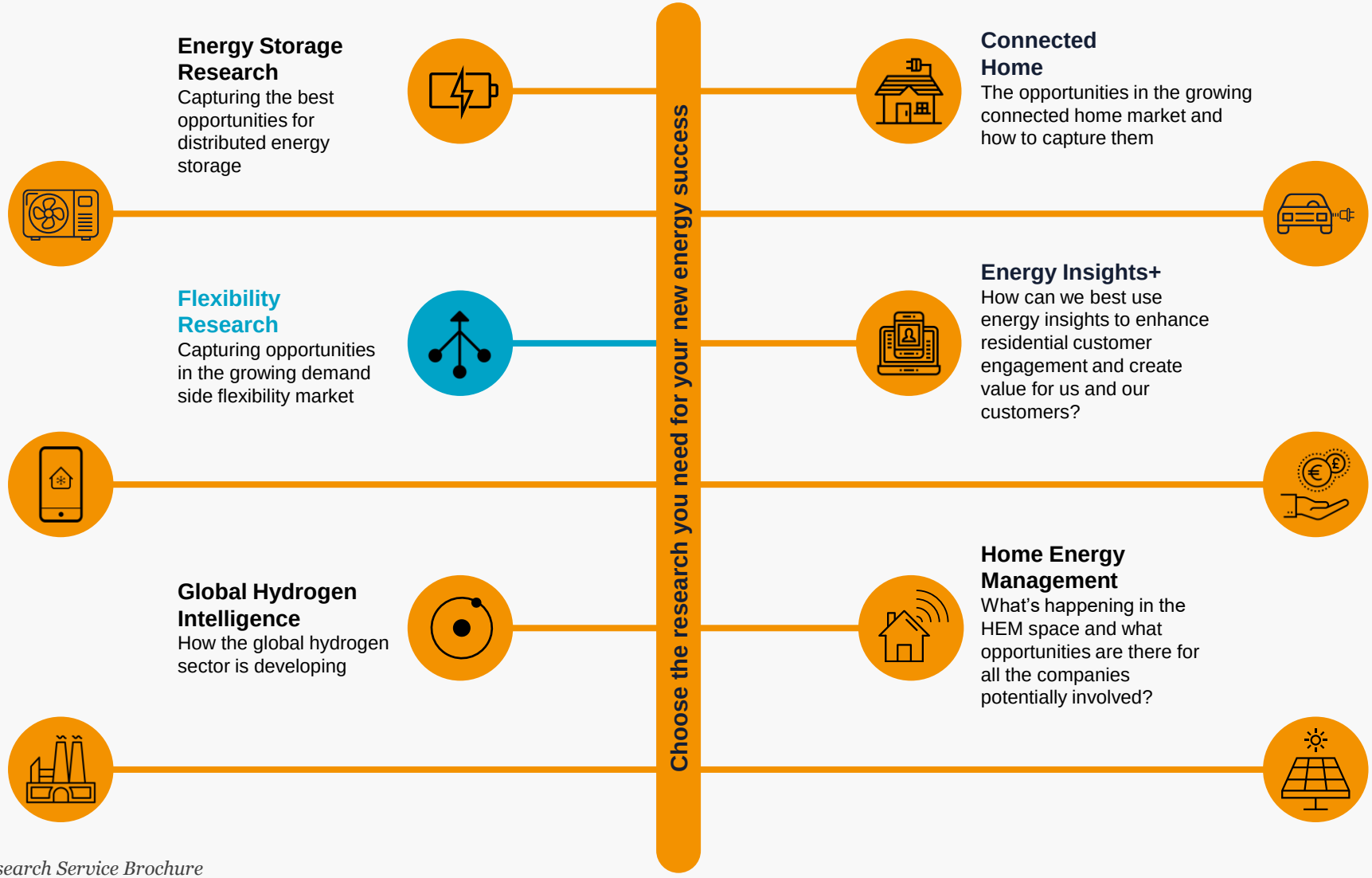
Data integration and analysis is at the heart of the energy transition. However, sourcing and navigating complex, wide-ranging datasets is challenging. At LCP Delta, we combine and curate proprietary and public datasets to provide you with a single source of truth across the energy spectrum,and make this data interactive using our cutting-edge technology.

Training

Our training helps professionals quickly develop their new energy knowledge, accelerating their impact for organisations who want to capture opportunities. We provide meaningful, concise and easy to understand short courses.

Subscription Research Services

Use a combination of our subscription research services, bespoke consultancy projects and training services to gather the information you need to ensure your business's success in the energy transition.



Energy Storage Research
Capturing the best opportunities for distributed energy storage

Decarbonisation of Heat
Gain a holistic understanding of the future of the heating sector from a product and policy point-of-view

Flexibility Research
Capturing opportunities in the growing demand side flexibility market

Heating Business
How to evolve from selling individual products and commodities to become a successful home energy solution provider

Global Hydrogen Intelligence
How the global hydrogen sector is developing

Distributed Power
How to succeed in the global distributed power market

Connected Home
The opportunities in the growing connected home market and how to capture them

EV Charging
How to best develop position and activities to succeed in the rapidly growing eMobility market

Energy Insights+
How can we best use energy insights to enhance residential customer engagement and create value for us and our customers?

New Energy Business Model
Understand, identify and implement the most promising commercial opportunities from the increasing disruption in the energy sector

Home Energy Management
What's happening in the HEM space and what opportunities are there for all the companies potentially involved?

Solar PV
Understanding the growth of solar PV across Europe

Flexibility is a rapidly growing part of our energy systems and is set to play a major role in the transition to new energy.

Energy Insights+

LCP Delta

Market landscaping and strategy

Where is the value for demand-side flexibility and how will this change?

What are the most lucrative emerging opportunities for flexibility?

How are changing policy and regulations influencing these opportunities for flexibility?

Product development and customer engagement techniques

What technologies – software, hardware, platforms and data analytics – do we require to be successful?

What are competitors using?

How are platforms communicating with distributed assets, and where is this headed?

Benchmarking

What are the business models for demand-side flexibility and how are they evolving?

Business model to business case: should we invest?

How can customers be incentivised?

Clients we support

- ***Govt, Regulators & System Operators***
- ***Energy retailers***
- ***Product manufacturers***
- ***Solution providers***
- ***Investors***

How our research helps your business

The Service provides data, analysis and opinion that enable you to evolve the right positioning and to identify, understand and capture the growing opportunities from demand side flexibility.

Benefits

- Navigate the market complexities to define, develop and evolve your strategy
- Helps you understand competitors and find the right positioning
- Help you to find the best partner
- Enables you to take advantage of emerging opportunities in DSF
- Helps you to identify key value streams to monetise DSF
- Supports you to create compelling customer propositions

LCP-Delta provides us with ongoing, first-class insight and advice to support our low carbon investment activities.

Leading Investment Company

Example clients

- Energy suppliers
- Aggregators
- Product manufacturers
- Policymakers
- TSOs
- DSOs
- Technology companies
- Developers
- Storage providers
- Industry associations

FLEXtrack

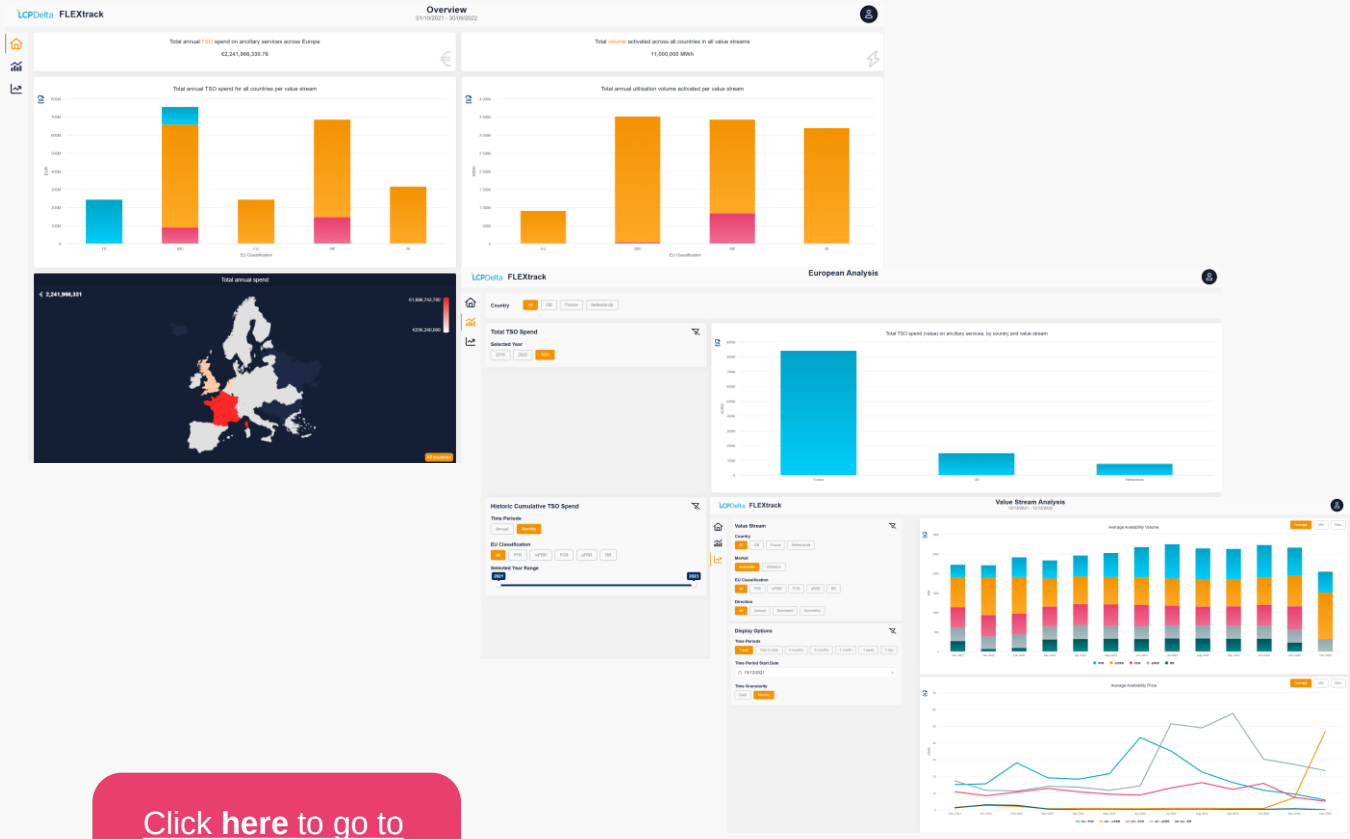
Quantifying the value of flexibility through ancillary service tracking

FLEXtrack normalises, integrates and visualises ancillary services data across European markets, highlighting key trends and opportunities for flexibility providers.

This data is a progression from our Ancillary Services Database. Research subscribers will have access to the same aggregated data with monthly and yearly granularity, now updated quarterly.

11 countries are currently live - Austria, Belgium, Germany, Denmark, Spain, Finland, France, GB, Netherlands, Norway and Sweden. The rest of Europe will follow in 2023/4.

A separate FLEXtrack data subscription offers daily updates, 15-minute granularity and advanced analysis functions.



FLEXtrack allows users to:

- Track the volume requirements and clearing prices for various ancillary service markets across Europe
- Compare countries and value streams with ease
- Explore historical data and identify trends over time, such as within day volatility and seasonality
- Deep dive into specific countries or value streams to understand the value of flexibility and identify opportunities going forwards

Click **here** to go to YouTube to watch our explainer video

Flexibility Research Offerings

This table highlights the differing data offering availability. Our data can:

- Track the development of ancillary services and implementation of the Clean Energy Package across Europe
- Identify trends in prices, volume and total spend by TSO and system services
- Understand the accessible ancillary services revenue stack available to their asset

	Flexibility Research Service	FLEXtrack	Consultancy	Enact
Core use case	**Strategic**	**Tactical**		**Operational**
	Help subscribers to decide what countries, assets or partners to focus on	**Data to help develop market entry strategy, track and compare latest trends for specific market(s)**	**Combination of FLEXtrack data and expert knowledge to address your specific needs**	**Real-time data and visualisation to allow users to make trades**
Data	Availability and utilisation volume (MW) and prices (€/MW/h) for Ancillary Services (Fast acting, FCR, aFRR, mFRR and RR)* 27 EU countries plus Norway, GB and Switzerland			GB wholesale and ancillary services
Data granularity	Monthly and yearly data	15 minutes (where possible)	15 minutes (where possible)	As reported by TSO
Update frequency	Monthly	Monthly	NA	Real time
Historic data	One year	Yes	Yes	Yes
Access to the Flex research team	Yes, on an ongoing basis	No	Experts contribute to project	No
Download data	No	Yes	NA	NA
Core audience	Strategy, market intelligence, business development	Corporate and in-country strategy teams	Strategy teams or project managers	Energy traders

Note: this table refers to data only and does not include the other benefits provided.

Market Monitor on Demand Side Flexibility

Published annually in February

High level overview of 30 European countries and their development of demand side flexibility. In depth analysis of 12 core countries identifying spend on flexibility, driver, barriers, service providers and future outlook.

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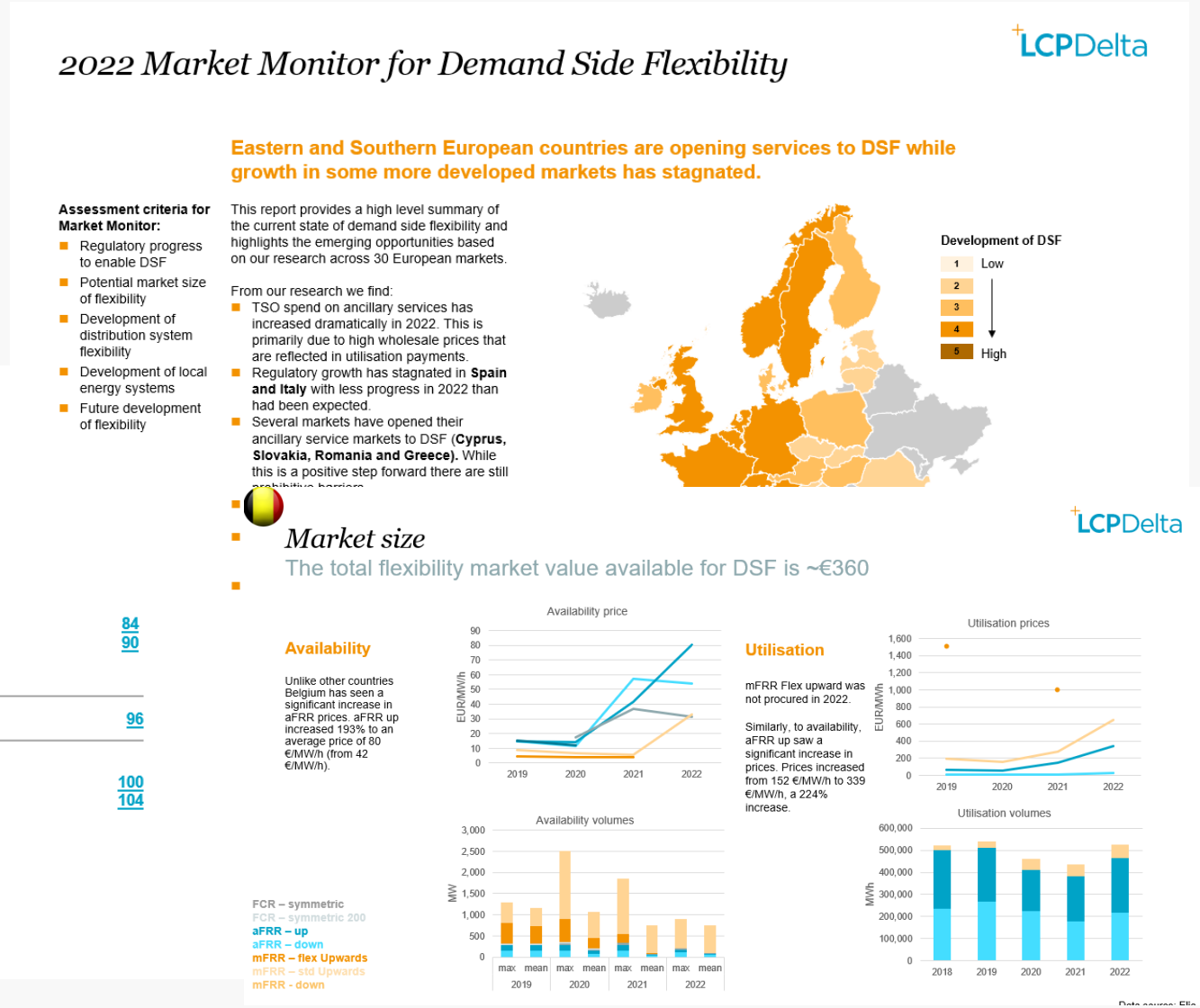

Introduction to Flexibility

- **Fundamentals of Flexibility**
- **Implementation of the Clean Energy Package**
- **Pan European Market Coupling**
- **Smart tariff fundamentals**
- **Resource Adequacy Mechanism (capacity markets)**
- **Emergency Intervention: mechanisms to mitigate high cost and supply shortage in winter 2022/23**

Fundamentals of Flexibility

Published July 2021

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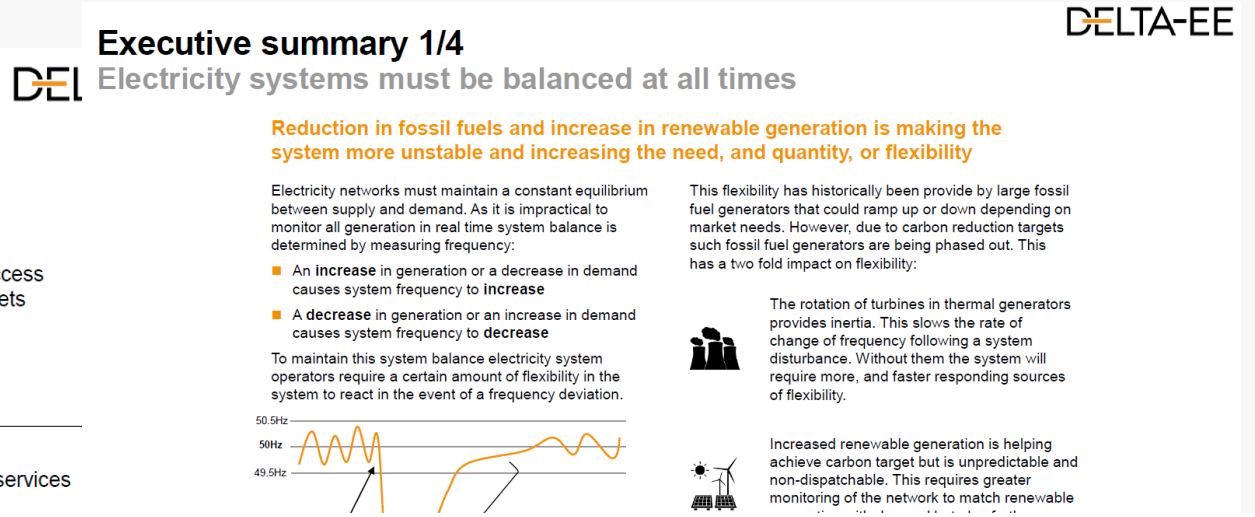
Report outlines:

- What is flexibility?
- Why is there a growing need?
- Key changes to the electricity system and the impacts of flexibility
- How flexibility change in the future



Executive summary 1/4

Electricity systems must be balanced at all times

Reduction in fossil fuels and increase in renewable generation is making the system more unstable and increasing the need, and quantity, or flexibility

Electricity networks must maintain a constant equilibrium between supply and demand. As it is impractical to monitor all generation in real time system balance is determined by measuring frequency:

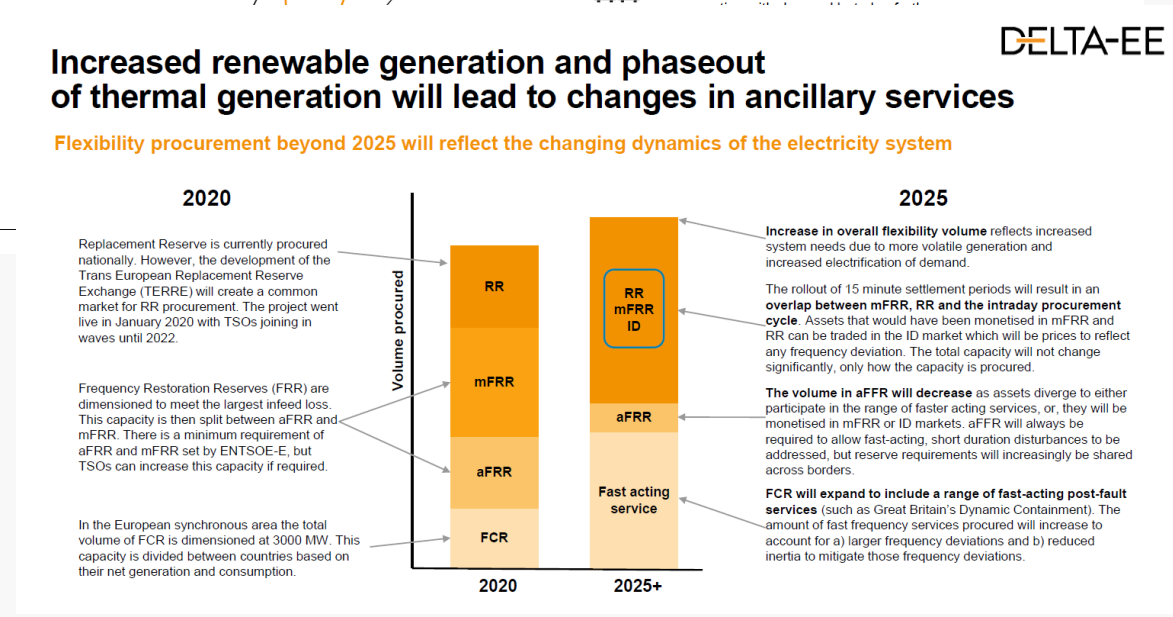
- An **increase** in generation or a decrease in demand causes system frequency to **increase**
- A **decrease** in generation or an increase in demand causes system frequency to **decrease**

To maintain this system balance electricity system operators require a certain amount of flexibility in the system to react in the event of a frequency deviation.

This flexibility has historically been provide by large fossil fuel generators that could ramp up or down depending on market needs. However, due to carbon reduction targets such fossil fuel generators are being phased out. This has a two fold impact on flexibility:

The rotation of turbines in thermal generators provides inertia. This slows the rate of change of frequency following a system disturbance. Without them the system will require more, and faster responding sources of flexibility.

Increased renewable generation is helping achieve carbon target but is unpredictable and non-dispatchable. This requires greater monitoring of the network to match renewable



Increased renewable generation and phaseout of thermal generation will lead to changes in ancillary services

Flexibility procurement beyond 2025 will reflect the changing dynamics of the electricity system

2020

Replacement Reserve is currently procured nationally. However, the development of the Trans European Replacement Reserve Exchange (TERRE) will create a common market for RR procurement. The project went live in January 2020 with TSOs joining in waves until 2022.

Frequency Restoration Reserves (FRR) are dimensioned to meet the largest infeed loss. This capacity is then split between aFRR and mFRR. There is a minimum requirement of aFRR and mFRR set by ENTSOE-E, but TSOs can increase this capacity if required.

In the European synchronous area the total volume of FCR is dimensioned at 3000 MW. This capacity is divided between countries based on their net generation and consumption.

2025

Increase in overall flexibility volume reflects increased system needs due to more volatile generation and increased electrification of demand.

The rollout of 15 minute settlement periods will result in an **overlap between mFRR, RR and the intraday procurement cycle**. Assets that would have been monetised in mFRR and RR can be traded in the ID market which will be prices to reflect any frequency deviation. The total capacity will not change significantly, only how the capacity is procured.

The volume in aFFR will decrease as assets diverge to either participate in the range of faster acting services, or, they will be monetised in mFRR or ID markets. aFFR will always be required to allow fast-acting, short duration disturbances to be addressed, but reserve requirements will increasingly be shared across borders.

FCR will expand to include a range of fast-acting post-fault services (such as Great Britain's Dynamic Containment). The amount of fast frequency services procured will increase to account for a) larger frequency deviations and b) reduced inertia to mitigate those frequency deviations.

Implementation of the clean energy package

Published September 2021

This report focuses on components of the Electricity Directive and Electricity Regulation that are most relevant to demand-side participation in flexibility markets.

We have benchmarked key legislation relevant to the development of DSF in 11 markets (Belgium, France, Finland, Germany, Greece, Ireland, Italy, Netherlands, Slovenia, Spain and Great Britain.

Specific Articles covered by this report

Several Articles in the Electricity Directive and Regulation will enable greater and more equitable participation of flexibility providers. These are the focus of this report.

Electricity Directive	Key questions
Article 5	■ Are residential electricity prices market-based?
Article 11	■ Are dynamic tariffs (prices based on short term markets) available to residential customers?
Article 17.1	■ Can demand response participate in ancillary services, intraday/day ahead (DA/ID) and capacity market? ■ Is aggregation allowed in ancillary services? ■ Is a BRP partnership required to access ancillary services?
Article 17.4	■ Are compensation mechanisms present?
Article 32	■ How developed is distribution system flexibility?
Article 40	
Electricity Regulation	
Articles 7 and 8	

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Dynamic electricity contracts for residential customers

Dynamic tariffs are a key enabler for residential demand response, particularly for consumers with large, controllable loads such as batteries, EVs and heat pumps.

Electricity Directive, Article 11

Entitlement to a dynamic electricity price contract

Dynamic tariffs are retail tariffs where the price of electricity varies regularly to reflect short term wholesale prices. Suppliers provide market based prices in thirty minute or hourly blocks with prices updated daily. Some contracts expose the customer to negative wholesale prices.

Few retailers currently offer dynamic tariffs. The CEP requires electricity retailers with more than 200,000 customers to offer a dynamic tariff.

Are residential electricity prices market based?

France, Spain, and the UK are the only countries to have regulated electricity prices. However, both France and the UK offer dynamic (based on spot prices) tariffs with regulated tariffs as a last resort. As of March 2020, Spain has introduced a regulated time of use (3 time periods per day) for all residential consumers.

Smart tariff fundamentals

Published June 2022

This report focuses on:

- How a tariff can be considered smart and explore the motivation behind the increasing diversity in tariff design
- Provide a pricing strategy landscape of standard tariff types, as well as a risk framework to describe the relationship between customer and retailer.
- Provide examples of innovative tariff offers across Europe.

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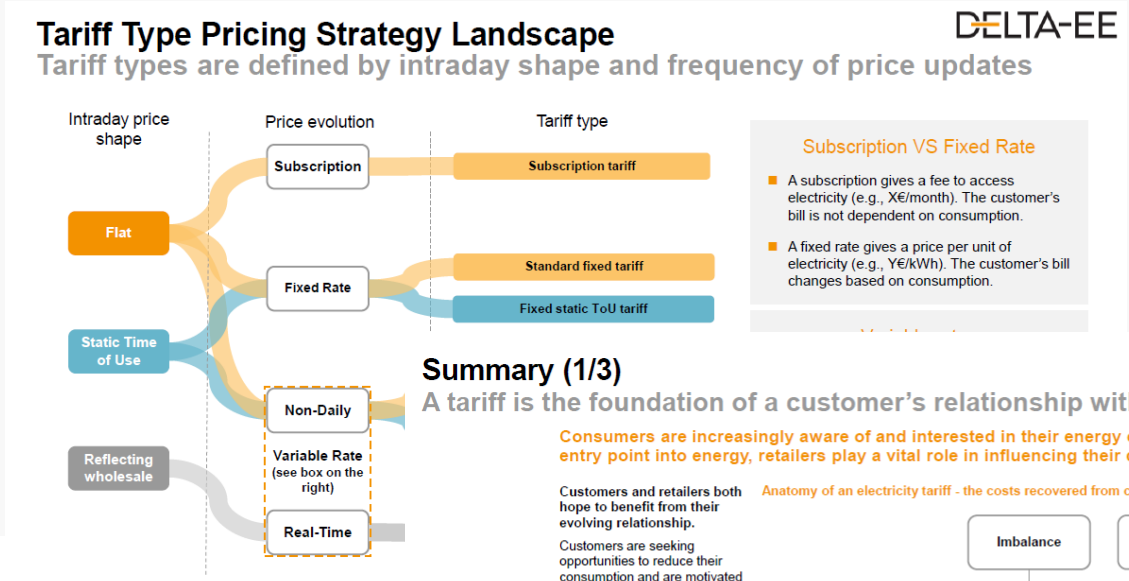
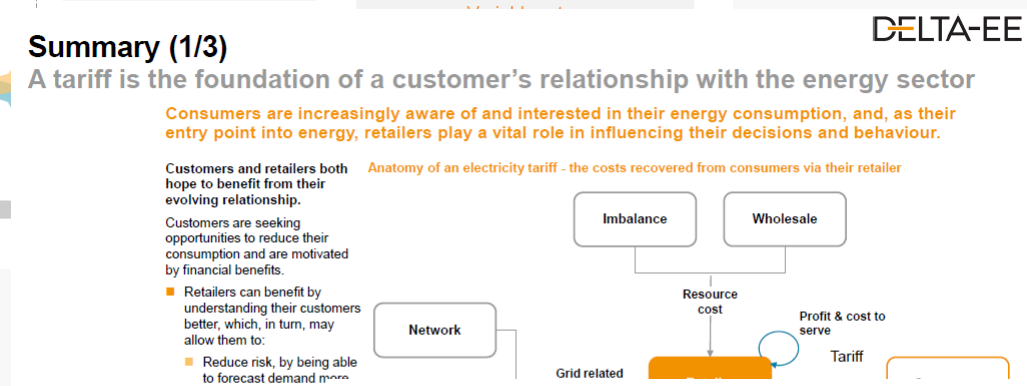
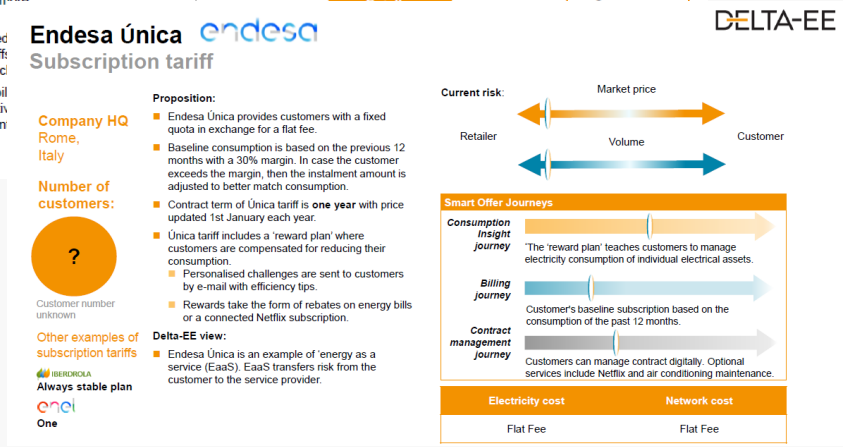




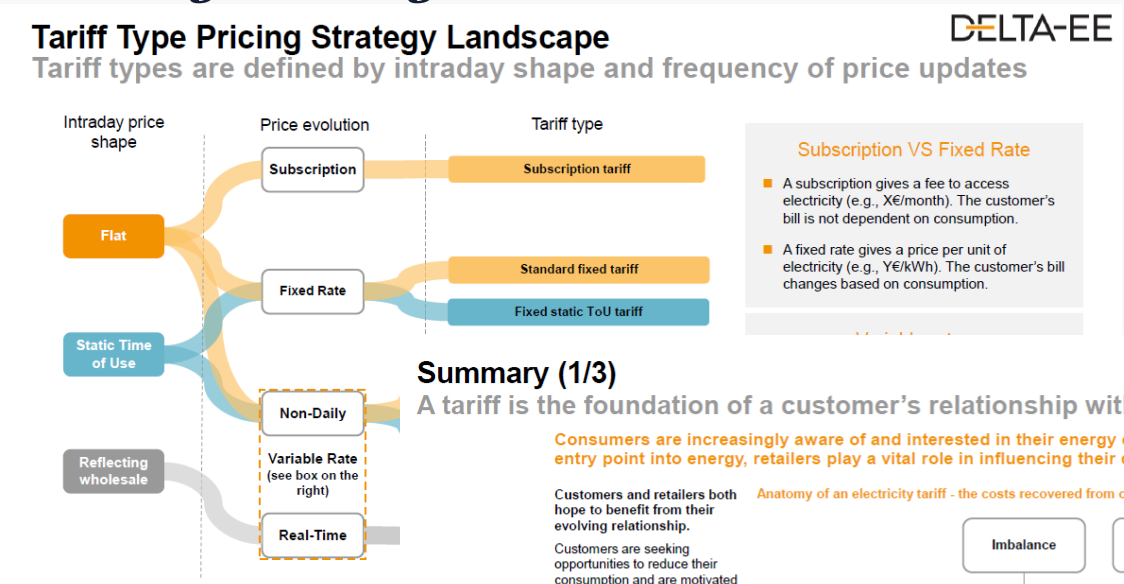


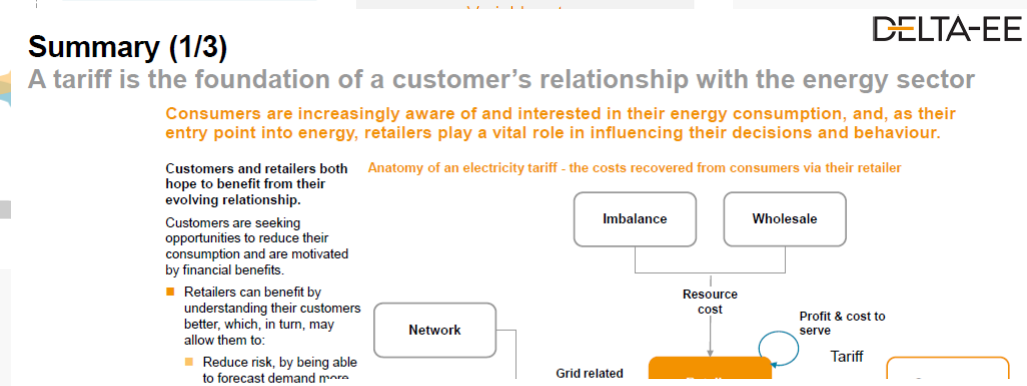
When will pan-European flexibility emerge

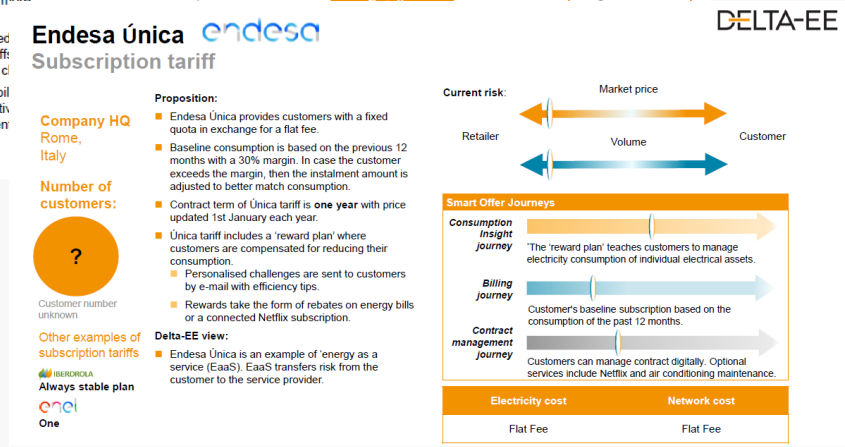
Last updated August 2023

This report focuses on:

- How a tariff can be considered smart and explore the motivation behind the increasing diversity in tariff design
- Provide a pricing strategy landscape of standard tariff types, as well as a risk framework to describe the relationship between customer and retailer.
- Provide examples of innovative tariff offers across Europe.







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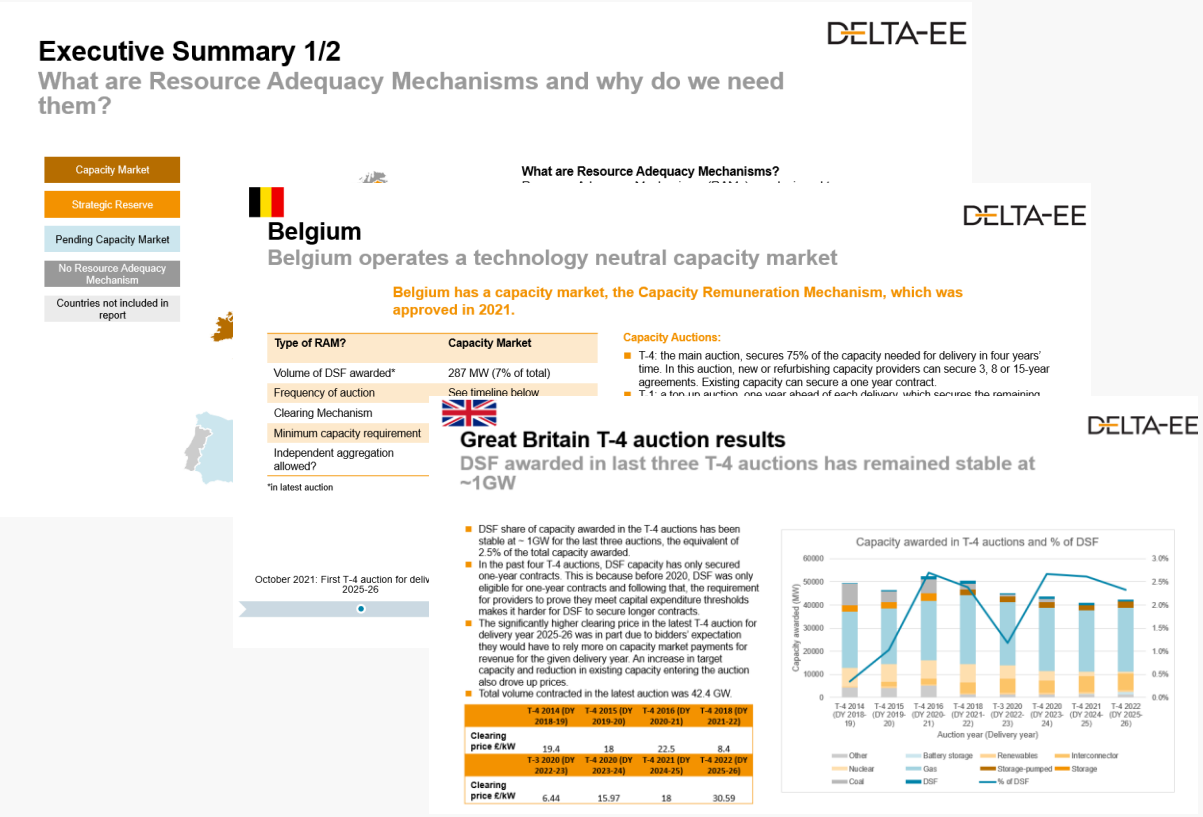
Resource adequacy mechanisms

Last updated July 2023

This report focuses on Demand Side Flexibility in 12 European countries Resource Adequacy Mechanisms (RAMs). The report aims to:

- Outline the main structure of the Resource Adequacy Mechanisms in 12 countries (8 have RAMs).
- Determine the volume (MW) of Demand Side Flexibility (DSF) capacity awarded in each capacity auction and the percentage of DSF capacity awarded compared to the total volume of capacity awarded.
- Assess how easy it is for DSF to access these RAMs and specific features of the mechanisms like compensation, lengths of contracts and derating factors.



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The French Capacity Market explained: How can DSF participate in the French Capacity Market?

Published February 2023.

- A specific, detailed report focusing on exampling the different capacity market mechanisms in France.

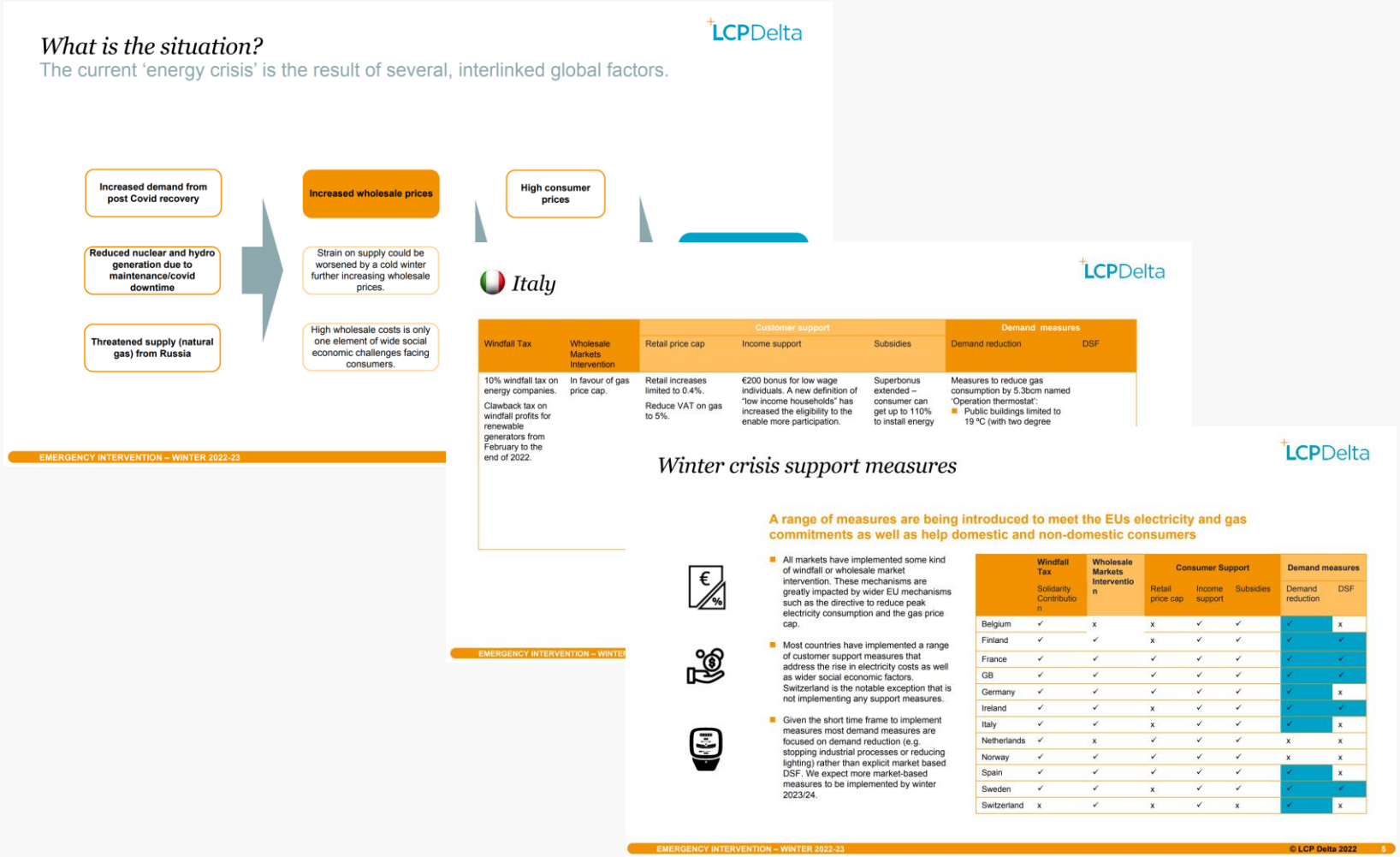
Emergency intervention

Published November 2022

As a result of the current energy crisis countries are implementing a range of measures to help consumers and to mitigate potential supply issues.

This report outlines key initiatives with a specific focus on demand reduction and demand side flexibility.

Countries included: Belgium, Finland, France, GB, Germany, Ireland, Italy, Netherlands, Norway, Spain, Sweden and Switzerland.

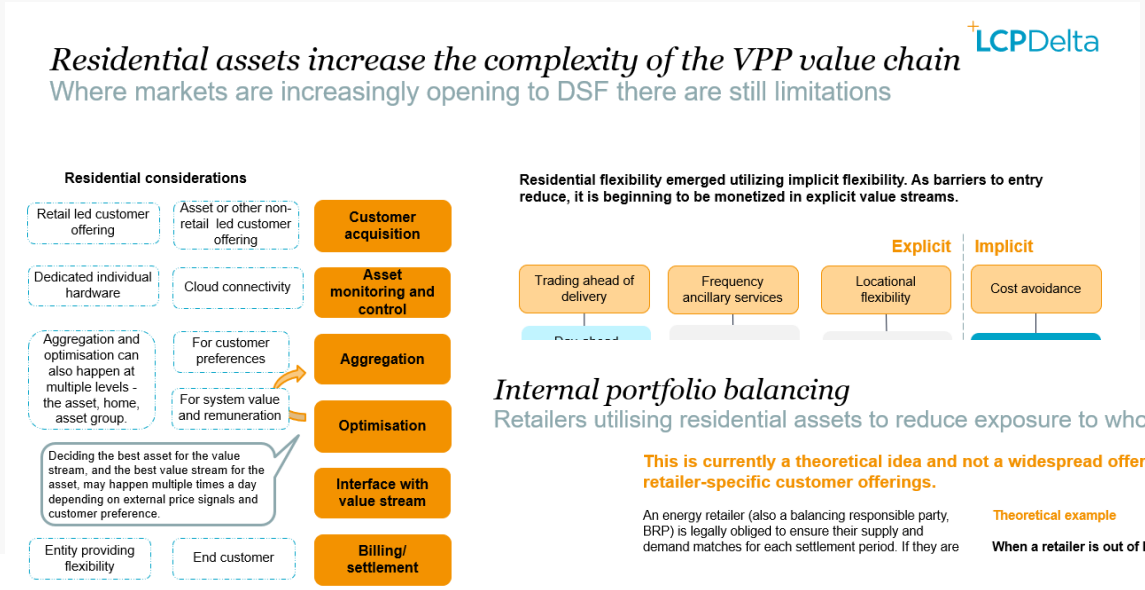


Residential flexibility – next frontier or road to nowhere?

Published May 2023

Residential flexibility can be monetized implicitly, through tariffs, or explicitly by trading into DSO and TSO markets. However, while there are clear cost savings available through implicit flexibility, there are significant technical and legal barriers to entry for residential flexibility in explicit value streams.

To overcome these barriers, we are seeing the growth of specialised service providers able to monetise residential flexibility, but the additional complexity is a competitive disadvantage against merchant assets (including grid-scale batteries) that dominate TSO value streams.



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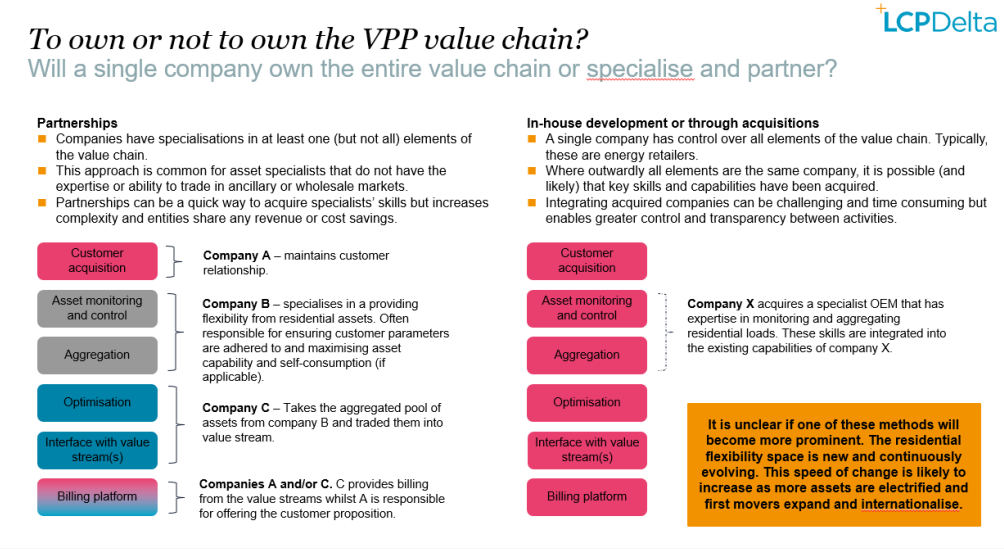


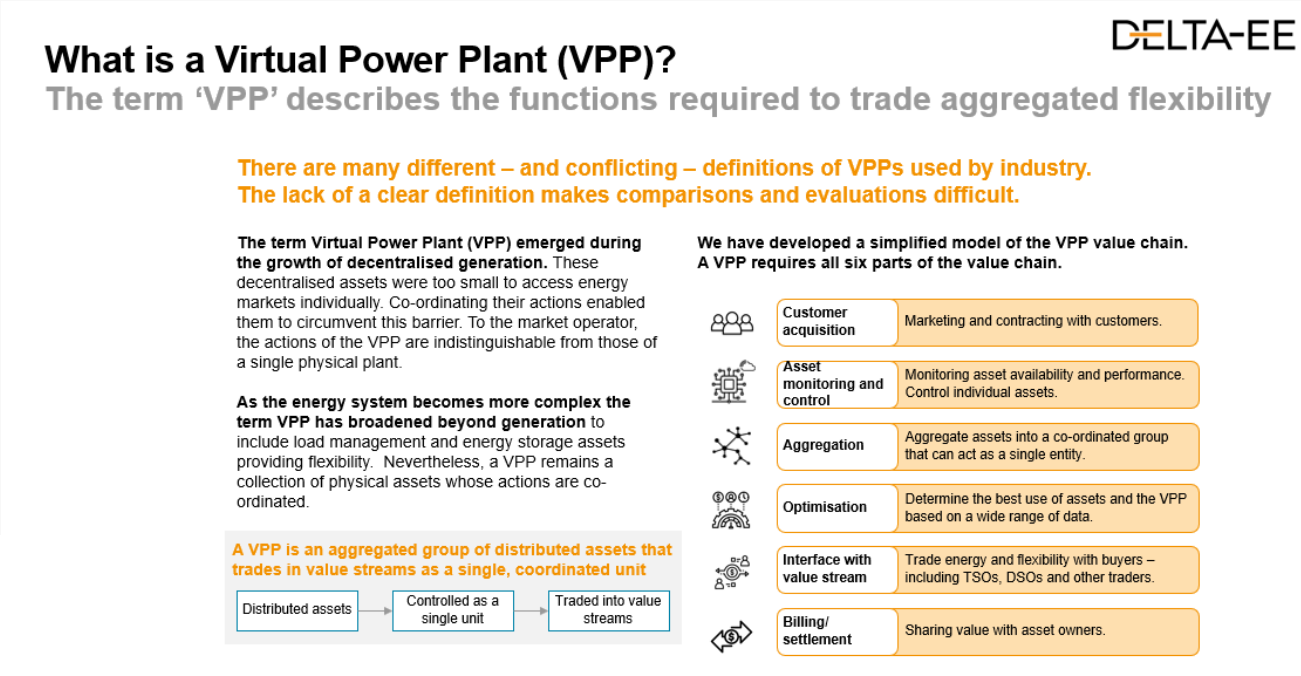
Understanding the roles of different service providers

- **What is a Virtual Power Plant?**
- **Marketplace platforms**
- **Route to market providers**
- **Evolution of retail platforms**
- **Mergers and acquisitions**
- **Introduction into DSO flexibility market**
- **Introduction to distribution network charges**

What is a virtual power plant?

Published June 2021

This report outlines our definition of a VPP and categories it into 6 components.
Using these components, we map the service providers performing these functions highlighting how they are partnering/acquiring across Europe in order to monetise across value streams and across multiple courtiers.



DELTA-EE

What is a Virtual Power Plant (VPP)?

The term 'VPP' describes the functions required to trade aggregated flexibility

There are many different – and conflicting – definitions of VPPs used by industry. The lack of a clear definition makes comparisons and evaluations difficult.

The term Virtual Power Plant (VPP) emerged during the growth of decentralised generation. These decentralised assets were too small to access energy markets individually. Co-ordinating their actions enabled them to circumvent this barrier. To the market operator, the actions of the VPP are indistinguishable from those of a single physical plant.

As the energy system becomes more complex the term VPP has broadened beyond generation to include load management and energy storage assets providing flexibility. Nevertheless, a VPP remains a collection of physical assets whose actions are co-ordinated.

A VPP is an aggregated group of distributed assets that trades in value streams as a single, coordinated unit

Distributed assets → Controlled as a single unit → Traded into value streams

We have developed a simplified model of the VPP value chain. A VPP requires all six parts of the value chain.

Customer acquisition	Marketing and contracting with customers.
Asset monitoring and control	Monitoring asset availability and performance. Control individual assets.
Aggregation	Aggregate assets into a co-ordinated group that can act as a single entity.
Optimisation	Determine the best use of assets and the VPP based on a wide range of data.
Interface with value stream	Trade energy and flexibility with buyers – including TSOs, DSOs and other traders.
Billing/ settlement	Sharing value with asset owners.

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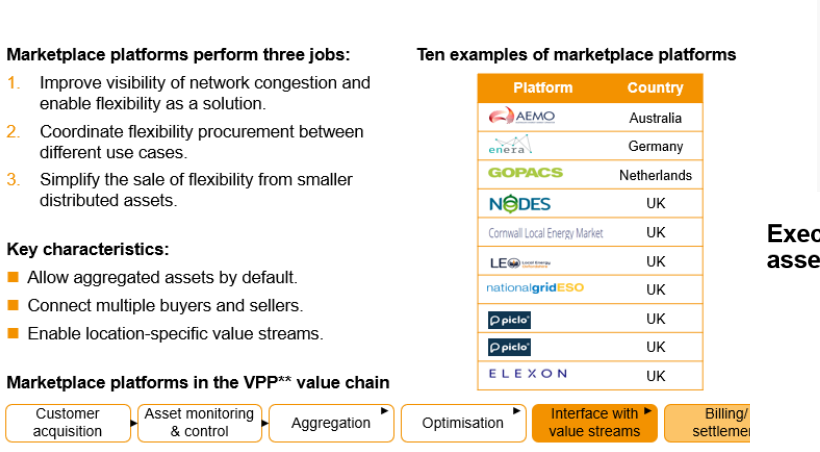
Evolution of platforms

Market place platforms
Published October 2021

The report evaluates 10 marketplace platforms identifying capabilities, scope, market access and development stage.



Marketplace platforms perform three jobs:

1. Improve visibility of network congestion and enable flexibility as a solution.
2. Coordinate flexibility procurement between different use cases.
3. Simplify the sale of flexibility from smaller distributed assets.

Key characteristics:

- Allow aggregated assets by default.
- Connect multiple buyers and sellers.
- Enable location-specific value streams.

Marketplace platforms in the VPP value chain**

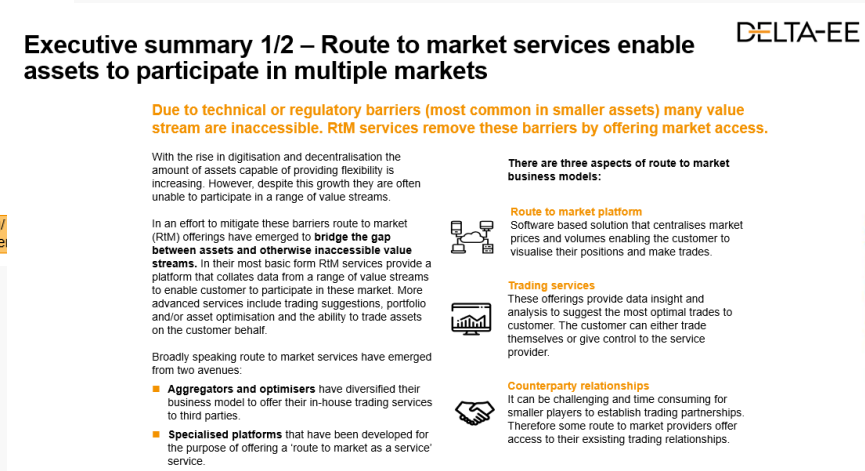
Customer acquisition → Asset monitoring & control → Aggregation → Optimisation → Interface with value streams → Billing/ settlemer

Ten examples of marketplace platforms

Platform	Country
AEMO	Australia
enera	Germany
GOPACS	Netherlands
NODES	UK
Cornwall Local Energy Market	UK
LEO	UK
nationalgridESO	UK
piclo	UK
piclo	UK
ELEXON	UK

Route to market platforms
Published August 2021

Aggregators are increasingly turning to other service providers to provide market access and trading capabilities. This report identifies and explains the different potential business models for route to market offerings.



DELTA-EE

Executive summary 1/2 – Route to market services enable assets to participate in multiple markets

Due to technical or regulatory barriers (most common in smaller assets) many value stream are inaccessible. RtM services remove these barriers by offering market access.

With the rise in digitisation and decentralisation the amount of assets capable of providing flexibility is increasing. However, despite this growth they are often unable to participate in a range of value streams.

In an effort to mitigate these barriers route to market (RtM) offerings have emerged to **bridge the gap between assets and otherwise inaccessible value streams.** In their most basic form RtM services provide a platform that collates data from a range of value streams to enable customer to participate in these market. More advanced services include trading suggestions, portfolio and/or asset optimisation and the ability to trade assets on the customer behalf.

Broadly speaking route to market services have emerged from two avenues:

- **Aggregators and optimisers** have diversified their business model to offer their in-house trading services to third parties.
- **Specialised platforms** that have been developed for the purpose of offering a 'route to market as a service' service.

There are three aspects of route to market business models:

Route to market platform
Software based solution that centralises market prices and volumes enabling the customer to visualise their positions and make trades.

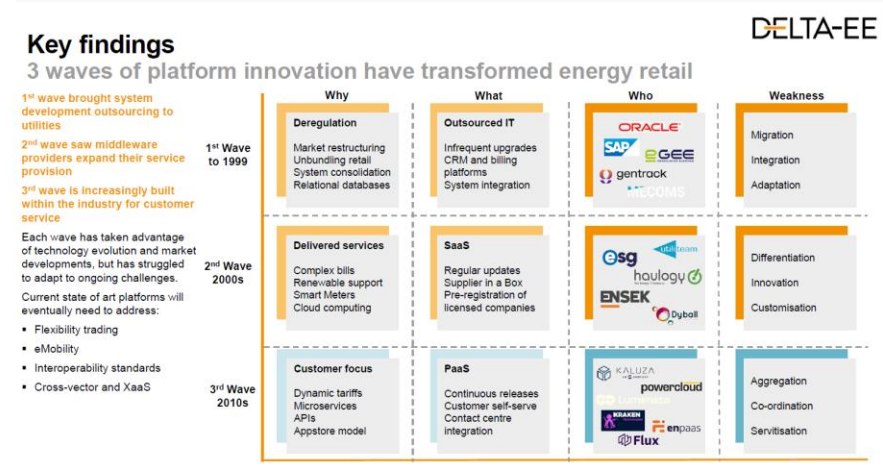
Trading services
These offerings provide data insight and analysis to suggest the most optimal trades to customer. The customer can either trade themselves or give control to the service provider.

Counterparty relationships
It can be challenging and time consuming for smaller players to establish trading partnerships. Therefore some route to market providers offer access to their exsisting trading relationships.

Retail platforms
Published December 2021

Retail platforms we undergoing significant change. We have identified three waves of innovation:

1) Outsourcing to ERP providers like SAP and Oracle
2) Supplier-in-a-box providers like Utiligroup and Haulogy offering Software as a Service
3) Retail-technology partnerships like Kraken and Kaluza, and extensible Platform as a Service products



DELTA-EE

Key findings

3 waves of platform innovation have transformed energy retail

1st wave brought system development outsourcing to utilities

2nd wave saw middleware providers expand their service provision

3rd wave is increasingly built within the industry for customer service

Each wave has taken advantage of technology evolution and market developments, but has struggled to adapt to ongoing challenges.

Current state of art platforms will eventually need to address:

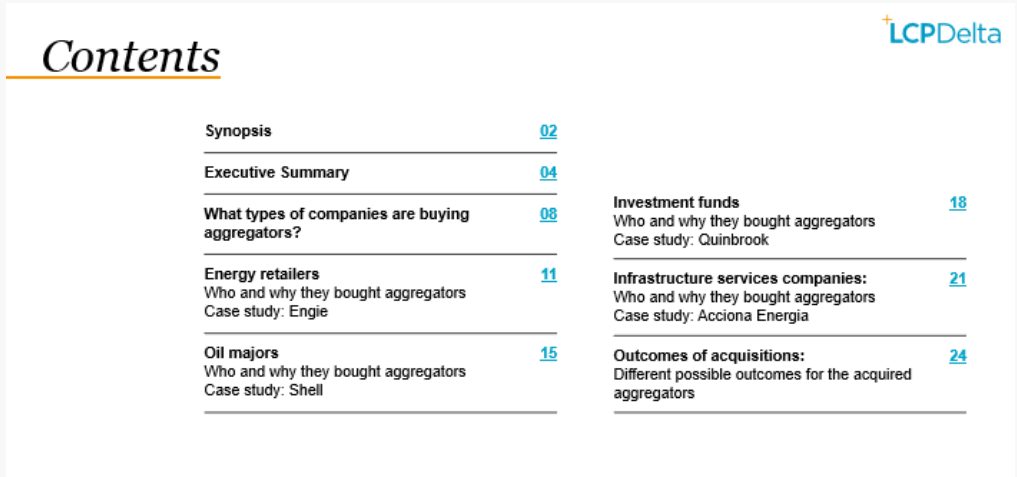
- Flexibility trading
- eMobility
- Interoperability standards
- Cross-vector and XaaS

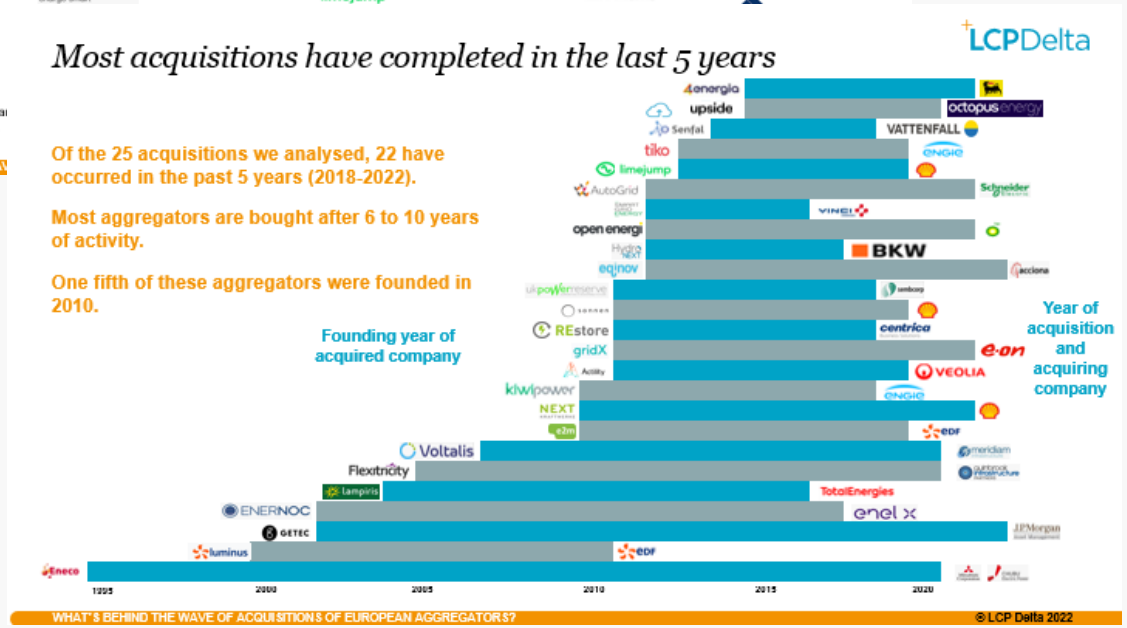
	Why	What	Who	Weakness
1st Wave to 1999	Deregulation Market restructuring Unbundling retail System consolidation Relational databases	Outsourced IT Infrequent upgrades CRM and billing platforms System integration	ORACLE, SAP, gentrack	Migration Integration Adaptation
2nd Wave 2000s	Delivered services Complex bills Renewable support Smart Meters Cloud computing	SaaS Regular updates Supplier in a Box Pre-registration of licensed companies	esg, haulogy, ENSEK, Dyball	Differentiation Innovation Customisation
3rd Wave 2010s	Customer focus Dynamic tariffs Microservices APIs Appstore model	PaaS Continuous releases Customer self-serve Contact centre integration	KALUZA, powercloud, KRAKEN, enpaas, Flux	Aggregation Co-ordination Servitisation

What's behind the wave of acquisitions of European aggregators?

Published October 2022

- Who is acquiring independent aggregators?
- What are they buying them?
- At what stage of maturing are aggregators being acquired?
- What subsequently happens to acquired businesses?





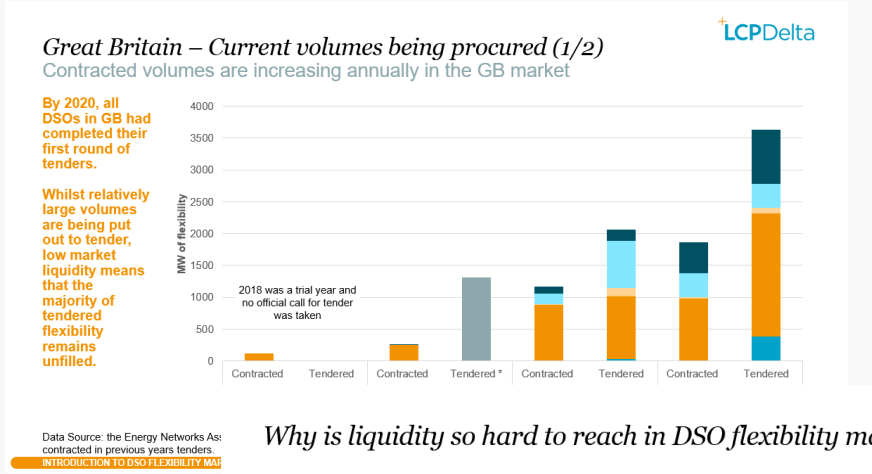
Introduction to DSO flexibility markets

Published December 2022

The decarbonisation of the electricity system means that large amounts of distributed demand and generation assets are being connected to the distribution network.

DSOs are struggling to build out the network capacity at the pace that demand is increasing. Things brings about an increased need for flexibility on the distribution network to ensure that they continue to operate safely.

This report provides a overview of what DSO flexibility markets are and then details where they are emerging in Europe, giving a more detailed overview of fur of the most advanced markets: Great Britain, the Netherlands, Sweden and France.



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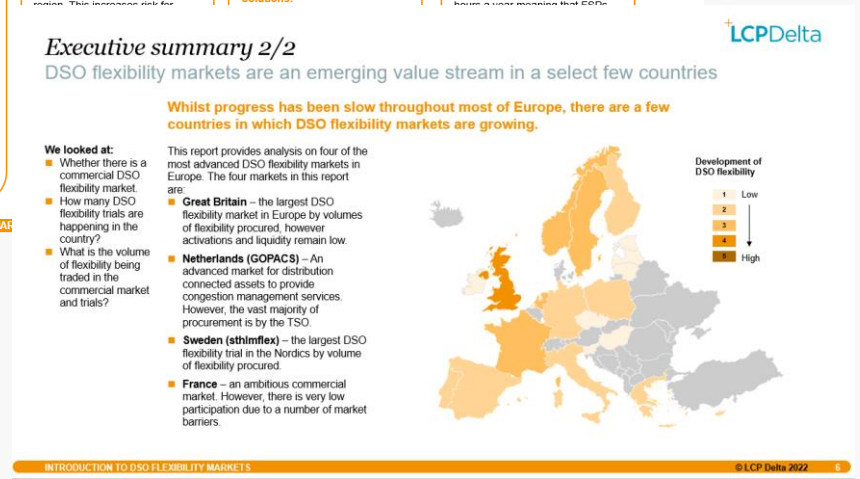


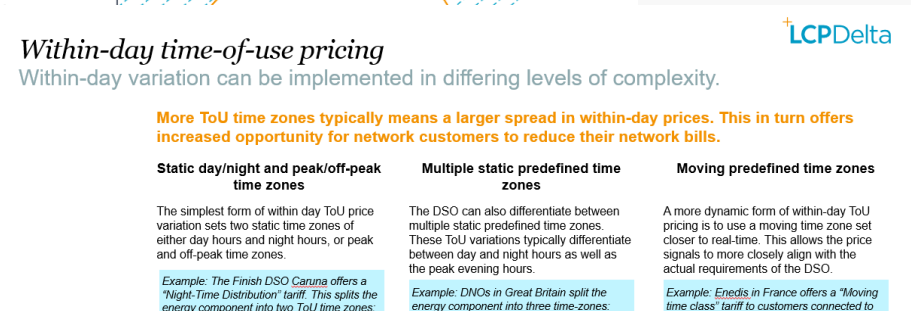
Introduction to distribution network charges

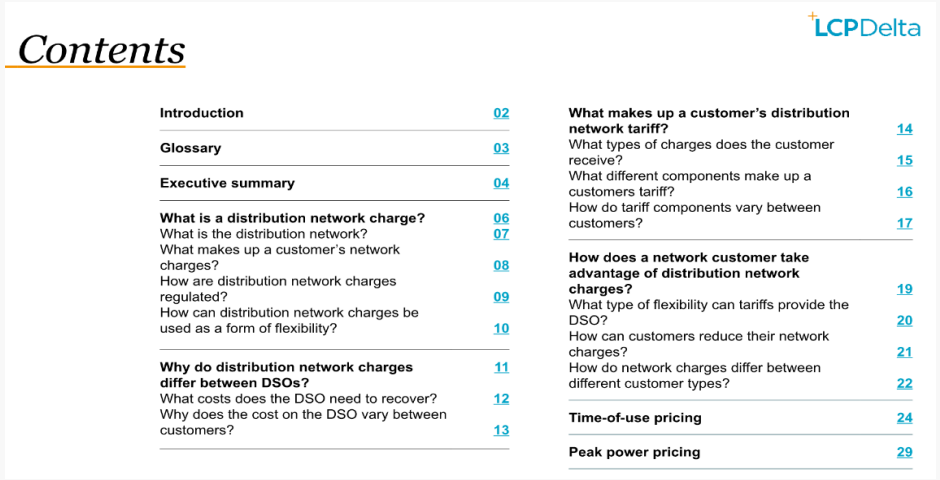
Published March 2023

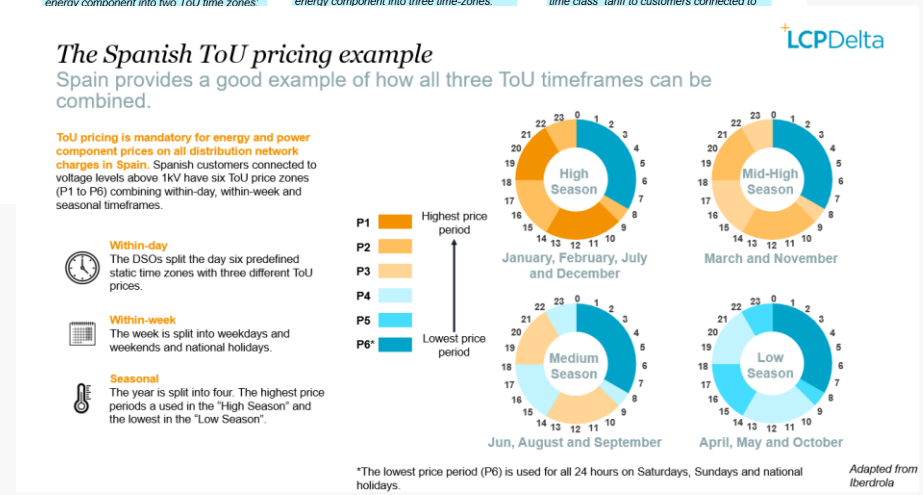
Distribution network charges are the mechanism that DSOs use to recover the costs associated with the operation, maintenance and development of the distribution network. In countries where the DSO is under private ownership, the distribution network charges also includes profit for shareholders.

They can also be used as a form of implicit flexibility in which DSO customers react to a price signal by increasing or decreasing their energy usage and making savings on the network portion of their energy bill.

This report details the different components that can make up a distribution network charge and how the prices of these components can vary depending on several different variables. The report then provides an insight into how network customers can take advantage of distribution network charges, providing implicit flexibility to the DSO and gaining cost savings on their network bills.





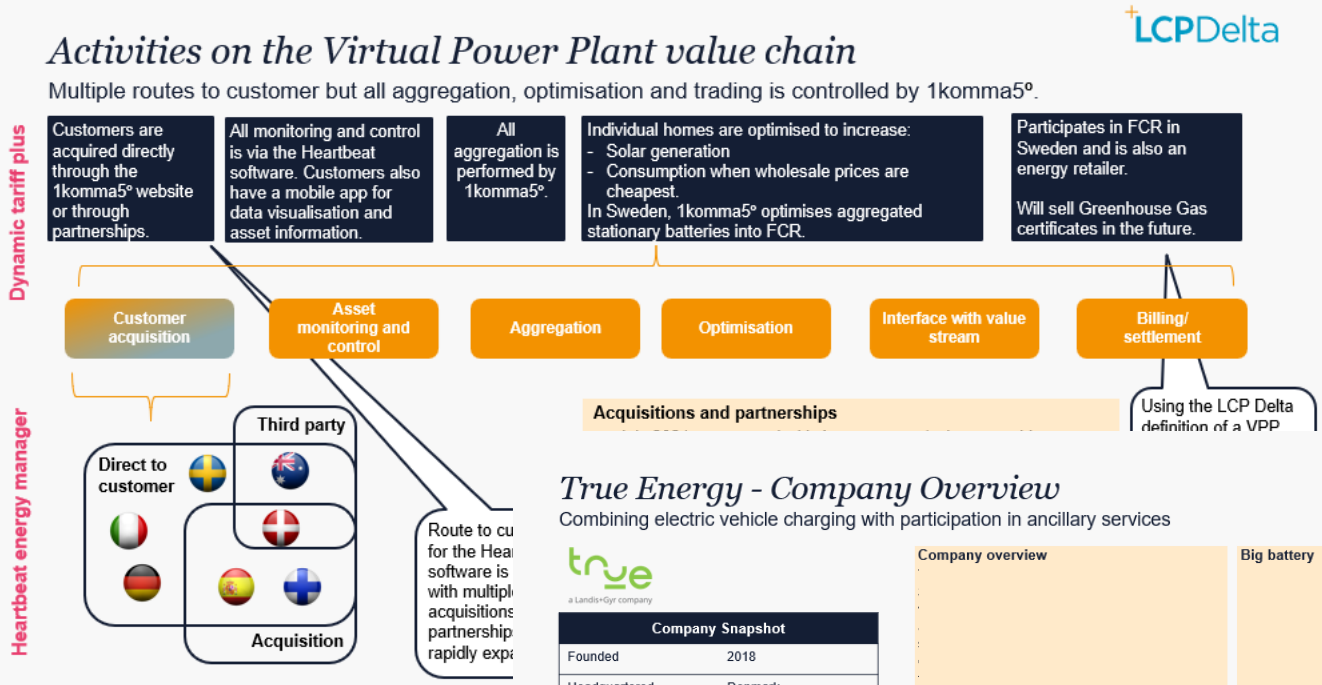


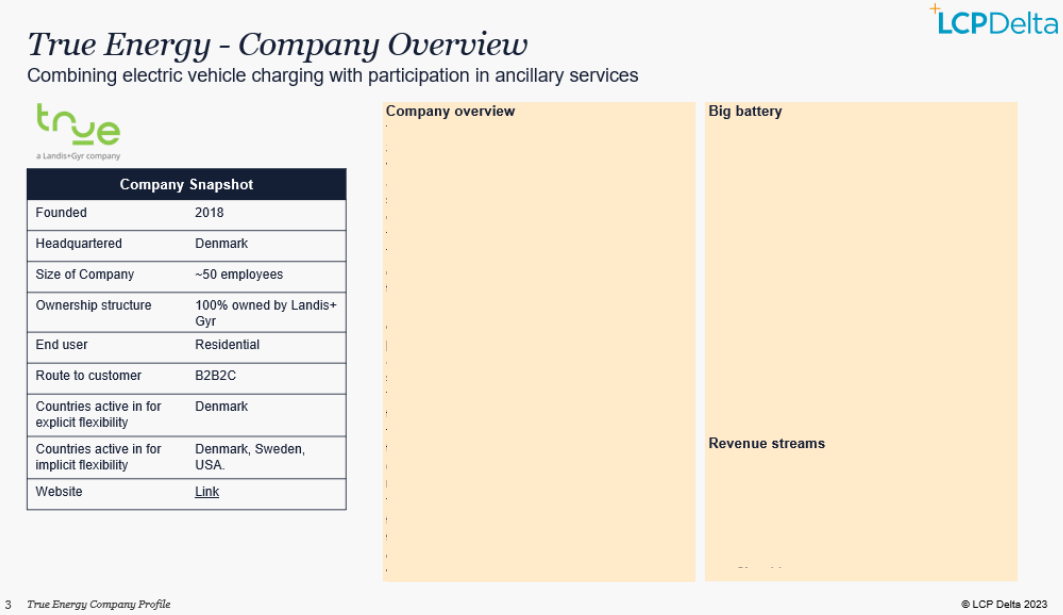
Service provider profiles

These company profiles highlight those companies with activities across the virtual power plant value chain. The profiles outlines the company overview before detailing the specific flexibility activities, value streams accessed and customer propositions.

Publication are profiles is ongoing, Currently available are:

- Letra
- Ev.energy
- The Mobility House
- Tiko
- 1Komma5
- True Energy





Access to hard to get data

Value stream requirements

Last updates January 2023

Data included (per value stream):

- Product shape
- Payments (availability and/or utilisation)
- Can DSF participate?
- Is aggregation allowed?
- Is a BRP agreement required?
- Procurement type and frequency
- Cleaning mechanism
- Time to activation start
- Response duration
- And more…

Countries included:

- Belgium
- Finland
- France
- Germany
- Great Britain
- Ireland
- Italy
- Netherlands
- Norway
- Spain
- Sweden
- Switzerland

DELTA-EE

Belgium

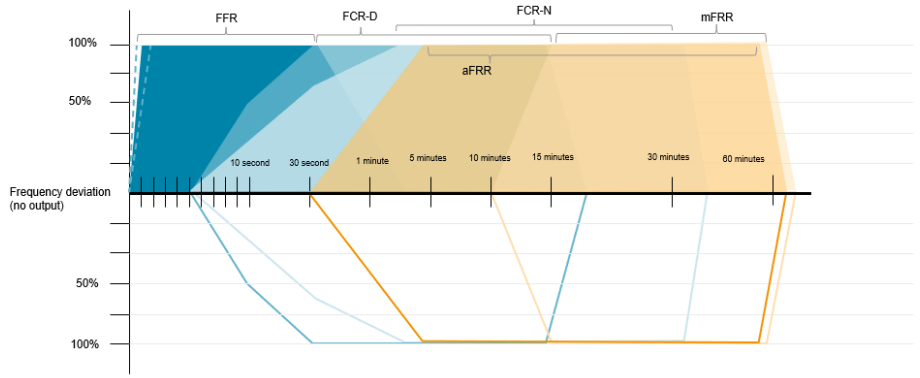
Technical and regulatory requirements

	Product shape	Payments	Can DSF participate?	Is aggregation allowed?	Aggregated portfolio size limit (MW)?	Is a BRP agreement required?	Is storage allowed?	Procurement frequency	Procurement type	Minimum bid size (MW)	Maximum bid size (MW)	Payment period (minutes)	Clearing Mechanism
R1 Symmetric (FCR)	Symmetric	Availability	Yes	Yes	-	No	Yes	Daily	Pool	1	-	4 hours	Pay as clear
R2 (aFRR)	Down	Utilisation	Yes	Yes	-	Yes	Yes	Daily	Pool	1	-	15	Pay as bid
R2 (aFRR)	Up	Utilisation	Yes	Yes	-	Yes	Yes	Daily	Pool	1	-	15	Pay as bid
R2 (aFRR)	Down	Availability	Yes	Yes	-	Yes	Yes	Daily	Pool	1	-	4 hours	Pay as bid
R2 (aFRR)	Up	Availability	Yes	Yes	-	Yes	Yes	Daily	Pool	1	-	4 hours	Pay as bid
R3 (mFRR)	Down	Utilisation	Yes	Yes	100	Yes	Yes	Daily	Pool	1	-	15	Pay as clear
R3 (mFRR)	Up	Utilisation	Y										
R3 (mFRR)	Up	Availability	Y										

DELTA-EE

Finland

Product shape requirements



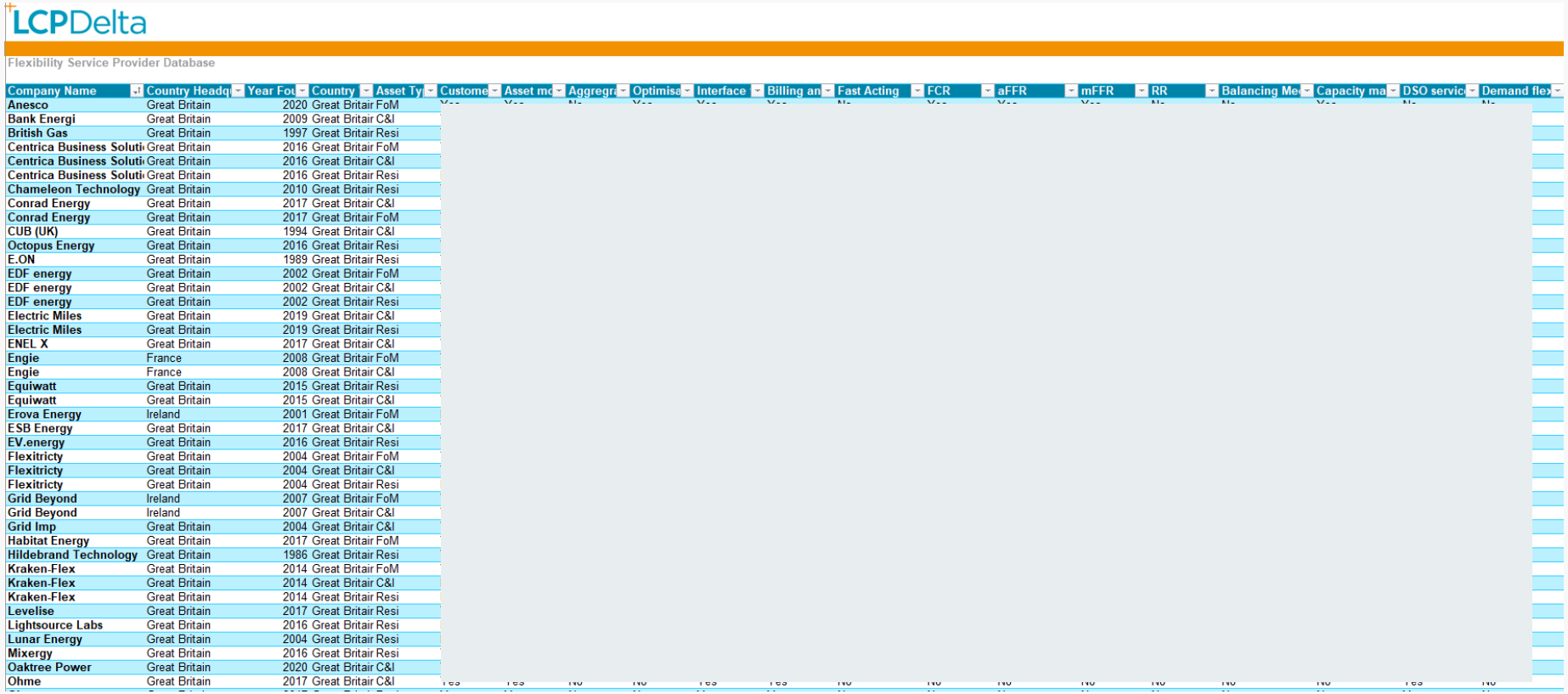
Service provider database

Published May 2023

Database Contents:

- Company overview
- VPP Value chain coverage
- Customer type
- Asset type
- Value stream active in
- Country active in

The database contains information on the GB market. It is currently being updated to include additional European countries.



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Flexibility Service Provider Database

Company Name	Country Headqu	Year Fou	Country	Asset Ty	Custome	Asset mo	Aggregra	Optimisa	Interface	Billing an	Fast Acting	FCR	aFFR	mFFR	RR	Balancing Me	Capacity ma	DSO servic	Demand flex
Anesco	Great Britain	2020	Great Britain	FoM															
Bank Energi	Great Britain	2009	Great Britain	C&I															
British Gas	Great Britain	1997	Great Britain	Resi															
Centrica Business Soluti	Great Britain	2016	Great Britain	FoM															
Centrica Business Soluti	Great Britain	2016	Great Britain	C&I															
Centrica Business Soluti	Great Britain	2016	Great Britain	Resi															
Chameleon Technology	Great Britain	2010	Great Britain	Resi															
Conrad Energy	Great Britain	2017	Great Britain	C&I															
Conrad Energy	Great Britain	2017	Great Britain	FoM															
CUB (UK)	Great Britain	1994	Great Britain	C&I															
Octopus Energy	Great Britain	2016	Great Britain	Resi															
E.ON	Great Britain	1989	Great Britain	Resi															
EDF energy	Great Britain	2002	Great Britain	FoM															
EDF energy	Great Britain	2002	Great Britain	C&I															
EDF energy	Great Britain	2002	Great Britain	Resi															
Electric Miles	Great Britain	2019	Great Britain	C&I															
Electric Miles	Great Britain	2019	Great Britain	Resi															
ENEL X	Great Britain	2017	Great Britain	C&I															
Engie	France	2008	Great Britain	FoM															
Engie	France	2008	Great Britain	C&I															
Equiwatt	Great Britain	2015	Great Britain	Resi															
Equiwatt	Great Britain	2015	Great Britain	C&I															
Erova Energy	Ireland	2001	Great Britain	FoM															
ESB Energy	Great Britain	2017	Great Britain	C&I															
EV.energy	Great Britain	2016	Great Britain	Resi															
Flexitricty	Great Britain	2004	Great Britain	FoM															
Flexitricty	Great Britain	2004	Great Britain	C&I															
Flexitricty	Great Britain	2004	Great Britain	Resi															
Grid Beyond	Ireland	2007	Great Britain	FoM															
Grid Beyond	Ireland	2007	Great Britain	C&I															
Grid Imp	Great Britain	2004	Great Britain	C&I															
Habitat Energy	Great Britain	2017	Great Britain	FoM															
Hildebrand Technology	Great Britain	1986	Great Britain	Resi															
Kraken-Flex	Great Britain	2014	Great Britain	FoM															
Kraken-Flex	Great Britain	2014	Great Britain	C&I															
Kraken-Flex	Great Britain	2014	Great Britain	Resi															
Levelise	Great Britain	2017	Great Britain	Resi															
Lightsource Labs	Great Britain	2016	Great Britain	Resi															
Lunar Energy	Great Britain	2004	Great Britain	Resi															
Mixergy	Great Britain	2016	Great Britain	Resi															
Oaktree Power	Great Britain	2020	Great Britain	C&I															
Ohme	Great Britain	2017	Great Britain	C&I															

In addition we also published in depth case studies on individual companies.

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