



Q3 2022

PPA Price Index Executive Summary

EUROPE

Executive Summary

Europe's Energy Crisis Pushes Electricity Prices Higher

Europe's energy crisis has shown no signs of relenting, with wholesale electricity prices soaring to a record-high average of €500/MWh during August, as Russian gas supplies dwindle to a trickle: falling 82% year over year. This has put upward pressure on PPA prices, which were already on the rise due to escalating demand and development costs. LevelTen's Blended European P25 Index, which is an average of P25 wind and solar PPA price indices in all countries, by 11,3% in Q3, and now rests at €73,54 per MWh.

Regulatory Uncertainty Reaching New Levels

On both national and EU-levels, politicians are increasingly considering strong policy interventions and market overhauls to stem the unrelenting tide of high wholesale electricity prices. A dizzying array of policy proposals, paired with a general lack of specifics, has created profound regulatory uncertainty for the renewable development community – making it increasingly difficult for developers to assess the long-term economics of PPAs.

Top of mind for all those in the European clean energy community is the EU's proposed €180/MWh cap on revenues for inframarginal electricity producers – specifically wind,

solar, nuclear, and lignite (coal) generators. The regulation is structured to account for revenues after PPA settlements, and given that the vast majority of long-term PPA prices fall well under €180/MWh, this will have minimal impact on most long-term PPAs. The regulation hasn't halted activity completely; according to LevelTen's survey this quarter, most developers plan to continue to make PPA offers through the LevelTen Energy Marketplace, despite some uncertainty around the regulation, particularly around what actions individual Member States may take.

High Electricity Prices and Exploding Renewable Demand are Pushing Prices Up

The allure of extremely high wholesale electricity prices continues to provide tempting non-PPA options for developers. Such an environment dramatically lowers the risks associated with "going merchant" (selling into the wholesale market) with greater portions of their projects' capacity, and banks – growing more accustomed to renewable economics and current wholesale conditions – are increasingly comfortable financing projects on a merchant basis. Even the EU's proposed €180/MWh revenue cap represents a price level well above historical norms, and should be only temporary: expiring by next July. Altogether, this could reduce the supply of available PPAs for corporate offtakers as demand for PPAs continues to skyrocket, leading to increased prices.

Even In These Conditions, Deals are Getting Done

Even with rising prices, PPAs are still the solution of choice for many companies, and PPAs continue to be signed. Buyers with clarity on their goals, sound credit, an ability to contract quickly, and a willingness to be flexible with developers will continue to succeed. "Corporations that are prepared to move quickly can secure long-term PPAs that will deliver less volatility in energy costs, a steady stream of Guarantees of Origin, and contribute to Europe's energy independence," said Flemming Sørensen, LevelTen Energy's Vice President of Europe. "Despite market volatility, now is the time corporations need to step up and help us bring more clean energy onto the grid, as fast as possible."

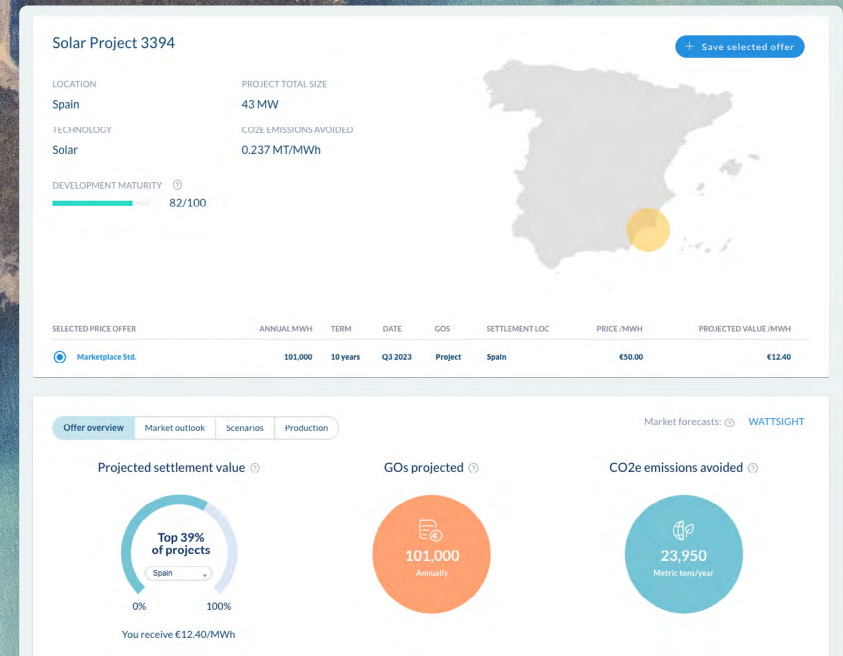
About the LevelTen Energy PPA Price Index

The Industry's Only Source of Real PPA Pricing Data

Each quarter, the LevelTen Energy PPA Price Index reports the prices that wind and solar project developers have offered for power purchase agreements (PPAs) available on the LevelTen Energy Marketplace, the world's largest collection of PPA pricing offers, spanning 25 countries in North America and Europe.

The offers underlying our Index are from projects that are currently under development and posted by developers to the LevelTen Energy Marketplace, giving the industry a transparent and unprecedented look at actual PPA price offers – not estimates of what PPA prices could or should be. By tracking how the P25 Index changes over time, LevelTen can alert the industry to changes in the market that may make it more or less attractive. We also give the industry a tool to see how macro-level factors, like increased competition or regulatory changes, are impacting renewable PPA prices.

It is critical to remember, however, that price does not equal value. Because PPAs are complex transactions that can't be valued on price alone, LevelTen's CFO-Ready™ Analytics – based on more than a billion data points calculated every day – give market participants a much deeper understanding of the expected value, and potential risk, of every PPA.



Q3 2022 Methodology

LevelTen Energy PPA Price Index

The offer prices presented below are expressed on a per-megawatt-hour basis within each country, and all offers conform to LevelTen's pricing standards, which include:

- a fixed price over the offer term;
- an as-generated production profile;
- a contract-for-differences structure – i.e., virtual PPA or financially settled against a specific market reference price (typically the national country price);
- standardized credit assumptions.

Data are based on PPA prices that assume financial settlement against the hourly Day Ahead wholesale energy market price. We include only flat, as-generated (i.e., unit-contingent) projects updated within 90 days of September 16, 2022. All prices include the bundled energy attribute certificates (EACs). Prices were offered across a range of project commercial operation dates with contract tenors ranging from 5 to 20 years. Price data are aggregated and reported in percentile buckets (e.g., "P25" refers to the most competitive 25th percentile offer price).

Each regional Index is for the 25th percentile, or the boundary of the lowest 25% of offer prices from project developers. The European Indices are aggregations of the individual P25 regional components. We prefer to use the P25 Index because it provides a standardized measure for

competitive pricing within each geography, while safeguarding sellers' confidential information. In general, we would expect the majority of PPA transactions to occur within this most competitive pricing band. That said, it is important to highlight that the most competitive Marketplace offers (i.e., the "P1" or market clearing price) can be significantly lower than the P25 Index.

LevelTen can facilitate tenders for standard physical and virtual PPAs, as well as non-standard contract types, like baseload shape, market-following price structure, upside-sharing model, and with tenors shorter than 5 years.



About LevelTen Energy

To slow the rate of global warming and meet the growing demand for renewable energy, the world needs to rapidly accelerate utility-scale renewable energy project development. Unfortunately, the legacy processes developed to help companies find renewable projects, analyze the financials, or run RFPs are slow, manual, and can't scale at the rate required to meet modern market needs.

LevelTen Energy provides software that enables faster, safer, and more efficient transactions for the renewable energy industry, delivering the transaction infrastructure required to accelerate the clean energy economy. LevelTen's platform provides renewable energy advisors, developers, large-scale buyers, and financiers with instant access to the full market of renewable energy projects, on two continents, combined with the automated analytics and technology to get better deals done, faster.

Only LevelTen has:



The industry's largest renewable PPA marketplace, with more than 4,500 pricing offers in 25 countries;



Analytics that automatically calculate more than a billion risk and value data points every day for our advisor partners and customers; and



A modern platform of automation software, data quality control, and standardized contracts — all to make faster and more efficient renewable energy deals possible, and all presented in a highly intuitive, user-friendly interface.

Get Access to the LevelTen Energy Marketplace

Want to see it for yourself? Renewable energy buyers, advisors, and developers should email info@leveltenenergy.com to schedule a free consultation.

Contributors



Frederico Carita

As Developer Services Senior Manager, Europe, Frederico engages with utility-scale project developers in Europe, delivering competitive market intelligence and transaction support for PPAs.



Gia Clark

As Senior Director of Developer Services, Gia ensures that renewable energy buyers have access to fresh supply, and developers receive market intelligence to make strategic business decisions.



Rob Collier

As VP of Energy Marketplace, Rob leads LevelTen's business lines that deliver innovative products and services to project developers.



Kristian Lande

As Senior Director, European Energy Analytics, Kristian provides insight and market intelligence to developers, partners, and clients.



Luis López-Polín

As a Senior Manager of Business Development based in Madrid, Luis supports renewable energy buyers and advisors entering into PPAs in Europe.



Sarah Pendergast

As Manager of Buyer Transactions, Sarah supports requests for proposals and bilateral communications between energy buyers and sellers.



Andreas Sakellaris

As Director of Transactions for Europe, Andreas leads the requests for proposals and bilateral communications between European energy buyers and sellers.



Gabriel Umana Gomez

In his role as a Customer Success Manager, Gabriel ensures that LevelTen Energy's clients and partners are fully supported to achieve their objectives.



Flemming Sørensen

As VP of Europe, Flemming leads LevelTen's expansion across the continent from our European headquarters in Madrid. He brings deep experience as an energy buyer, seller and trader to the role.

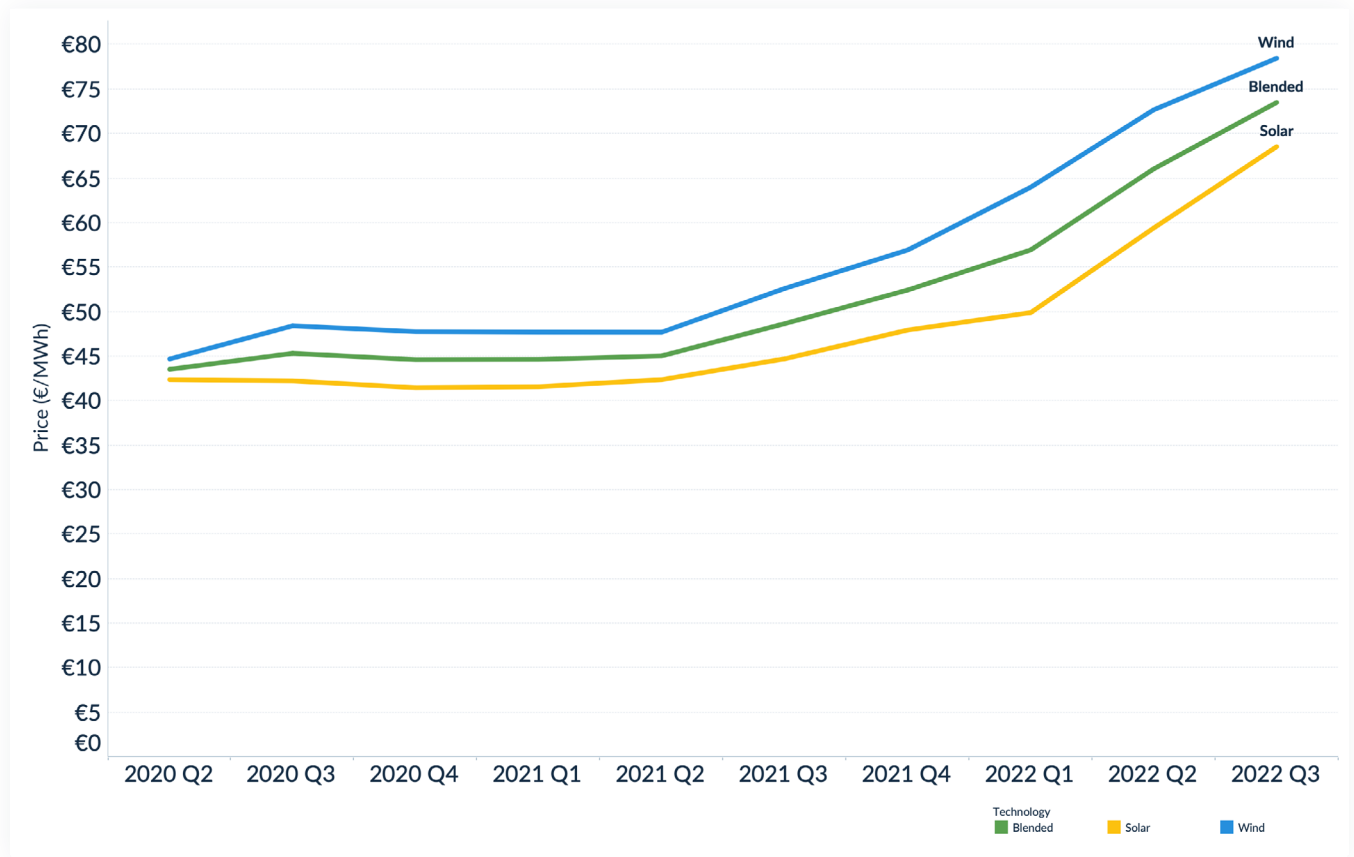
Price Index Comparison by Technology

From Q2 2022 to Q3 2022:

- The Blended European P25 Index, which is an average of the P25 wind and solar PPA price indices in all countries, increased by 11,3%, and now rests at €73,54 per MWh.
- The Solar P25 Index rose 15,4%, to €68,57 per MWh.
- The Wind P25 Index increased by 8%, and now sits at €78,50 per MWh.

Year over year:

- The Blended European P25 Index has increased by 51%, or €24,85 per MWh.
- The Solar P25 Index rose by 53,3%, or €23,84 per MWh.
- The Wind P25 Index increased by 49,1%, or €25,86 per MWh.

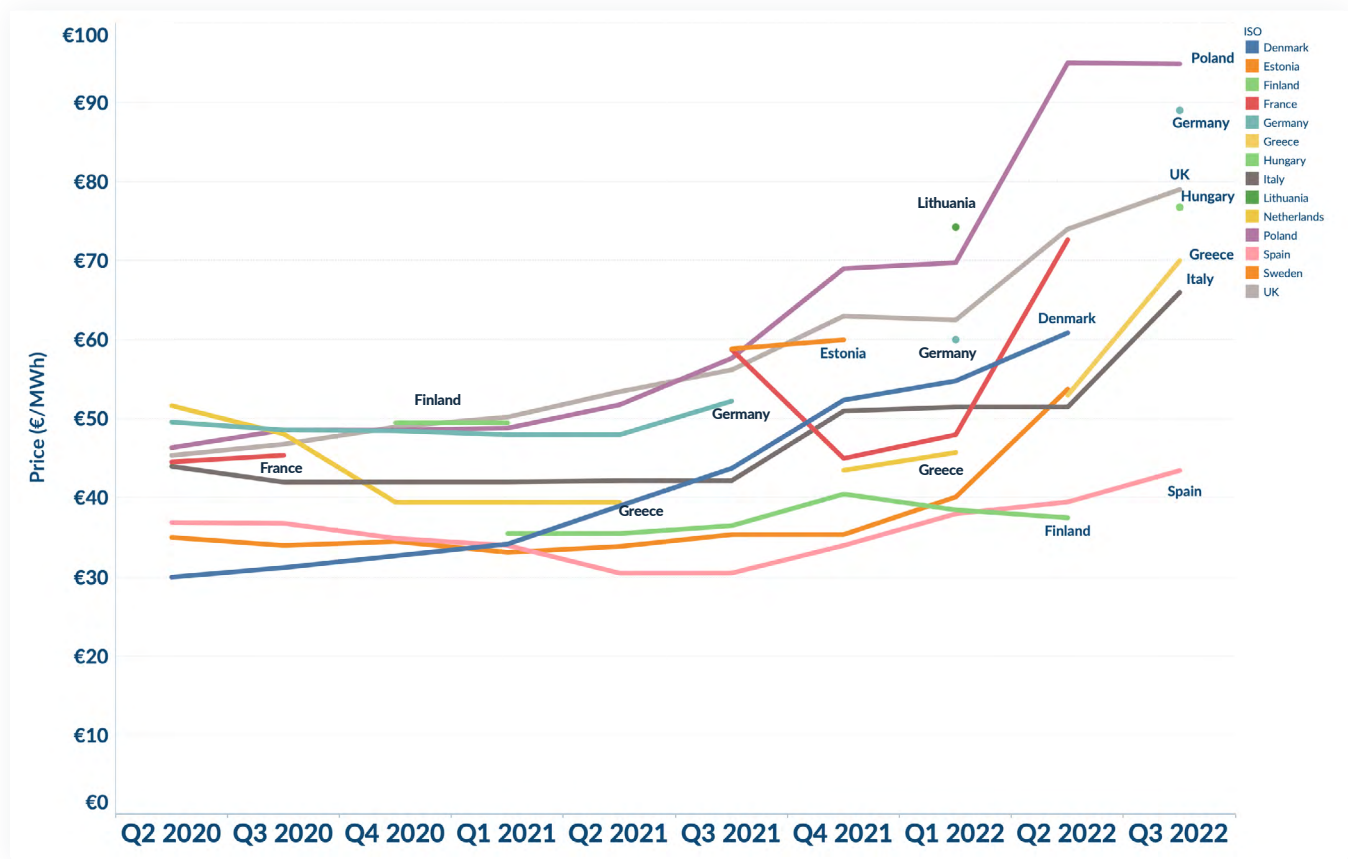


Solar P25 Price Indices by Country

During Q3 2022:

- P25 solar prices in Italy rose by 28,2%, or €14,50 per MWh. They now rest at €66 per MWh.
- P25 solar prices in Greece increased by 32,1%, or €17, during Q2, reaching €70 per MWh.
- No markets experienced price decreases during Q3, with P25 Solar PPA prices in the UK rising as well by 6,8%.

“Both the Italian and Greek solar markets have continued to move towards increased transactability for PPAs – good news, to be sure,” said Gabriel Umana Gomez, Customer Success Manager, Europe, LevelTen Energy. “However, one of the ironies of such market development is an increase in interested buyers, which can increase competition and apply upward price pressure. We can see some of this in both markets this quarter, with Italian and Greek P25 solar prices rising by 28,2% and 32,1%, respectively. It should also be noted that the number of Greek solar offers continues to grow on our Marketplace with each passing quarter, increasing overall liquidity and producing a P25 price that is likely more indicative of the Greek market as a whole.”

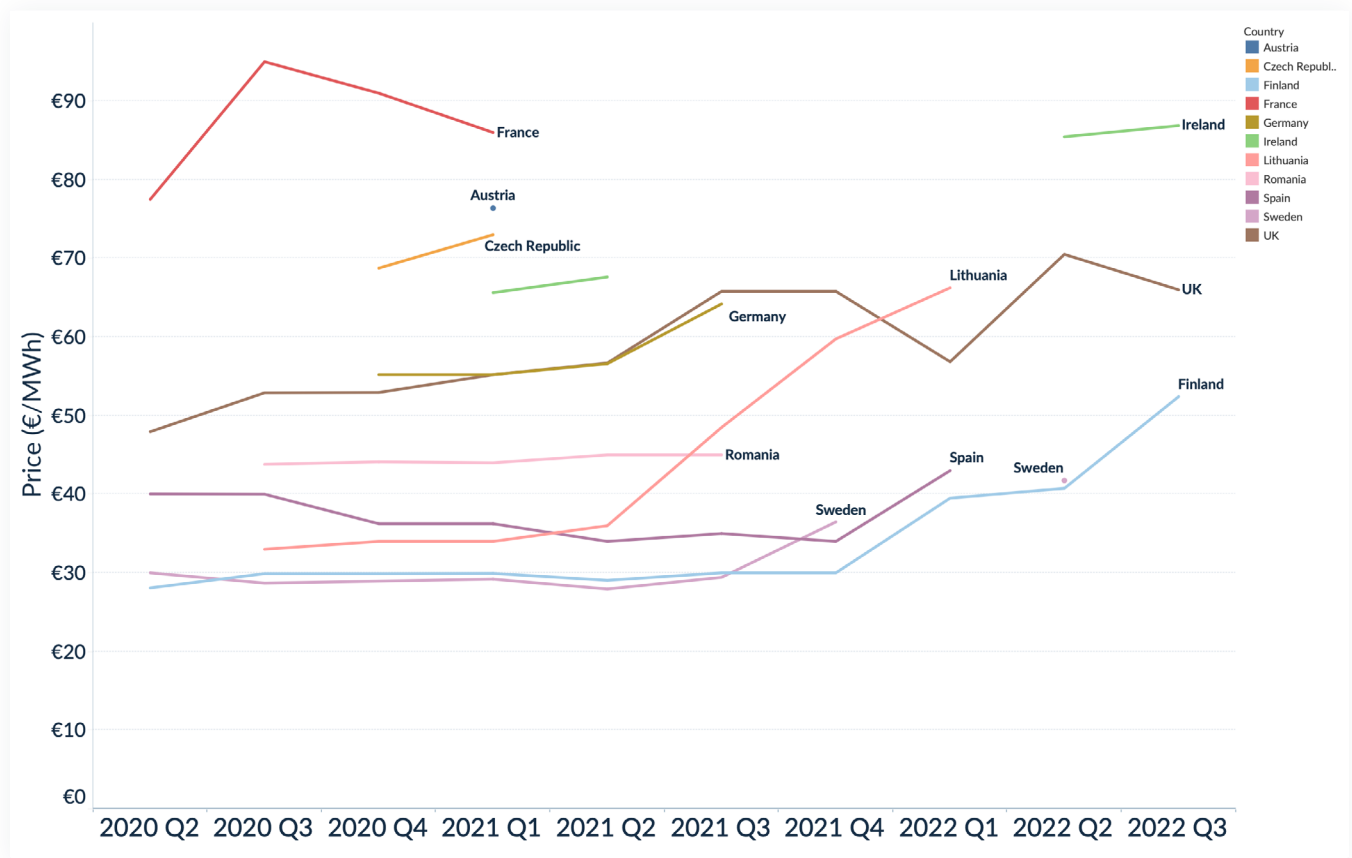


Wind P25 Price Indices by Country

During Q2 2022:

- P25 wind prices in Finland increased substantially in Q3, rising by 28,6%, or €11,66 per MWh. They now sit at €52,41.
- P25 wind prices in Ireland rose modestly during Q3, by 1,7%.
- UK wind prices declined by 6,4%.

“Finnish P25 wind prices rose substantially this quarter, reaching €52,41 – their highest mark since our European Price Index began in 2020,” said Kristian Lande, Senior Director of European Analytics, LevelTen Energy. “With Russia’s gas exports to Europe dropping by 82% year over year, it’s no surprise that gas futures and electricity prices have continued to explode upwards in recent months. Finnish wholesale electricity prices nearly doubled from June to August, adding a premium to PPA prices.”



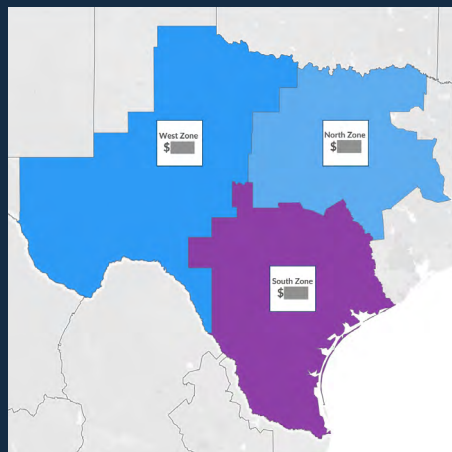
Purchase the Full Report

[Purchase the full report here](#)

The full North American PPA Price Index (\$2,000 USD)

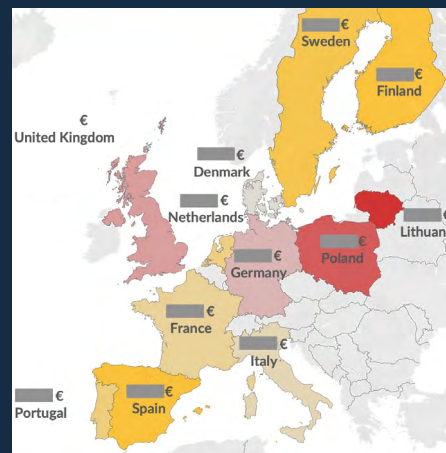
The full European PPA Price Index (\$1,500 USD)

An annual report subscription to receive 25% off each report



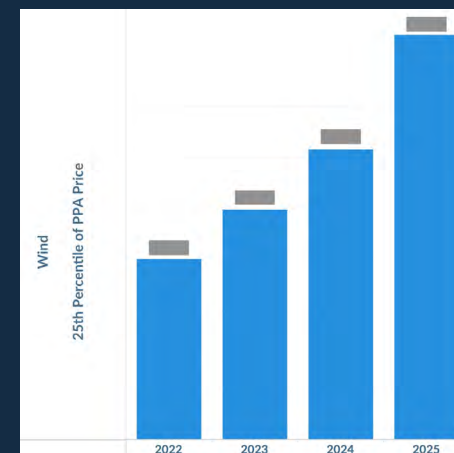
Stay Ahead in Today's Rapidly Changing Market

With LevelTen's PPA Price Index reports, the only source of real price offers from the last 90 days, you'll get the data and market analysis you need to benchmark deals and prepare your stakeholders to successfully navigate today's market conditions.



Understand Regional Trends

See PPA prices by technology, COD, country, ISO and hub, understand which markets have the most offers, and get insight into regional trends from LevelTen's team of market analysts.



Inform Your Strategy

Understand how prices change by COD, and read LevelTen's analysis on major forces shaping the market, including how developers are reacting to supply chain challenges and tariffs.

Dive Deeper with More Data and Analysis

“LevelTen’s report is one of the best in the market. Their analysis methods for capture prices and PPAs leaves little doubt in the state of renewable markets.”

-Treehouse Management

► Purchase the reports at
LevelTenEnergy.com/PPA

WHAT'S INCLUDED	EXECUTIVE SUMMARY <i>Free</i>	PPA PRICE INDEX <i>North America \$2,000 USD Europe \$1,500 USD</i>
Key takeaways from P25 Price Indices	✓	✓
In-depth analysis of continental and regional market trends		✓
In-depth survey results and analysis		✓
Solar and wind P25 PPA price trends	✓	✓
Solar and wind P25 PPA price trends by North American ISO or European country	✓	✓
Solar and wind PPA prices (P10, P25, P50, P75, P90)		✓
Solar and wind P25 PPA prices by North American ISO or European country		✓
Solar and wind P25 PPA prices by commercial operation date		✓
Solar and wind P25 PPA prices by hub (North America only)		✓
Projected capture price trend (North America only)		✓
Quarterly changes in solar and wind P25 and P50 PPA prices by North American ISO or European country		✓
Percentage of wind/solar PPA price offers from each North American ISO or European country		✓
Percentage breakdown of solar and wind project sizes		✓
Solar and wind PPA term lengths		✓

Understand the Forces Shaping Today's Market

LevelTen's Q3 PPA Price Index Reports also include written analysis on major trends impacting the clean energy market in North America and Europe, with insights from LevelTen Energy's team of market experts as well as survey data from our network of participating developers and energy advisors.

Purchase the reports at
LevelTenEnergy.com/PPA



North America

Understanding the Inflation Reduction Act and Its Impacts

On August 16, President Biden signed the Inflation Reduction Act into law, providing much-needed tailwinds to a renewables sector that's been persevering through supply chain, permitting, interconnection, and inflationary challenges for years. Our analysis provides an overview of the new options now available for financing projects, the shifting settlement landscape, and the key potential impacts that both buyers and sellers should be aware of.



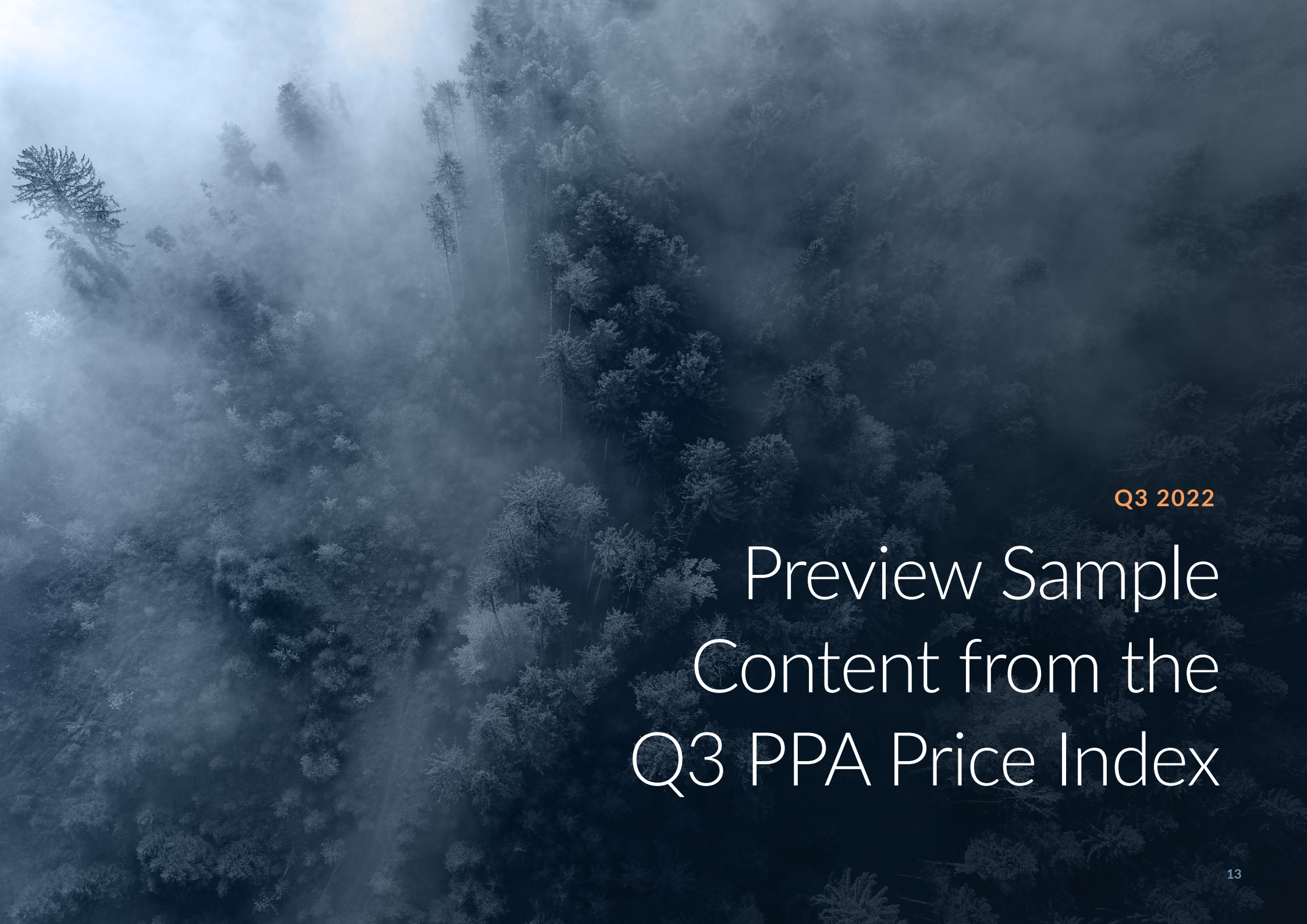
Europe

Winds of Change: How the UK's Grid is Adapting to a Clean Energy Future

The UK has a thriving PPA market; over the past year, it has consistently ranked within the top four countries with most offers on the LevelTen Energy Marketplace. Our European Analytics team offers in-depth insight on new market reforms from the UK's Department of Business, Energy & Industrial Strategy.

How the European Commission's Cap on Renewable Energy Could Impact the Industry

On 29 September, the European Commission approved a revenue cap of €180 per megawatt hour on electricity from generators with low marginal costs, including solar and wind. We polled our network of developers and spoke with LevelTen Energy experts to explore what effect this cap might have on power purchase agreements and the industry.

An aerial photograph of a dense forest, likely a coniferous forest, with a thick layer of mist or fog hanging between the trees. The lighting is soft and diffused, creating a serene and somewhat ethereal atmosphere. The colors are muted, with various shades of green and blue dominating the scene.

Q3 2022

Preview Sample Content from the Q3 PPA Price Index

Solar P25 PPA Offer Prices by Country

P25 solar prices ranged from [redacted]

“German solar prices were absent from our P25 Solar Index in Q2, but when they last appeared in Q1, their P25 price was [redacted],” said Luis López-Polín, Senior Manager of Business Development, Europe, LevelTen Energy. “This dramatic six-month change is unsurprising given the state of wholesale electricity prices in Germany, its strained gas supplies given former dependence on Russian supply, and an accelerated demand for renewable capacity across the country. The price stability PPAs provide during a time of historic market volatility pushes PPA demand even higher, adding upward price pressure.”

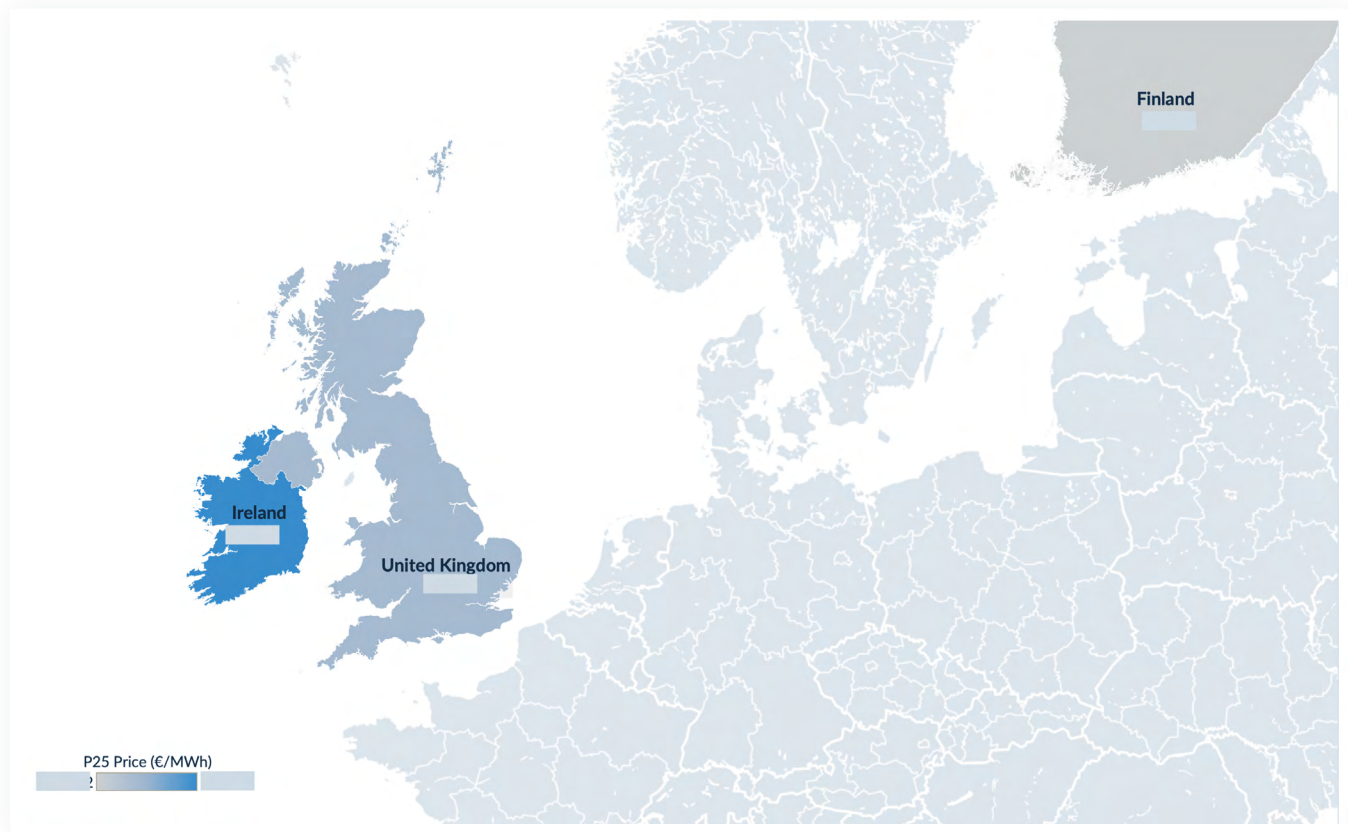


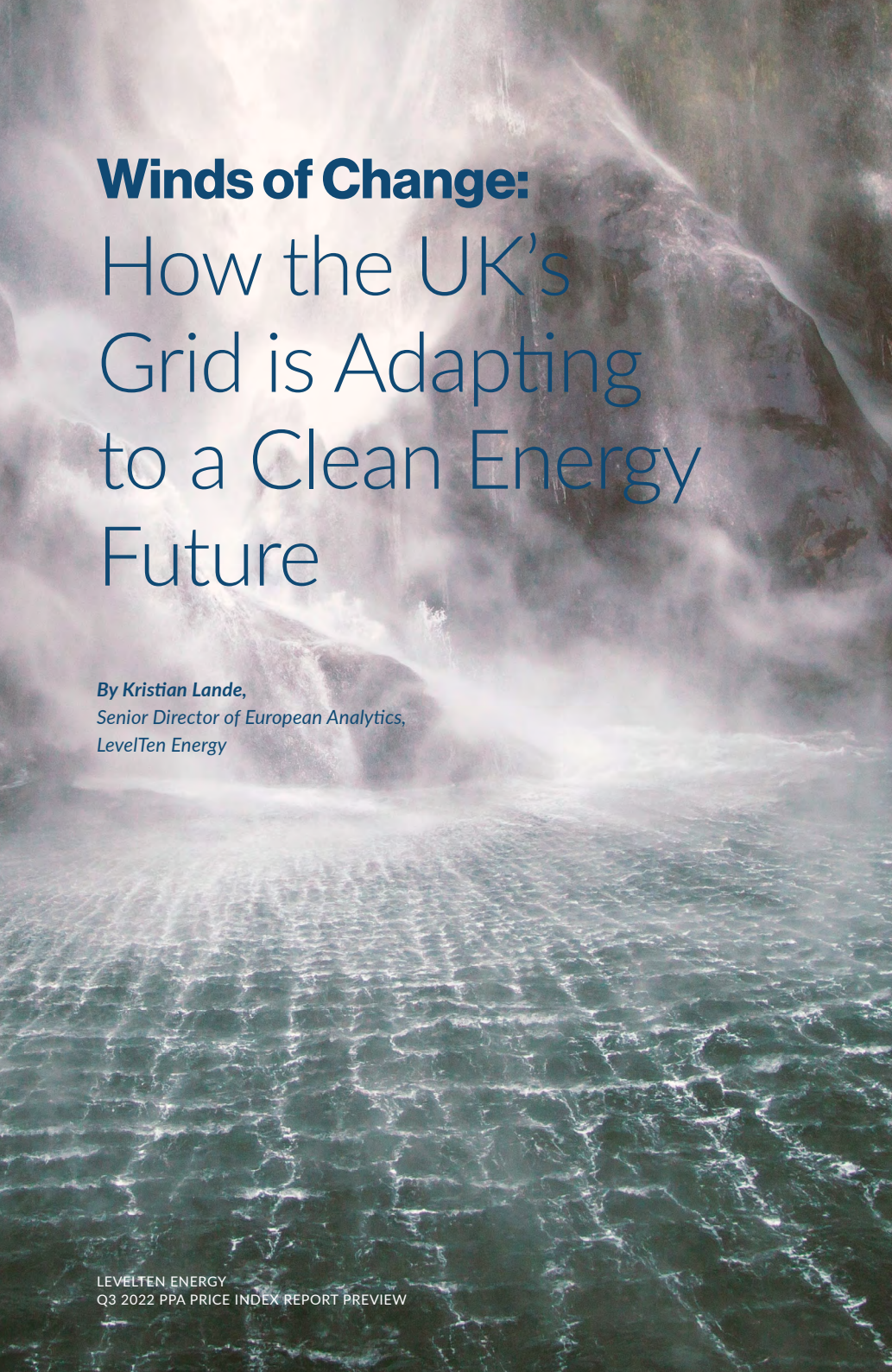
Wind P25 PPA Offer Prices by Country

25th percentile solar prices ranged from _____

“This quarter, only three European markets met the criteria to be included on our Wind Index: a sure sign of the state of play for wind development in Europe, and the status of the continent’s energy markets more broadly,” said Sørensen. “In Sweden, permitted projects with pre-2025 CODs have largely been contracted for, leaving a gap in supply. Banks have also grown increasingly comfortable with financing projects on a merchant basis — a growing trend across Europe as wholesale electricity prices remain elevated — further reducing developers’ need to secure corporate PPAs.”

“Permitting for onshore wind has become immensely difficult in many European countries, but EU initiatives to reform and accelerate the renewables permitting process should, over time, provide some relief,” said Sørensen. “Over the long-run, we expect most of the next generation of new-build wind in Europe to be offshore, with Baltic and North Sea nations dramatically upping their collective commitments to do so in recent months. Competition for these projects will be strong, with energy majors and government auctions already taking large portions of current planned offshore capacity. But we are also seeing successful corporate offshore wind procurements, and with planned capacity additions in the **hundreds of gigawatts**, there should be plenty to go around.”





Winds of Change: How the UK's Grid is Adapting to a Clean Energy Future

By Kristian Lande,
Senior Director of European Analytics,
LevelTen Energy

The UK has a thriving PPA market; over the past year, it has consistently ranked within the top four countries with the most offers on the LevelTen Energy Marketplace. However, the UK has, like much of Europe, been coping with painfully high wholesale electricity prices due to Russia's increasing curtailment of natural gas supplies. Nonetheless, this pronounced market volatility in no way nullifies the UK's urgent need to decarbonize its power sector and meet its ambitious goal of a 100% renewable electricity mix by 2035 [1]. Prior to recent market turbulence (and going back as far as 2012 with the Electricity Market Reform (EMR) that created the UK's Carbon Price Floor, Contracts for Difference (CfD) scheme, and Capacity Market), the UK had been reckoning with the need to adapt its market mechanisms to a world in which renewable capacity is rapidly increasing.

Following the UK government's 2020 [review of the Levelized Cost of Electricity](#) (which emphasized the wider system costs of generation), the British government has taken steps to reform its current energy market. These reforms are intended to facilitate appropriate market and locational signals, ensure adequate compensation to generators, create financial security for renewable developers, and protect energy consumers from unsustainably high bills.

The specifics of these potential market reforms were made clear on July 18, 2022, when the UK's Department of Business, Energy & Industrial Strategy published its Review of Electricity Market Arrangement, or "REMA" – welcoming feedback on the proposals put forth in the document. This consultation, the largest such review since the Electricity Act of 1989, closed October 10, 2022, with final decisions anticipated by winter. While the REMA's ideas are not yet binding, its contents provide a glimpse into market changes we may see in the UK's near- and long-term future. Understanding their potential impacts will be critical for parties in existing PPAs, those looking to procure UK PPAs in the future, and for the market more broadly.

“We do not consider that existing market arrangements are likely to deliver our ambition for a decarbonised and secure electricity system by 2035” - GB Department for Business, Energy & Industrial Strategy [2]

In addition to assessing one of the REMA's more consequential proposals – the shift to a nodal market – this article will also examine the UK's recent CfD proposal and how, if implemented, these changes could impact PPAs and the market as a whole.

WINDS OF CHANGE

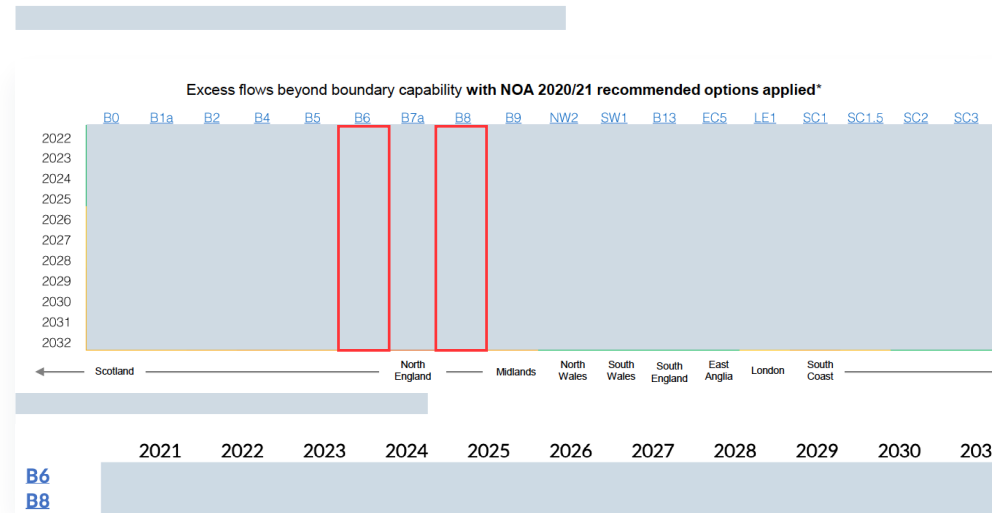
An Increasingly Strained UK Grid

The costs of managing grid constraints in the UK increased five-fold between 2012 and 2021 as the growth of renewables outpaced transmission capacity: rising from ~£200 million to £1.2 billion during that time [3]. A prime example of this phenomenon is the “B6 boundary” between Scotland and England, where occurrences of southward electrical flows maxing-out existing transmission capacity have increased by 85% in the last ten years, with regional wind generation increasing 144% in that same time. This influx of wind additions has created a state in which this region of the grid is generally overwhelmed, with north-south grid congestion occurring during roughly three-fourths of all operating hours [4].

There is some hope on the horizon. Presently, there are four major undersea transmission cables linking Scotland to England scheduled to come online between 2027 and 2031 against a backdrop of 30-40 GW [4, 5, 7] of new Scottish wind capacity expected to come online in the coming decade. These additions would equate to a doubling of north-south transmission capacity between Scotland and England, but

given that Scottish wind capacity is expected to triple during this same time, it's clear that transmission additions will need to grow well past what existing plans provide.

By 2030, UK renewable output is set to reach daytime highs of 40 GW against a projected peak demand of ~75 GW [6], a shift that will accelerate the need for grid flexibility. This is particularly true when considering the country's planned generator retirements: 4 GW of coal slated to go offline by 2025, 5 GW of nuclear to be decommissioned by 2030, and the repowering requirement of 15 GW of aging natural gas capacity by 2035.



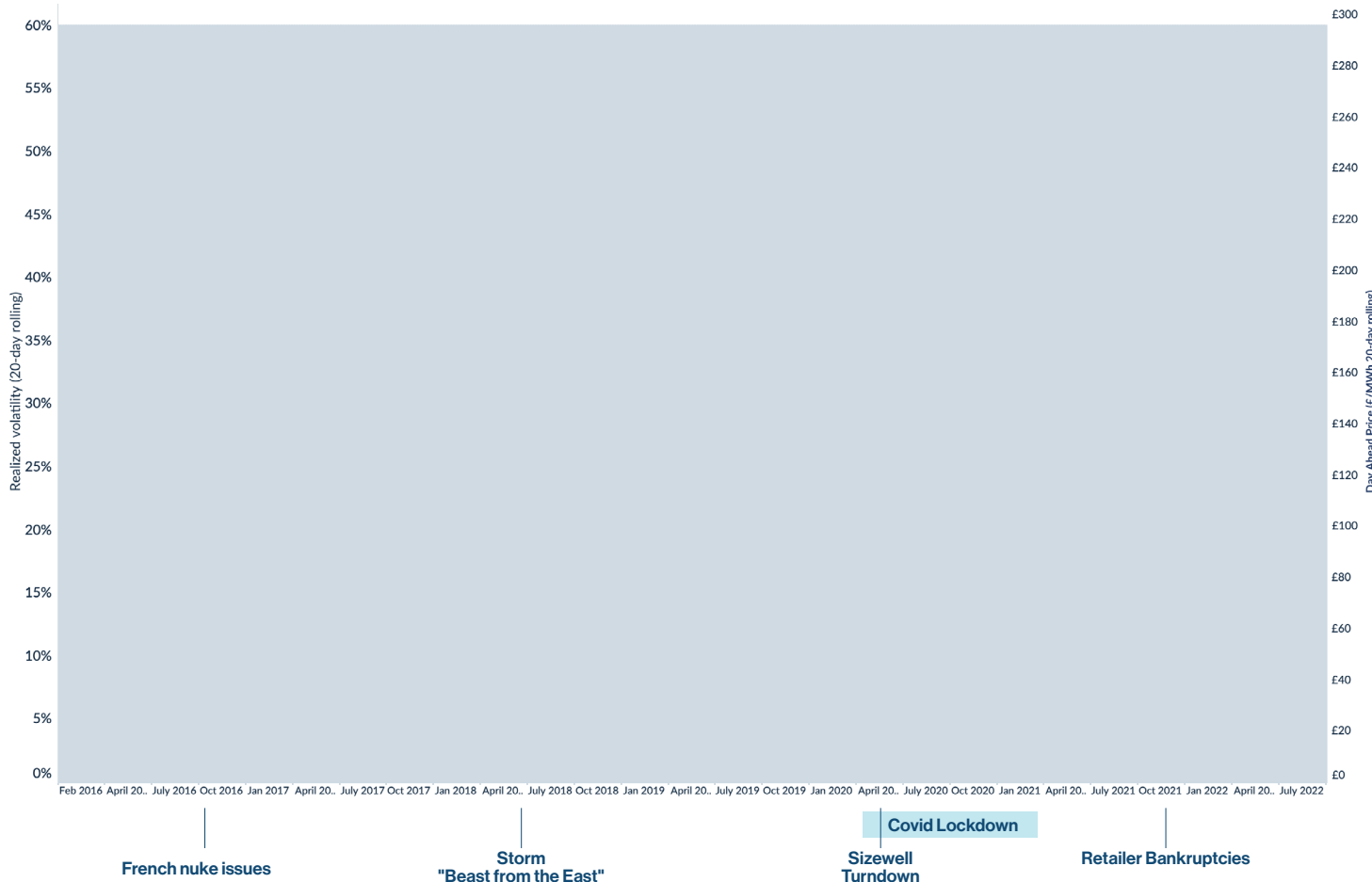
WINDS OF CHANGE

Other clear indicators of the UK grid's growing need for improved flexibility and load management can be seen in the increase of market price volatility and Capacity Market Notices (CMN). The blue vertical lines in the chart below show growing price volatility in recent years —

driven not only by the broader energy crisis, but also growing frequency of both over- and under-supply. The recent increase in the frequency of Capacity Market Notices (CMN), represented below in blue vertical bars, also indicates a grid functioning closer to its limits. **CMNs are triggered**

automatically when total reserve generation drops below 500 MW, in order to recruit additional generation. More frequent capacity notices are yet another sign that the UK's grid is struggling to meet its demand and load-balancing needs.

Historical day-ahead price, volatility and Capacity Margin Notifications (CMNs)



Current Grid Pricing Signal Mechanisms



How the European Commission's Cap on Renewable Energy Could Impact the Industry

On 29 September, the European Commission approved a revenue cap of €180 per megawatt-hour on electricity from generators with low marginal costs, including solar and wind. We polled our network of developers with projects on the LevelTen Energy Marketplace, and spoke with LevelTen Energy's European market experts, Plácido Ostos and Kristian Lande, to explore what effect this cap might have on power purchase agreements, and what ripple effects it might have across the industry.

What does this regulation do, exactly?

First of all, it's important to understand this is a *revenue cap*, NOT a *price cap*, as many publications have been referring to it. The reason for that distinction is because the electricity price is not always equal to the revenue a generator earns for every megawatt-hour they sell.

Generators earn revenue in two main ways; fixed revenues and market-based revenues:

- Fixed revenues come from contracts with governments (via CfD auctions, feed-in-tariffs, and other schemes), or through power purchase agreements with other entities; they're referred to as "hedges" because they reduce revenue volatility for generators. These long-term contracts aren't the only way to reduce revenue volatility; generators also use other types of hedging mechanisms and financial instruments. Whatever the nature, if the actual revenue exceeds the cap of €180/MWh, it will be affected by this regulation. The majority of long-term contracts are not producing revenues over €180 for generators, because they require generators to pass along or redistribute revenue from the spot market to their counterparties. According to Rystad Energy, these contracts represent 60% of the total installed renewables capacity in the EU.
- Market-based revenues are derived from the current market price of electricity. This could come from selling electricity on the spot market or short-term PPAs, which would be included in this category because their price is typically closely linked to the actual market price. According to Rystad, the remaining 40% of renewable energy capacity falls into this category, and is therefore going to be most affected by this cap.

EU COMMISSION'S CAP

Under the proposal, the price of electricity will still be determined by the cost of the marginal technology used (typically natural gas), but renewable generators will need to pay the difference between that market price and €180, which will be paid to a government-controlled fund, called a "solidarity contribution." The Commission says the solidarity contributions should be used to reduce retail electricity bills for households and companies; to foster the reduction of energy consumption; and to support companies in energy intensive industries, conditional upon their investment into renewable energies, energy efficiency, or other decarbonisation technologies.

The cap is set uniformly across the European Union, although member states have the option to implement further caps, and indeed, some have; Greece, for example, set an €85/MWh cap on renewables. The regulation is set to last through 30 June 2023, which means that it will have a limited effect on projects under development that are scheduled to become operational in 2024 and beyond.

How will this affect existing long-term power purchase agreements?



“(31) While applying the cap on market revenues at the time when transactions are settled may be more efficient, it might not always be possible, for instance due to differences in the way wholesale electricity markets are organized in the Member States and across different timeframes. To account for national specificities and to facilitate the application of the cap on market revenues at national level, Member States should have the discretion to decide whether to apply it either when the settlement of the exchange of electricity takes place or thereafter.”

-- EU Commission

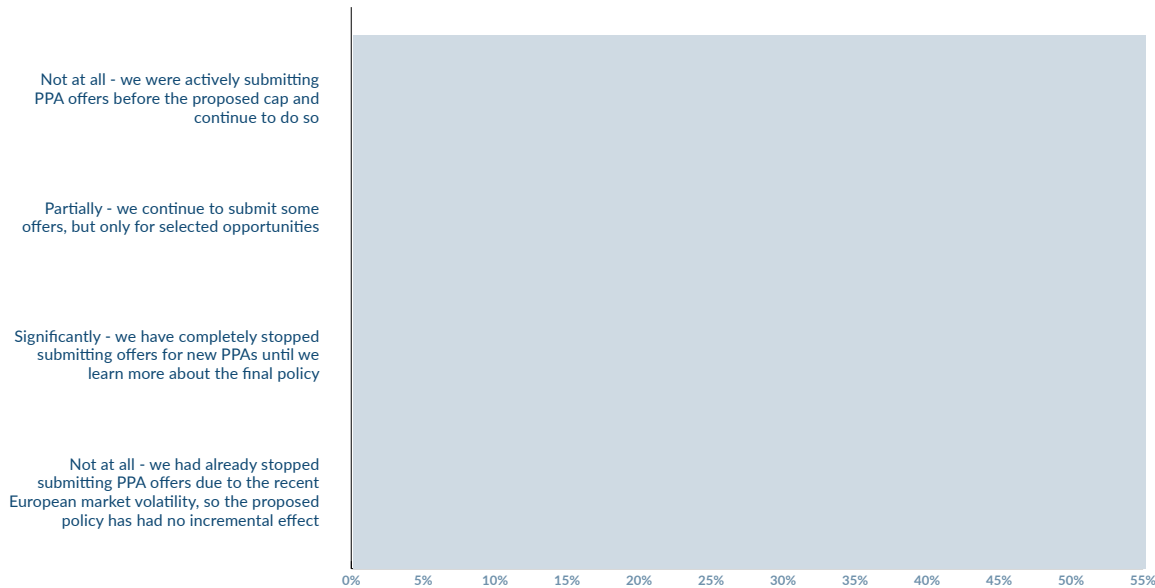


How will this affect existing short-term power purchase agreements?



Effects of the Revenue Cap on PPA Offer Activity

How has the proposed €180/MWh revenue cap for inframarginal technologies affected your company's current approach to long-term PPA offers since the proposal's announcement?



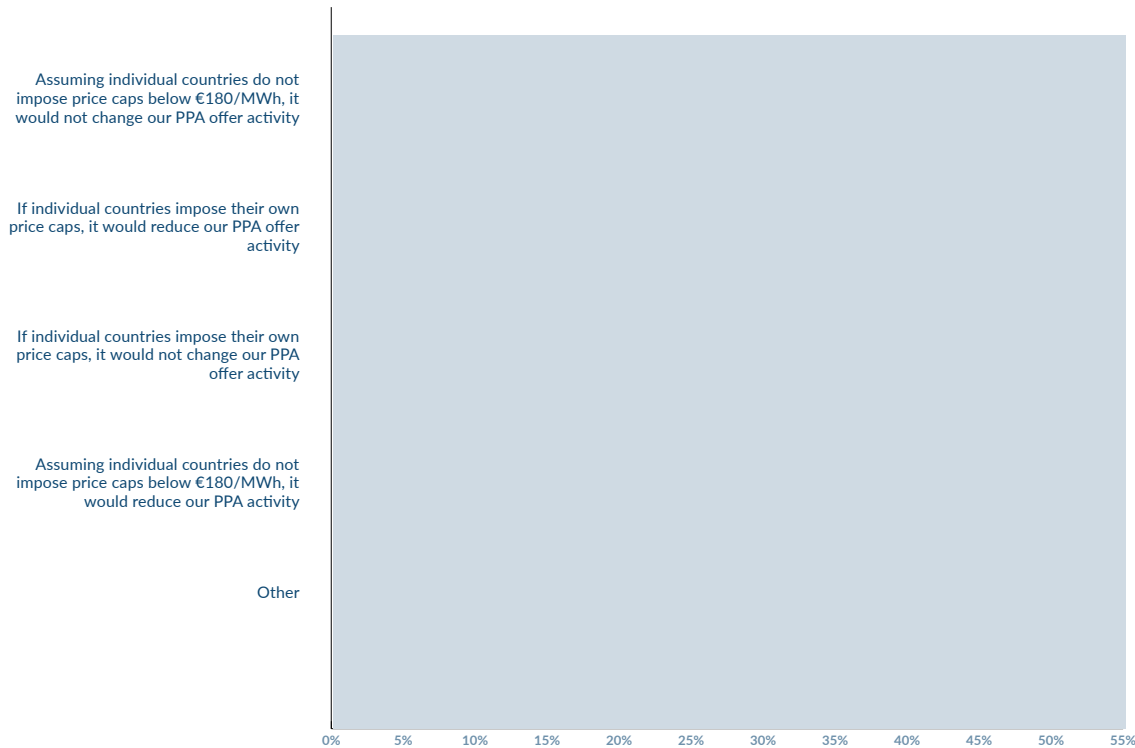
Following the news of the EU Commission's revenue cap proposal, LevelTen surveyed our network of European developers with projects on the LevelTen Energy Marketplace, and received 19 responses. We wanted to know what impact, if any, the revenue cap would have on PPA offer activity. The good news is that developers still have a desire to enter into long-term PPAs:

- [redacted] said that the proposal has not affected them at all, as they were actively submitting PPA offers and continue to do so.
- [redacted] said that the revenue cap has partially affected their approach, as they are continuing to submit offers, but only for select opportunities.
- [redacted] said they've stopped submitting offers until they learn more about the final policy.
- [redacted] reported that they had stopped submitting offers due to the recent market volatility in Europe.

“Regulatory uncertainty is never a good thing, but clearly developers understand that long-term PPAs are not the main subject of this regulation, and thus they won't be greatly affecting their behavior,” said Plácido Ostos, Senior Manager of Analytics, LevelTen Energy. “Many projects under development now will not reach commercial operation until 2024, well past June 2023 when the regulation will be reviewed and potentially lifted, which means that it would have limited effect on project economics.”

Implications of Varying Price Caps Among Member States

If the proposed €180/MWh income cap is formally adopted, how would that affect your company’s approach to long-term PPA offers?



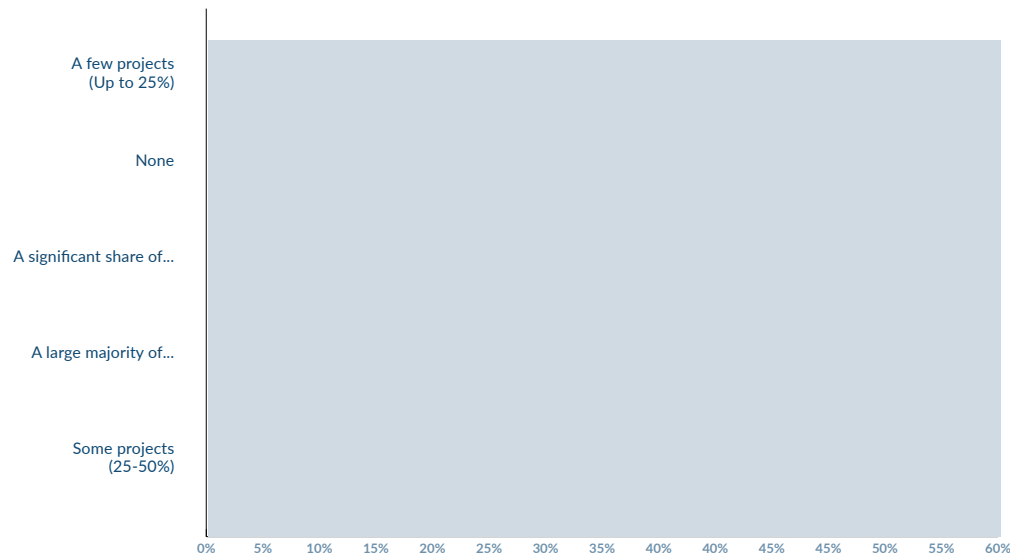
The cap is set uniformly across the European Union, although member states have the option to implement further caps, and indeed, some have; Greece, for example, set an €85/MWh cap on renewables. We asked developers what effect the European Commission revenue cap would have on their long-term PPA offers, and found:

- [Redacted] noted that they would not change their PPA offer activity if individual countries do not impose price caps below €180/MWh.
- [Redacted] said that if individual countries impose their own price caps, it would reduce their PPA offer activity.
- [Redacted] said that their PPA offer activity would remain unchanged if individual countries impose their own price caps.

“Again, the key element here is regulatory uncertainty. While the European cap is assumed to be in force, developers are eagerly awaiting to see how Member States will respond. A myriad of regulations within the different countries would cause a lot of uncertainty and potential stalls or delays in the process of renewable energy development and financing,” said Ostos.

Percentage of PPA Activity Impacted by the Cap

If an EU-wide €180/MWh inframarginal price cap is implemented (with no country-specific variation), what fraction of your company's long-term PPA activity do you expect to be affected while the price cap is in effect?



Developers can secure long-term contracts for the entire capacity of their project, or they can reserve some capacity for sales on the spot market. Projects that are expected to come online between now and July 2023 are more likely to have larger percentages of capacity that developers anticipated to sell on the spot market to capture the high prices we're seeing now. These are the projects that will be most impacted, as developers will have to recalculate their financial outcomes due to the cap. This could be why the majority of respondents said the cap would only impact a few projects, or none at all:

- [redacted] of developers said up to 25% of projects would be affected
- [redacted] said no projects would be affected
- [redacted] said a significant share of projects would be impacted

“The overall revenue impact on new project developers largely depends on how much of their capacity they had planned to sell on the spot market, versus securing a long-term contract, and when their portfolio of projects is expected to come online,” said Ostos. “Some developers could have been relying on windfall spot market revenues in their financial models.”

LEVELTEN PARTNER SURVEY

How Advisors are Adapting Their Procurement Approach

LevelTen Energy surveyed its network of more than 45 energy and sustainability advisor partners to understand what steps they are taking to help their clients navigate today’s market conditions, and received 16 responses. In short, our partners are advising their clients to move quickly and be flexible on some PPA terms, although commercial operation dates remain a sticking point.

- Many advisors understand that speed is critical to success. [redacted] said they are accelerating their procurement process with clients to help them lock in deals, and no respondents said they’re advising clients to delay their PPA procurements.
- A wide range of approaches are being taken to keep procurements moving forward. Some [redacted] that they’re coaching clients to get comfortable with more “seller-friendly” terms and conditions, while another [redacted] are advising clients to become more flexible around PPA contract selections in order to achieve their targets. [redacted] selected “Other” - noting that they’re taking an “all of the above” approach and are coaching clients to be flexible in any areas where they know clients are willing to adjust.

Over the last 12 months, there is little doubt that the nature of PPA risk-sharing has shifted in new ways for both energy suppliers and buyers. How is your organization transitioning during this time to help your clients find transactional success?



- Flexibility is not being advised in all areas. No respondents said they’re advising clients to become more flexible around commercial operation dates (COD), or asking their clients to secure a pre-approved “maximum price” mandate before they go to market, and [redacted] said they’ve made no change in their procurement approach with clients.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

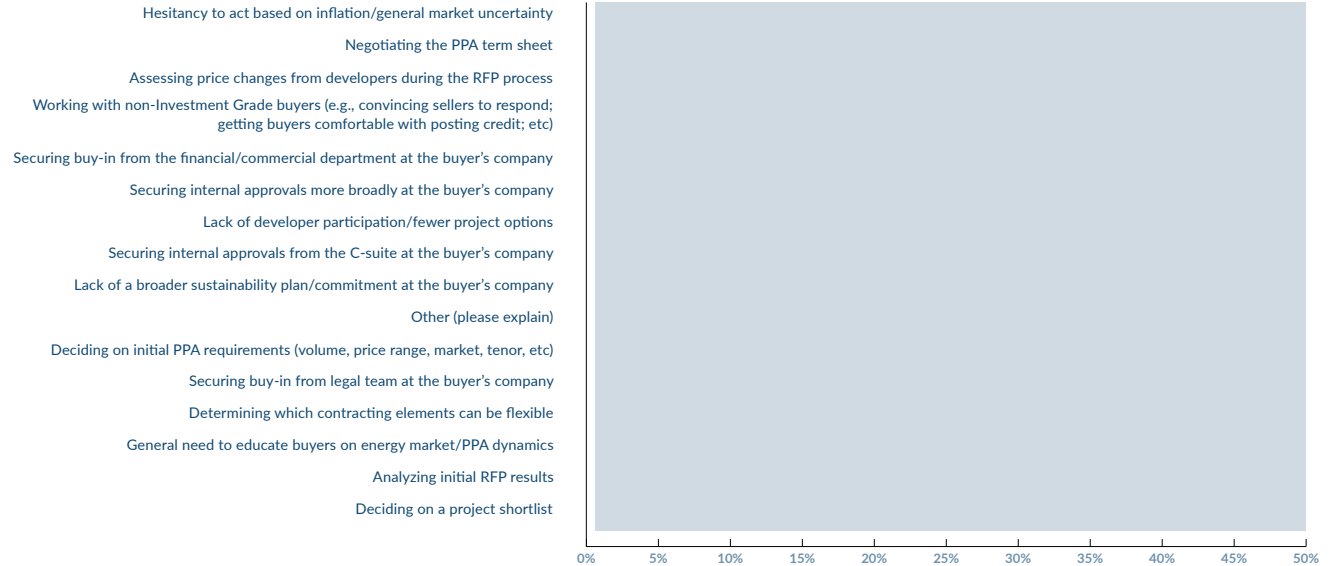
What's Causing PPA Delays

Advisors in LevelTen's network responded with a wide range of reactions when we asked them what parts of the PPA procurement process have recently created the most bottlenecks/slowdowns. In the results, inflation, the shifting market, and the recession all showed signs of impacting the procurement process, and three bottlenecks clearly stood out:

- **Buyer hesitancy:** [Bar chart showing percentages for various reasons]
- **Contracting delays:** [Bar chart showing percentages for various reasons]
- **Securing PPA approvals:** [Bar chart showing percentages for various reasons]

Of note, multiple advisors identified two other delays in the process; working with non-investment grade buyers, and assessing price changes from developers during the RFP

In your recent experience, which parts of the PPA procurement process have most commonly created bottlenecks/slowdowns?



process. In today's market conditions, where there is a lot of competition for supply, entities that are not investment-grade will have a tougher time getting responses to their RFPs. Working with a retail electricity provider to source clean energy may be a more viable alternative for some of these organizations. LevelTen partners with many retail electricity providers, who source clean energy on behalf of their customers, and we can connect our partners and their clients with these opportunities.

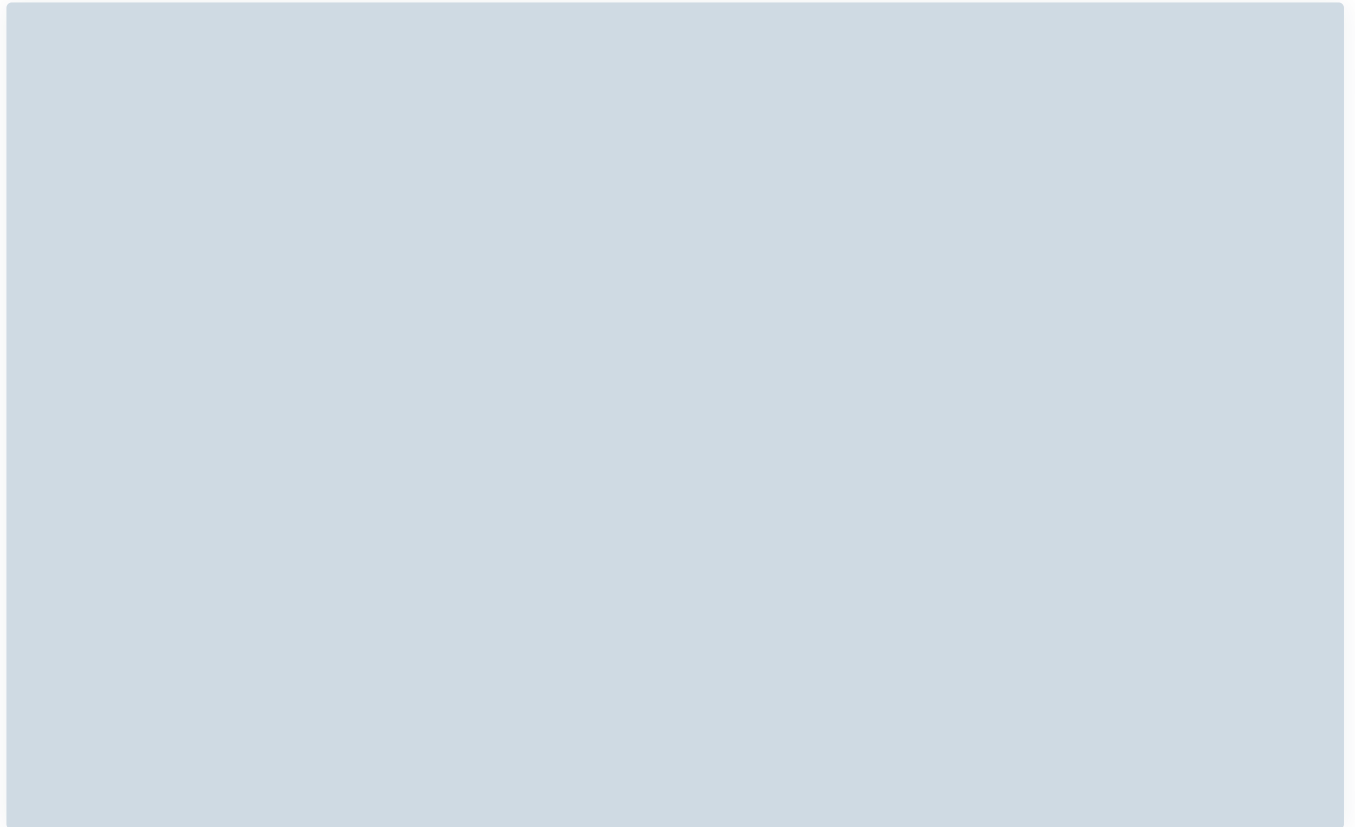
When it comes to assessing price changes from developers during the RFP process, buyers should be aware



Q3 2022

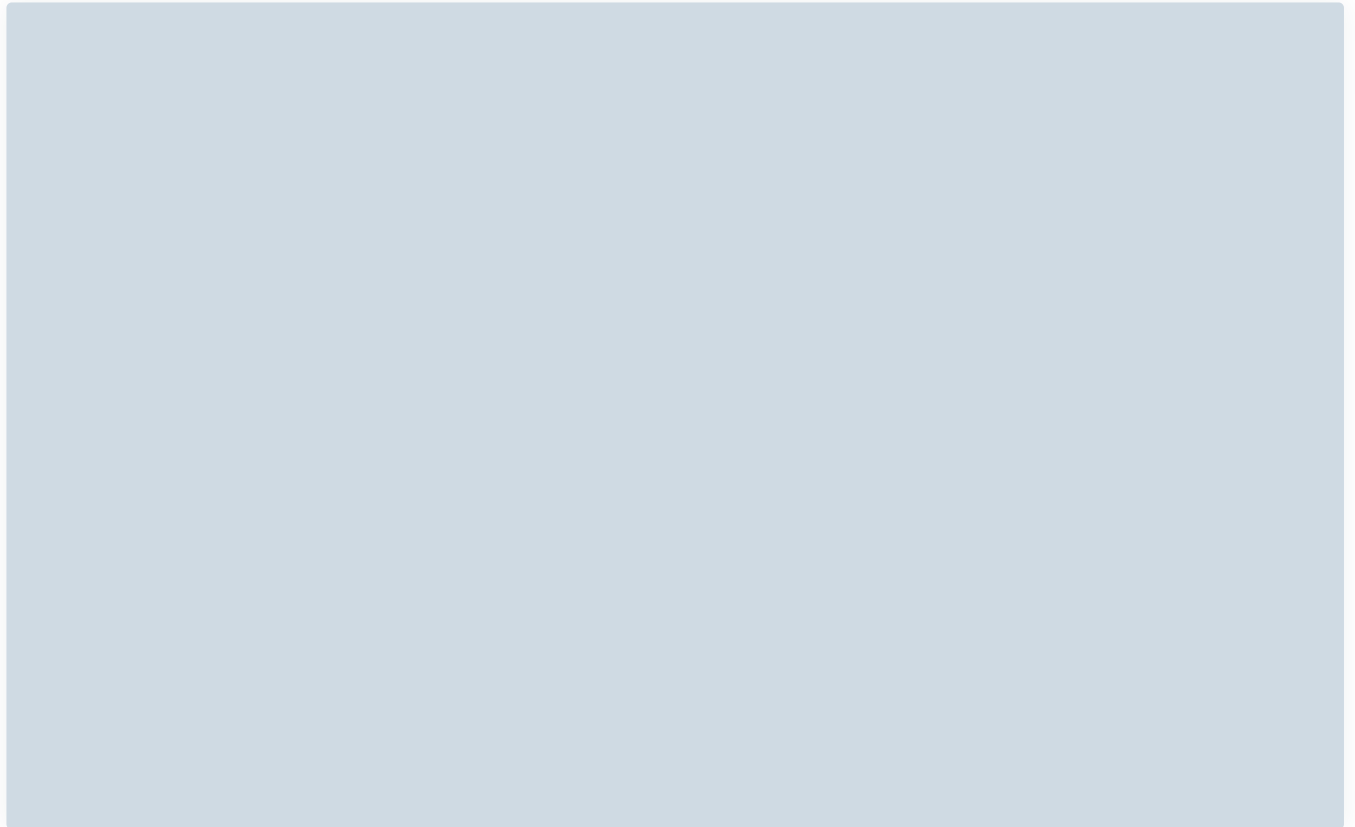
Solar Offer Volume by Country

“Spain, Greece, and the UK lead our Marketplace in terms of offer volume this quarter,” said López-Polín. “But there are interesting solar opportunities across the whole of Europe, with offers also showing up in Lithuania, Estonia, Hungary, and Romania. Buyers should keep these countries in mind, and contact their LevelTen representative to learn more about PPA options in these markets.”



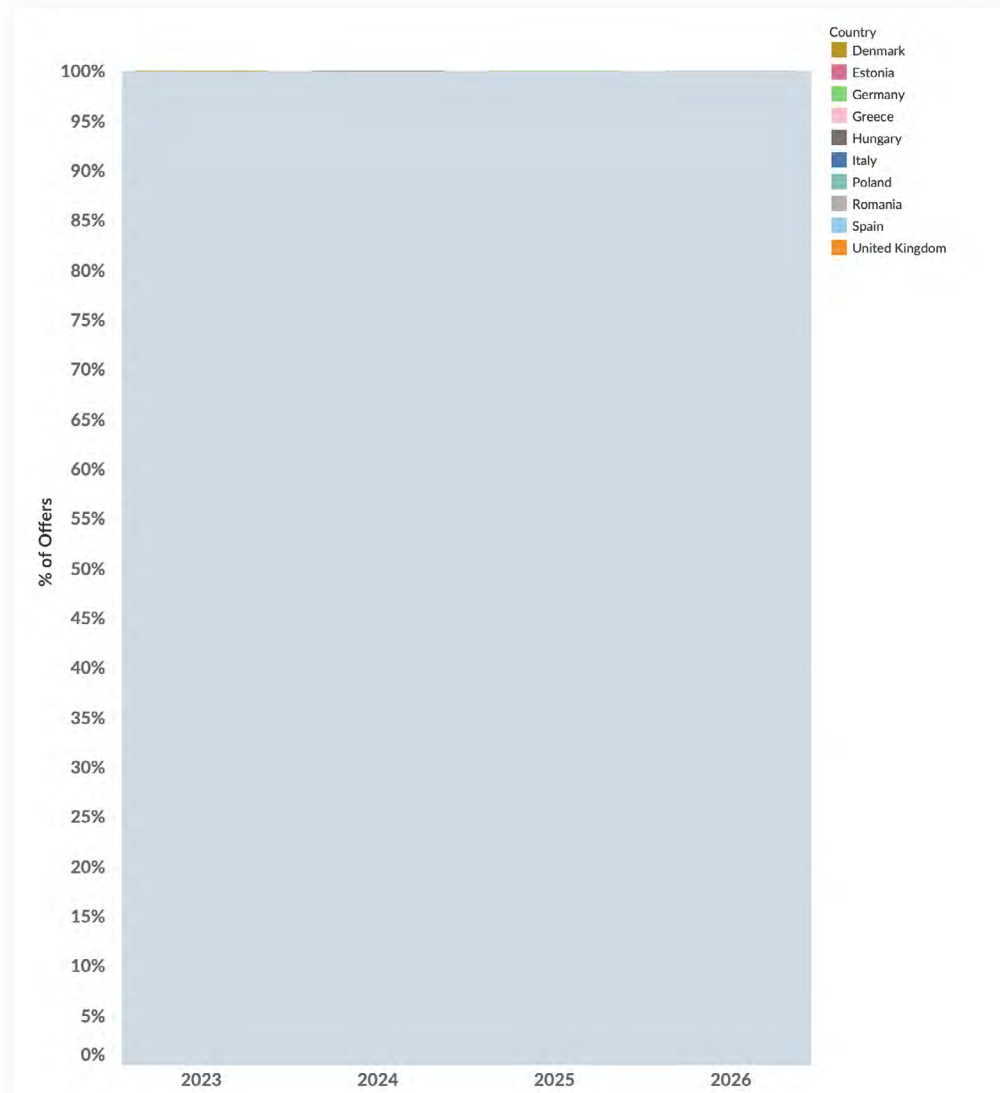
Wind Volume Count by Country

“Markets must surpass thresholds related to offer count and active developers in order to be included in our P25 Solar and Wind Indices,” said López-Polín. “With that said, there is a great deal of offer activity on the LevelTen Marketplace in countries not included in the P25 Indices, as shown in this map. Romania’s wind market is an intriguing one to watch, as development activity and corporate procurements have grown there in the last year. As the Eastern European renewable landscape continues to mature, Romania has proven itself to be a leader, particularly with respect to wind development.”



Offers by COD/Country

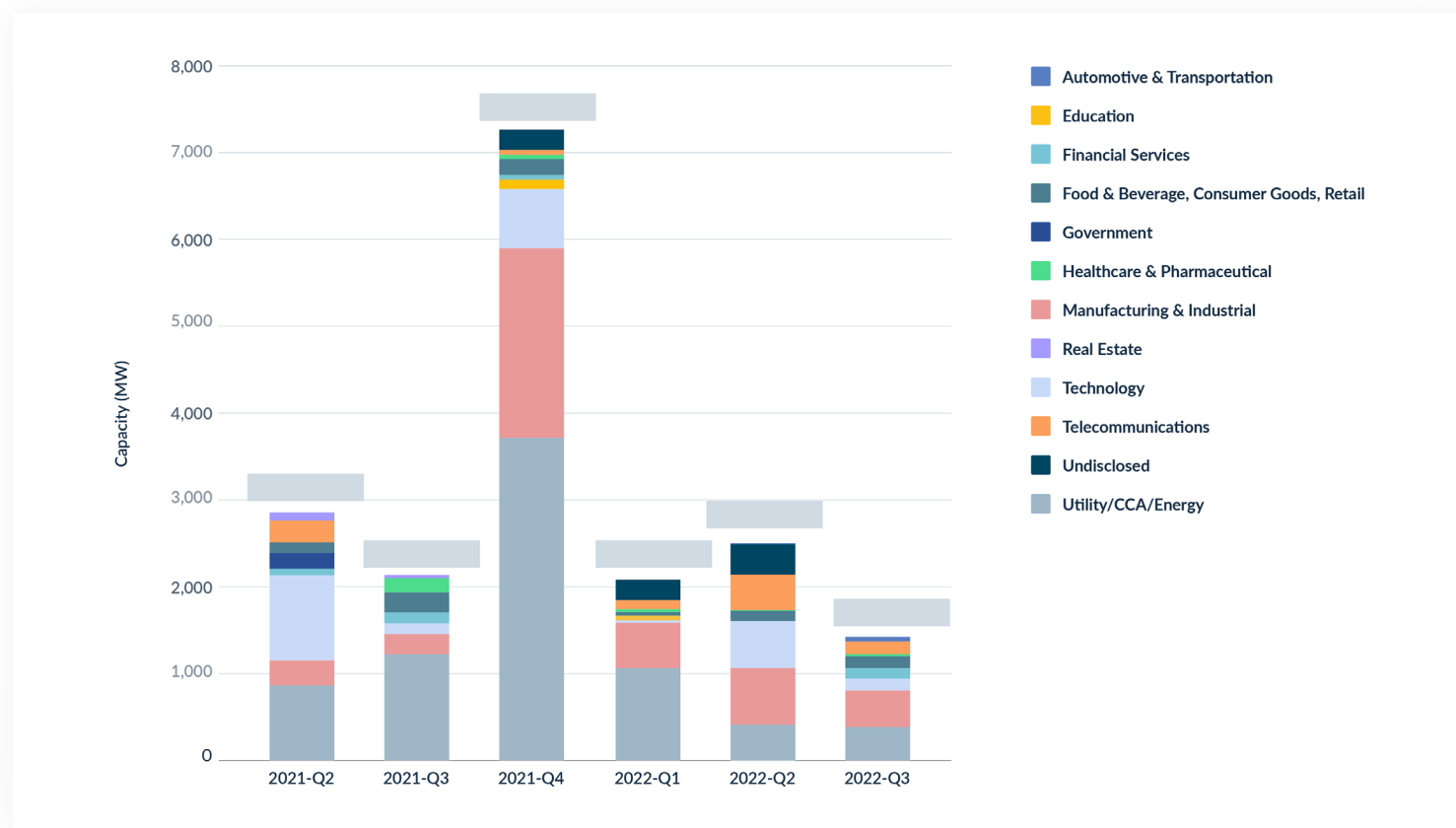
“This chart provides a fascinating glimpse into market activity over time,” said Plácido Ostos, Senior Energy Analyst, Europe, LevelTen Energy. “The United Kingdom’s strong development pipeline is evident here, and excitingly, Poland’s fast-growing market shows signs of strength in 2025 and beyond. This is welcome news in a country as dependent on coal-fired generation as Poland, and as the nation works to reform its permitting laws (including its infamous “10H” rule), we’re hopeful development accelerates even further there.”



PPA Deal Tracker

Over the last 12 months, LevelTen tracked approximately [redacted] of renewable PPA announcements across Europe. While Q3 only tallied [redacted] of announced capacity, it's worth noting that several deals did not disclose their procured volumes, and that [redacted] PPAs were made public in September alone: a good sign that deals are still getting done despite ongoing market volatility.

"Despite continued political and economic uncertainty in Europe spurring unprecedented wholesale market volatility this quarter, corporate buyers have demonstrated a strong appetite for PPAs from large wind and solar projects," said Sørensen. "Among the more than 40 corporate PPA deals announced in Q3 of 2022, Deutsche Telekom in Germany and Showa Denko in Spain both entered into [redacted] PPAs, with Pepsico, Siemens and Forterra adding solar deals."



Q3 2022 PPA Announcements in Europe

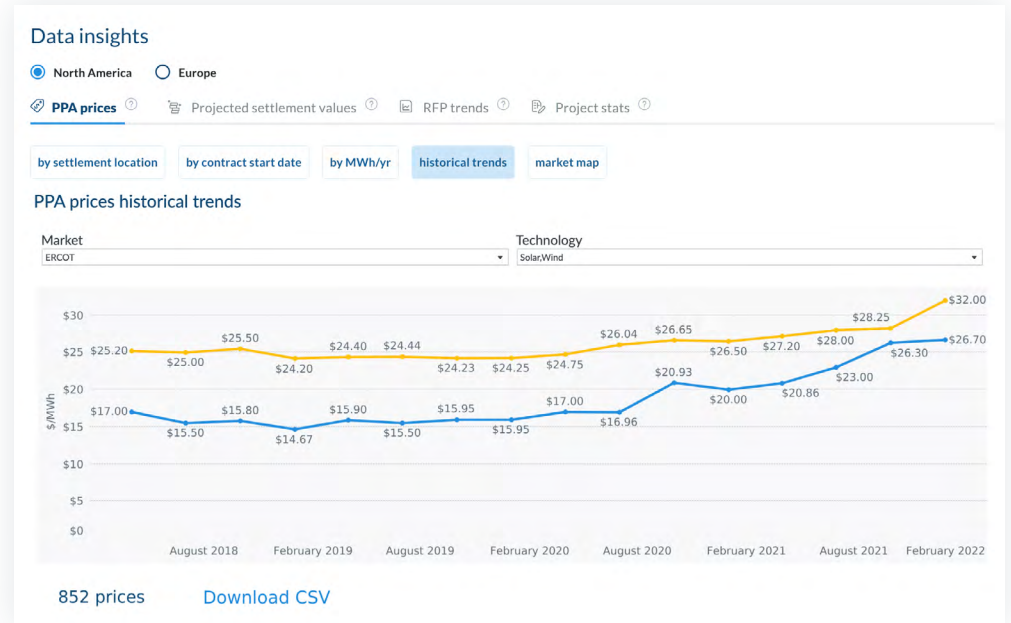
Month Announced	Technology	Developer Name	Buyer	Industry	Project Capacity	Buyer's Share	Term (Years)	Country
July	Solar			Utility/CCA/Energy		100	10	Greece
July	Solar			Utility/CCA/Energy	48			Italy
July	Solar			Financial Services	37.7*	25		Italy
July	Solar			Manufacturing & Industrial	228.3*	44.5*		Germany
July	Solar			Financial Services	228.3*	85.6*	4	Germany
July	Solar			Food & Beverage, Consumer Goods, Retail	590			Spain
July	Solar			Healthcare & Pharmaceutical	19.2	19		United Kingdom
July	Solar			Utility/CCA/Energy	50	50	9.5	Spain
July	Solar			Utility/CCA/Energy	30		5	Germany
July	Solar			Utility/CCA/Energy	9.2	10.4*	10	Sweden
July	Undisclosed			Manufacturing & Industrial			10	Spain
July	Undisclosed			Utility/CCA/Energy			5-10	Spain
July	Undisclosed			Technology				Germany
July	Undisclosed			Food & Beverage, Consumer Goods, Retail				Germany
July	Wind			Technology		45.7*	2	Germany
July	Wind			Manufacturing & Industrial	487	12	10	Belgium
July	Wind			Manufacturing & Industrial	123.2	123		Spain

INTRODUCING

LevelTen Energy's MarketPulse

Decision Analytics
On Demand

MarketPulse is LevelTen Energy's new cloud-based software that gives you instant access to real-time PPA market data and analytics. MarketPulse delivers access to the data* that powers LevelTen's PPA Price Index – and more. Its filters and visualizations also enable you to analyze the market through the lenses that matter the most to your business. MarketPulse is a powerful tool for those who want the speed and flexibility of real-time PPA data access.



ENERGY DEVELOPERS

Stay ahead of your peers

Price PPAs competitively to win board and buyer approval quickly, and discover pipeline expansion opportunities first.



ENERGY ADVISORS

Maximize revenue

Simplify and speed up market analysis so that you can help more clients run successful procurements.



ENERGY INVESTORS

Invest with confidence

Conduct thorough due diligence on debt financing and M&A opportunities with analytics that project PPA value over time.

LEVELTEN'S MARKETPULSE

Run Better Analysis to Optimize Revenue – and Save Time Doing It

- Use custom filters, such as commercial operation date and contract tenor, to make more precise price comparisons
- Download spreadsheets that make it easy to plug data into your financial models
- Get the latest price data without running a time-consuming RFP or relying on stale public data

Get Instant Access to Real-Time Data & Analytics

- Easily run custom searches for PPA, project, and RFP data, and generate custom reports
- Use filters to zoom in or zoom out on data at the continental, ISO/country, or hub/zone level

Gain a Competitive Edge

- Pre-configured charts help you visualize where PPA prices are today, and how they are trending
- See which markets are in-demand now, and which have high-potential
- Build better financial models with value projections

*Data is aggregated and anonymized in order to protect the privacy of the developers participating on LevelTen's platform

Learn More

LEVELTEN MARKETPULSE IS AVAILABLE NOW

Contact us at datasolutions@leveltenenergy.com to schedule a product demo and learn more about subscription plans, including options to bundle a subscription to the PPA Price Index.

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