Global Procurement Update

Issue 7: March 2022

Introduction

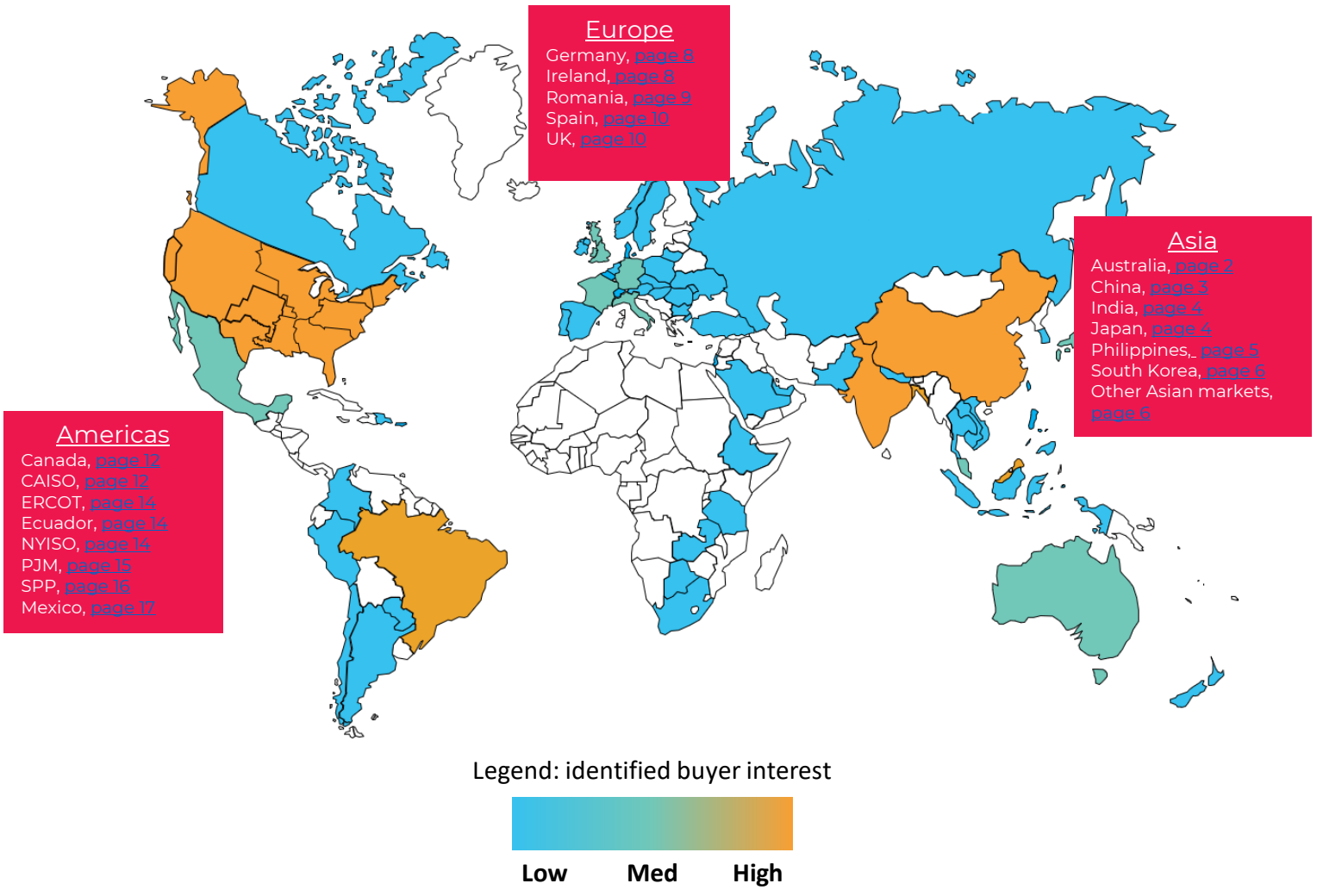
Large-scale energy customers continue to drive the expansion of international clean energy markets as they look to reduce the energy impact of their operations and supply chain worldwide. The tri-annual **Global Procurement Update** (formerly the C&I Procurement Update) highlights international energy market updates, connects you with international organizations supporting sustainability practitioners, and communicates best practices implemented in the market to accelerate the procurement of renewable energy.

If you are interested in providing input, please contact the CEBA team: supplychain@cebuyers.org

Table of Contents

The map below highlights the energy markets from which energy customers are interested in procuring renewable energy. Each issue of the Global Procurement Update will reflect relevant market updates.

You have the option to read through the update in its entirety *or* use the map to jump to the specific market of interest.



Global Procurement Update

Issue 7: March 2022

Future Updates

The Global Procurement Update is meant to supplement existing information and research on international markets for large-scale energy customers and should not be seen as a comprehensive resource covering all aspects of an energy market.

CEBA and all contributors welcome feedback on the content and will endeavor to expand market coverage pending interest.

To provide direct feedback, please contact the CEBA team: supplychain@cebuyers.org

Contributor Acknowledgements

CEBA is proud to collaborate on the Global Procurement Update with peer NGOs and for-profit companies to support large-scale energy customers' journeys towards emissions reductions through the implementation of renewable energy and to accelerate the transition to a zero-carbon energy system.

The following collaborators supported the development of this Global Procurement Update issue based on areas of interest and activity as identified by corporate buyers. Please note, not all NGOs active in the energy sector were able to contribute.

Contributions do not necessarily reflect the views of CEBA.

Contributors: NGOs

Business Renewables Centre Canada
World Wildlife Fund

CEBA extends sincere gratitude to the NGOs that contributed and a special thanks to The We Mean Business coalition for supporting greater collaboration among NGOs worldwide and specifically the International Connection Platform.

Contributors: For profit companies

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Think RE

Asia

Australia

Previous issues with content: 1 | 2 | 3 | 4 | 5 | 6

With thanks to EY

The development of utility scale renewable energy developments in Australia is being sustained by renewed corporate interest in the procurement of renewable energy. The initial goal of the renewable energy target legislation was to achieve 33,000 GWh of renewable energy by 2020. This has long been surpassed and despite this, the price of Large-scale Generation Certificates (LGCs – a key indicator for demand in renewable energy) remains buoyant, with Calendar 2022 - 2024 LGCs trading above AUD 40 / LGC at the time of writing. This is primarily due to demand driven by the sustainability goals of corporate Australia. Since the last edition, a number of significant deals have been executed by Australian corporates, including Nestlé Australia's PPA with a CWP wind farm in NSW (announced in November 2021) and the South Sydney Regional Organisation of councils executing a PPA with several solar farms (announced in February 2022).

More broadly, the Australian electricity market remains in a state of transition with a number of recent announcements that are likely to encourage the development of renewable energy and enhance the value of Corporate PPAs. In February 2022, Origin Energy (Origin), an ASX listed integrated electricity generator and retailer, announced the early closure of Australia's largest coal fired plant, the Eraring Coal Fired power station (2880MW). Originally slated to retire in 2035, Origin has brought forward the closure of Eraring by seven years primarily due to the challenging operating environment as a result of "cleaner and lower cost generation, including solar, wind and batteries." [1] Origin plans to replace Eraring with 700MW of storage located at the site. And in March 2022, AGL (Australia's largest integrated electricity retailer and generator), was the subject of a takeover offer by Canadian global asset manager, Brookfield, in combination with Atlassian founder, Mike Cannon-Brookes. The express intent of bid, which was rejected, was to extract value through accelerating AGLs closure of its three remaining coal fired plants.

Notwithstanding the buoyancy in the corporate PPA market, there are still a number of challenges which are making corporate PPAs complex and difficult in the Australian market. The lingering impact of Covid and regional geopolitical issues are causing a strain on supply chains. The price of panels has materially increased over the course of 2021 and this combined with the further concentration of EPC suppliers in the Australian market is causing PPA prices to increase for the first time in a number years. Governments across Australia are responding to some of these challenges by seeking ways to enhance renewable energy and improve the contracting process. In Victoria, the State government commenced a second Victorian Renewable Energy Target Auction (VRET 2) in December 2021 to drive new investment. It has also recently announced Australia's first offshore wind target. At the same time, The NSW Government has commenced its procurement of contestable transmission infrastructure to support the development of renewable energy in the Central West Orana Renewable Energy Zone. The Federal Government through the Australian Renewable Energy Agency (ARENA) has also commenced a large-scale battery funding round, with up to AUD 100 million in funding available for new battery projects of 70MW or larger. With this level of activity, 2022 promises to be a very interesting year for Corporate PPAs in Australia.

[1] https://www.originenergy.com.au/about/investors-media/origin-proposes-to-accelerate-exit-from-coal-fired-generation/

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China

Previous issues with content: 1 | 2 | 3 | 4 | 5 | 6

With thanks to Mt Stonegate Green Asset Management

After China announced the carbon neutrality target, it has actively promoted renewable energy development. The inter-provincial power spot trading rules has been published to further accelerate China's renewables liberalization transactions, urging direct trading between users with green power needs and renewable energy power generation enterprises. As an example, Zhejiang State Grid Comprehensive Energy Co., Ltd. has traded about 139 million kilowatts of green power in the first quarter of 2022, assisting many companies to obtain green power by trading renewables across provinces and generating additional income for renewable energy power generation companies.

With the trend of net-zero, the Beijing Winter Olympics in 2022 achieved 100% use of renewable energy to meet electricity consumption needs. The 2022 Beijing Winter Olympics achieved the renewable target through the direct purchase of renewables in the market, and the total renewable energy transaction volume of 162.78 million kWh was traded through the green electricity trading platform.

On the other side, on July 16, 2021, the online trading of the Chinese national carbon market was officially launched. Through December 31, 2021, the cumulative transaction volume of carbon emission allowances (CEAs) in the Chinese national carbon market reached 179 million tons, with a transaction value of 7.661 billion CNY. Regarding the seven pilot carbon markets, the cumulative transaction volume of CEAs reached 483 million tons, with a transaction value of 8.622 billion yuan.

The Chinese Certified Emissions Reductions (CCER) system started in March 2012 and was suspended in March 2017. This means that there were CCERs available in the Chinese domestic carbon market but they were banned for trading until the national carbon market launched on July 16, 2021, allowing companies to cover up to 5% of their compliance obligation with CCERs. As of April 2021, the National Development and Reform Commission has announced a total of 2,871 CCER-approved projects, 861 projects have been registered, and 254 projects have been registered for emission reductions. As of March 2022, the cumulative transaction volume of CCER nationwide is 280 million tons, and the price of CCER fluctuates at 20-30 yuan/ton.

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India

Previous issues with content: 1 | 2 | 4 | 6

With thanks to WWF

India was severely affected during the second wave of Covid, and the impacts have been felt throughout the power sector. DISCOMs were the worst hit with dips in annual revenues and lower payment collections from consumers. While there have been significant investments into the energy sector, including renewables, there is still a need for robust policy changes and large-scale RE grid integration. Fortunately, India's commitment at COP26 to go net zero by 2070 has renewed the national interest for climate goals in India. India has made steady progress in RE capacity addition, with a cumulative capacity of 104 GW by end of Nov 2021. Ground mounted solar has taken the lead among RE sources with around 41 GW capacity.

In India, the C&I sector is responsible for around half the emissions, but the percentage of power procured from renewables is disproportionately small despite strong interest from the sector. C&I renewable power generation capacity had reached 18,962 MW by September 30, 2021, which came primarily from Open Access (OA) solar and wind and rooftop solar. The limited avenues of procurement of RE has been identified as one of the primary challenges for C&I consumers in India. However, there have been some recent changes in policy at the central level which include the introduction of Green Tariff policies in some states and new guidelines for Open Access procurement of power. The revised OA rules lower the minimum demand for consumers from 1 MW currently to 100 kW. It also limits the surcharges associated with OA and introduces uniform procedures for applications and implementation across the country. Changes to the Renewable Energy Certificate (REC) issuance procedure have also been approved, which could open the way for new avenues of procurement like Virtual Power Purchase Agreements in India soon. The Indian Government has also signaled a strong push for Green Hydrogen in the country, and the National Hydrogen Policy will be launched shortly which is expected to boost green hydrogen production within the country.

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Japan

Previous issues with content: 1 | 2 | 3 | 4 | 5 | 6

With thanks to Mt Stonegate Green Asset Management

Since Japan introduced the feed-in tariff (FiT) system in 2012, it has taken a step closer to reaching its 2050 net-zero goal recently. With the adjustment of the energy structure at the national level, the expansion and development of renewable energy is the highest priority, with the government aiming to make renewable energy the main power source. One of the policies to support this transition is to replace the old FiT system with a feed-in premium (FiP) scheme, which is expected to be implemented in April 2022.

As FiP is about to hit the road, corporate users will be able to purchase the Non-FiT Non-Fossil Certificate (NFC) directly from power producers. The purpose is to make it easier

to conduct virtual PPA transactions on the environmental attributes of renewable energy. However, this trading market was previously only open to electricity retailers with an electricity retail business license. This new scheme allows newly constructed power generators that have been commercialized after 2022, or older projects that no longer receive the wholesale purchase rate of the FiT to trade without a license.

In the first renewable energy environmental value trading market held in November 2021, transaction volume surged by over 1.9 billion KWh. This is inseparable from the restriction of the minimum bid amount set out by METI. Moreover, this is also the first time that general enterprises are allowed to participate. There are 6 corporate users without electricity retail licenses that joined in the bidding. It is expected that the participation of general corporate users will become more enthusiastic in the future.

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Philippines

Previous issues with content: 6

With thanks to 3Degrees

Over the past few years, many clean energy buyers in the Philippines have utilized I-RECs to reduce their Scope 2 emissions. While I-RECs remain a viable procurement option, the implementation of a national Renewable Portfolio Standard (RPS) has created new interactions between the voluntary and compliance markets for clean energy which, in the near term, will likely limit the supply of voluntary market instruments.

Compliance with the national RPS is substantiated through Energy Attribute Certificates (EACs) issued through a system operated by the Philippines Electricity Market Corporation (PEMC), while I-RECs are issued through a separate and mutually exclusive system. Facilities that are registered with PEMC have been – or are in the process of being – deregistered from the I-REC Registry to prevent double counting between these systems.

The I-REC Secretariat is also working to ensure that there is no retroactive issuance of compliance EACs for MWh that are associated with historical I-REC issuance. Furthermore, they are engaging with regulators to understand the extent to which MWh issued through the PEMC system that are not utilized for RPS compliance may be alternatively used toward voluntary clean energy consumption claims in the Philippines. 3Degrees plans to support the I-REC Secretariat in these efforts and can help facilitate further CEBA member engagement in this initiative.

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South Korea

Previous issues with content: 4 | 5 | 6

With thanks to Apala Group

South Korea's renewable energy market currently offers a number of renewable energy procurement options through centralized market players like KEPCO and KEA. Retail renewable energy, locally known as Green tariffs, can be procured through S. Korea's Green Pricing Auctions hosted by the KEA, where premiums are reinvested into KEA renewable programs. The NREC determines the energy capacity to be sold at each auction (and the green premium floor price) and KEPCO invites bids through their website. Selected bidders enter into 1-year contracts with KEPCO and pay a "green premium" (no less than the floor price – KRW 10/kWh this year) on the electricity they purchase. Green tariffs, along with indirect PPAs, use Renewable Energy Use Certificates, which are traded on the Korea Power Exchange (KPX) through KEPCO. With direct corporate PPAs enabled in early 2022, corporations will be allowed to sign long-term offtake agreements directly with generators. Indirect PPAs, also referred to as sleeved PPAs, require KEPCO to act as an intermediary. Similar to other countries in the Asia-Pacific region, South Korea has limited available land for large-scale renewable projects. This restriction limits onsite renewable procurement to only small to medium volumes. However, this option remains moderately attractive due to government subsidies on equipment costs. A lack of available land for project development increases offshore wind attractiveness, and with the government aiming to increase offshore wind's REC multiplier for RPS compliance, one can expect an increase in offshore wind projects in the near future.

The South Korean renewable market is in a state of constant growth and change. Investors in this market must keep a close eye on the South Korean government, which itself might shift their renewable energy stance as a result of the upcoming election cycle. Key considerations for the near-term future outlook include the release of updated regulations and guidance for many of the renewable procurement options, and the stance towards cementing KEPCO as Korea's strong local renewable energy producer.

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Other Asian Markets

With thanks to EKOenergy Ecolabel

Upon requests from market participants and developers, the International REC Standard Foundation has recently approved Kazakhstan, Laos, Cambodia and Pakistan for I-RECs issuance. The approval was based on the submission of country reports detailing aspects of the local electricity market design, national policies related to renewables, and input from both domestic and international stakeholders on national market features, as well as coordination from relevant national authorities.

The I-REC Issuer in Laos and Cambodia is currently the Green Certificate Company (GCC) until an eligible local party is identified. The Association of Regional Environmental Initiatives (ECOJER) was approved as the I-REC Issuer of Kazakhstan. The local issuer in Pakistan is Pakistan Environment Trust (PET). The issuance of I-RECs in these countries will enable renewable energy trade and consumption according to internationally recognized standards and reporting initiatives.

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Europe

Germany

Previous issues with content: 2 | 5

With thanks to Altenex Energy

Although historically not the easiest market for direct renewable energy sourcing, good opportunities for corporates have recently become available in Germany. These range from subsidy-free solar farms in southern Germany to large-scale offshore wind farms in the North and Baltic Seas. With Germany aggressively retiring its nuclear fleet and decreasing coal generation over the past several years, we observed the creation of a higher priced wholesale environment where renewable PPAs could perform favorably.

The newly elected government has set more aggressive renewable energy targets: 80% of electricity should be produced from renewables by 2030. The government is also currently discussing moving the earlier set goal of achieving a carbon free power sector from 2045 to 2035. With a significant focus on climate, the new government is also aiming to shut all coal plants by 2030. The recent events in the region have a high impact on the security of energy supply and lead to higher energy costs. Germany, one of the key importers of Russian gas, is now pushing the renewable agenda even more aggressively.

Realizing Germany's more aggressive targets will be supported by streamlining permitting processes for new renewable energy projects across the country, as well as maintaining competitive electricity prices for the industry. This will lead to more renewable energy projects available for PPAs and reduced project development risks for energy buyers. At the same time, due to the EEG levy (a surcharge that subsidizes renewable energy projects) phase out in July 2022, we expect to see a relief for energy consumers.

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Ireland

Previous issues with content: 4 | 5

With thanks to EY

Corporate PPAs continue to gain popularity in Ireland. Following the completion of the first competitive auction support scheme, the Renewable Electricity Support Scheme ("RESS") in 2020 and delays to RESS 2, developers are increasingly seeing corporate PPAs as a viable route to market. As in other jurisdictions, international gas prices are heavily impacting wholesale electricity prices. To counter this, corporates are looking to corporate PPAs as a potential structure to both green their operations but also hedge against high (and uncertain) future electricity prices.

CPPAs are viewed by the Irish government as a key component to achieving Ireland's 2030 renewable energy targets and a key enabler in developing Ireland's ambitious renewable pipeline.

The viability of corporate PPAs in Ireland is evidenced by the PPAs recently signed by technology giants, and PPA procurement processes currently underway. Elevated wholesale electricity prices should only further improve corporate PPAs' attractiveness to corporates.

In advance of the second RESS auction later this year, there has been significant activity in terms of both corporates and developers seeking out PPAs. In order to provide greater impetus to the market, clarification on the interchangeability of REGOs/ GOs and their effectiveness for sustainability reporting (which is now potentially in doubt following Brexit) would be useful given the Republic of Ireland and Northern Ireland are a shared electricity market.

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Romania

Previous issues with content: 6

With thanks to Think RE

The Romanian renewable energy sector has relied on the Green Certificate (GC) support system for renewable energy for more than ten years. The support system only covers projects that were commissioned by the end of 2016, which has led to a lack of new capacity additions in Romania since then. Investors have also been unable to sign long-term PPAs outside the subsidy system to secure revenues, as over-the-counter PPA transactions were banned in 2012.

Romania's Integrated National Energy and Climate Plan binds Romania to achieving 49.4% share of electricity from renewable sources. One measure on this path was the lifting of the PPA ban in 2020 to encourage new investments in the renewable energy sector. Initially, PPAs were only available for newly built projects commissioned after June 1, 2020, while existing power plants continued to be banned from PPAs. Full legal certainty for PPAs was not restored until Emergency Ordinance No. 143/2021 of December 31, 2021. The newly added regulations now clarify that already existing power plants are also allowed to conclude PPAs outside the centralized OPCOM market.

Despite the restoration of the legal ability to enter into PPAs, it remains to be seen whether there are enough financially strong companies in the market willing to enter into long-term PPAs that meet lenders' requirements. However, recent extreme price spikes may encourage companies to sign PPAs for long-term price hedging reasons in addition to their sustainability goals. On the other hand, the current wind fall tax scheme induces a high liquidity risk for utilities and energy traders in the Romanian market which might hamper the PPA development at least in the short-term future.

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Spain

Previous issues with content: 1 | 2 | 3 | 4 | 6

With thanks to EY

The Spanish PPA market has recovered its activity in the last months, leading the market in total volume and number of operations mainly in solar and also in onshore wind, contracted under PPAs, with large operations as the deals of Alcoa or Amazon. After the uncertainty initially generated at the beginning of Autumn by the RDL 17/2021 to face the global energy price crisis, which put on hold potential operations, the subsequent clarifications and amendment on the decree brought confidence for PPA market's player. Furthermore, the updates on the decree and the energy price context encourage corporates and utilities to increase their activity in PPA market.

In this context, unlike other European PPA markets, the Spanish market has been much more resilient in PPA prices than Central European markets where prices have doubled in the last six months. The pressure of developers in the Spanish market to maintain its pipeline commitments and the needs of PPAs to finance its operations has maintained the offer in a market where the demand leg is more willing to increase its PPA volumes due to the volatility and global price scalation. In this situation, with European corporates eager for PPAs and with the unbeatable price of the Iberia market, it is expected that the Spanish (and Iberian) market will maintain its leading position for a long term.

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UK

Previous issues with content: 1 | 2 | 3 | 5 | 6

With thanks to Enosi

The pace of UK renewables increases driven by the drive to 24/7 CFE, and the need to move away from Russian energy sources. Kwasi Kwarteng, the UK's Secretary of State for Business, Energy and Industrial Strategy, has just sent out a strong signal for the future of renewables: "The long-term solution is obvious: gas is more expensive than renewable energy, so we need to move away from gas." via his Twitter account, February 28, 2022, as cited in the Guardian newspaper.

At the start of March natural gas prices hit a fresh peak above 500p per therm – nine times the price seen just over a year ago - and with a large share of UK electricity generation based on gas, all electricity buyers, from residential through to C&I are seeing massive price rises, predicted at up to 50% later in 2022. UK energy retailers continue to feel the pressure, with 31 ceasing trading since the start of 2021 serving around 4m customers. More are expected to follow.

While PPAs in UK grew relatively modestly in 2020-2021, the pace is expected to lift as C&I buyers and retailers alike look to accelerate the transition to renewables, not least to reduce energy price risk and diversify their energy sources. It is now being seen as imperative for organizations to start actively measuring and managing the transition to clean electricity.

Fortunately, as Kwarteng references clean energy has become the cheaper choice in many cases.

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Americas

Canada

Previous issues with content: 1 | 2 | 3 | 4 | 5 | 6

With thanks to Business Renewables Centre - Canada

With 1,262 MW worth of renewable energy contracts announced, 2021 nearly quadrupled Alberta's cumulative total, now standing at 1,703 MW. This total capacity is enough to power over 640,000 homes in Canada. The eleven deals announced in 2021 support twelve new renewable energy projects in total: five wind deals totaling 547 MW and seven deals for solar, totaling 715 MW. With 22 deals altogether since the market kicked off (16 of which have included at least one BRC-Canada member), the Alberta corporate renewable energy market now offers a sufficient dataset to take note of some emerging trends.

Corporate renewable energy deals are behind the biggest year for renewable energy construction in Alberta's history. Of the 488 MW of new wind power built in 2021 (increasing Alberta's installed wind capacity by 20.1%), over half (281 MW) are from new projects backed by corporate deals. The connection to corporate deals is even stronger for solar: of the 629 MW commissioned in 2021 (multiplying Alberta's solar compliment 5 times over), 98.3% (618 MW) were backed by corporate deals. Almost all (95.5%) of the 736 MW of utility-scale solar that is now operating in Alberta has been linked to an announced corporate offtake deal for the energy produced.

The growth of Canada's corporate renewables market will also start going national soon. With Nova Scotia actively advancing its Green Choice Program and Saskatchewan similarly developing a green tariff program for consumers to subscribe to long-term energy from new renewable projects, Alberta will finally have company as a host for corporate renewable energy investment.

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United States (CAISO)

Previous issues with content: 2 | 4 | 5 | 6

With thanks to cQuant.io

cQuant observes that renewable energy procurement in the CAISO market continues to be affected by considerations related to the "Duck Curve" phenomenon, whereby mid-day market prices tend to fall in response to an abundance of solar energy on the grid. This results in a strong negative correlation between solar generation and energy prices, reducing the value of solar power purchase agreements (PPAs) and physical assets. The bottom row of the figure below bears this out, illustrating that the historical generation-weighted average price of solar has been considerably lower than that of a corresponding wind asset in the same region. This trend is expected to intensify into the near future, placing additional downward pressure on the value of solar assets and PPAs within the CAISO market.

In response to concerns about worsening negative correlation between solar generation and wholesale electricity prices, cQuant has observed strong adoption of a variety of different contractual structures within virtual PPAs, or "contracts for differences". These structures aim to mitigate downside financial risk for the offtaker and include hub settlement, settlement price floors (e.g., $0 minimums), and bundled battery energy storage

system (BESS) components, among others. All these structures may be included in either solar or wind energy contracts, and each comes with a corresponding premium on the PPA price. Accordingly, renewable energy buyers should exercise caution when contracting such structures and should base procurement decisions on sound and objective analysis.

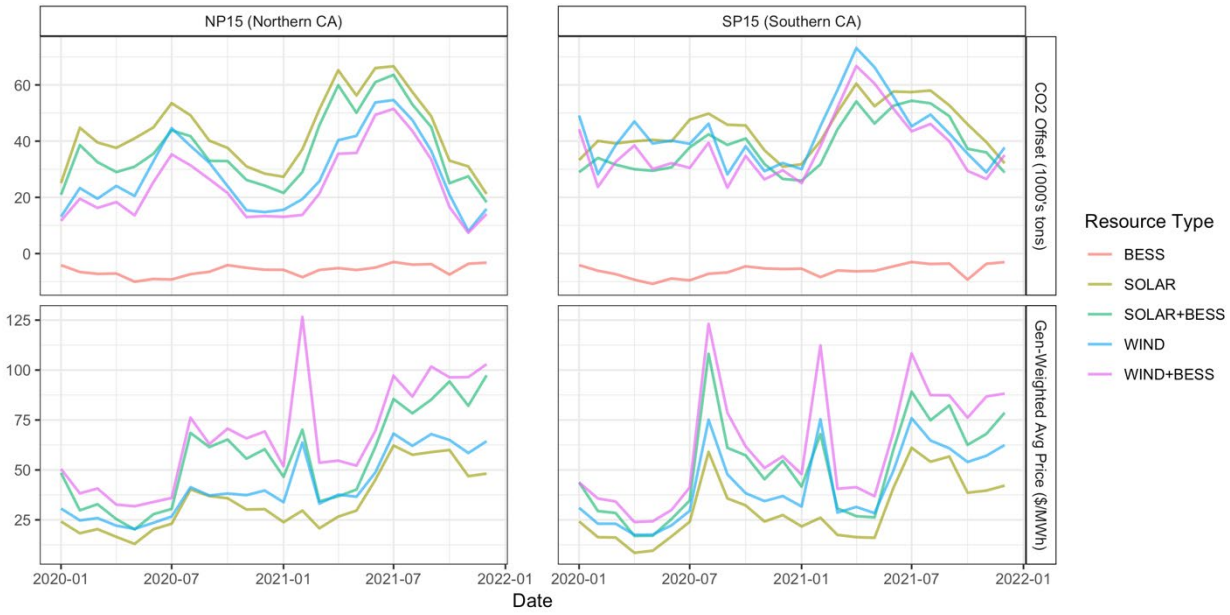

Figure 1. CO2 offset potential and generation-weighted average price by resource type and region. Marginal Operating Emissions Rates (MOERs) used in calculating CO2 Offsets obtained from WattTime.

cQuant has also noted a strong trend within ESG-focused organizations to manage the power content and carbon footprint of their overall energy position at a much finer granularity than ever before. Community Choice Aggregators (CCAs) and large corporate offtakers with aggressive sustainability goals are leading the charge, with an emphasis on regional matching of renewable supply with electricity demand on a 24-7 basis. cQuant's analysis shows that solar energy in northern California provides better carbon offset potential than wind under the current grid mix; the situation reverses slightly in certain months in southern California due to differing renewable resource density and supply composition. The top row of the figure illustrates these trends in CO2 offset potential.

Notably, adding battery storage to renewable projects in both northern and southern California tends to intensify rather than offset carbon when the battery is operated to maximize economics. This is because marginal CO2 emission rates are often anti-coincident with market prices under current supply dynamics (i.e., CO2 rates fall as power prices rise). At the same time, batteries can provide effective revenue stabilization to renewable projects to protect against negative generation-price correlation and other financial downsides. Organizations seeking to maximize their carbon offset from renewable energy procurement should be aware of these dynamics when procuring contracts or assets that include a battery storage component.

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United States (ERCOT)

Previous issues with content: 2 | 3 | 4 | 6

With thanks to EY

The headwinds facing renewables development across the US have had an effect on ERCOT as well, though the impact on ERCOT solar strike prices has been less pronounced than in other ISOs. ERCOT solar projects have seen only modest increases over 2021 according to LevelTen's Q4 2021 Price Index, and the volume of offers has increased from Q3 to Q4 – unlike other ISOs. On the other hand, ERCOT wind prices have followed a similar trend to PJM, with strike prices spiking over 25% year-over-year over 2021.

Against the backdrop of offers and deals being done today, ERCOT has been targeted for reform, ostensibly to improve grid reliability following Winter Storm Uri in February 2021, and recent legislation and Governor's Directives are likely to have implications for both renewable energy development and for C&I buyers. The two primary bills that have passed to date are State Bills 2 and 3, which focus on ERCOT's governance structure and increased weatherization requirements for facilities across the ERCOT grid.

The Texas Public Utilities Commission has also signaled two phases of market reform it is planning to implement. The first phase was officially announced in December 2021, and primarily focuses on improving price signals and operational reliability across ERCOT. The second phase was anticipated to be released in February 2022 but has yet to be published. Since this second phase is anticipated to include incentives and penalties for generation sources based on their reliability, this is a key reform component that may impact the availability and pricing of corporate PPAs from intermittent renewable energy sources.

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United States (NYISO)

Previous issues with content: 4

With thanks to CustomerFirst Renewables

The Value of Distributed Energy Resources (VDER) program is a New York State program that incentivizes small scale renewable energy projects. C&I offtakers can subscribe to local solar projects within their utility territory to support local renewable energy and make emissions reductions claims. With VDER, offtakers receive credits on their utility bill for every MWh of solar produced, reducing overall

spend. The credit is comprised of several different components, some of which are "locked-in" and others that change based on market dynamics.

In exchange for the VDER credit, C&I offtakers pay the developer a $/MWh price, which in many situations is expected to be less than the credit value, generating savings for the buyer.

As with any other renewable energy solution, there are several key aspects to consider when evaluating VDER:

- Developers typically offer multiple pricing options. The price can be a fixed $/MWh price or a floating rate that's always set to be a small discount to the credit rate. The latter option allows buyers to guarantee monthly cost savings
- The utility keeps the project RECs for VDER projects, so buyers must purchase substitute RECs to make emissions reduction claims. This can often be negotiated into the purchase contract
- Projects must be located within your utility territory
- Project sizes are capped by state regulation; further, the amount of credit an off taker can use is limited by the size of their full annual utility spend. Credits cannot be applied to separate retail bills
- VDER projects can be "community solar" projects or "remote net metering" projects, which impacts the credit value amount and number of subscribers allowed

In December 2021, the organization which oversees the VDER program, NYSERDA, published a whitepaper laying out additional upfront incentives to developers. As a result, CustomerFirst Renewables expects VDER to remain a robust opportunity for C&I buyers with electric load in New York state.

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United States (PJM)

Previous issues with content: 1 | 2 | 3 | 4 | 5 | 6

With thanks to Edison Energy

PJM Interconnection, LLC is an ISO where renewables are in demand from corporations, utilities, and retailers. However, prospective buyers in this market must be prepared to either transact quickly or wait patiently, as PJM's queue reform effort is expected to keep early-stage projects at a standstill for a significant period of time.

In the process of developing a renewable energy project, receiving the findings of the required interconnection studies and ultimately securing an interconnection agreement are critical milestones. PJM's interconnection queue processing timelines have grown unwieldly, commonly returning studies over a year

late. PJM reports that the delays have resulted in a backlog of 2,500 projects. These delays are problematic for buyers and sellers alike, as developers cannot accurately price projects, nor commit to guaranteed online dates, without the study results.

PJM's leading proposal for fixing this issue is two-fold, and likely to keep early-stage projects on the back burner while the front of the queue is prioritized. In the big picture, beginning in 2024, PJM is seeking to study projects in clusters rather than linearly from queue entry, which should speed the review process. In the interim, PJM is seeking to fast-track the review of a subset of projects. For buyers looking to bring new renewable energy onto the PJM grid within the next few years, it will be critical to seek a project that is being prioritized in the interconnection process. Edison Energy anticipates that demand in PJM will remain strong, and such projects are likely to be contracted quickly. Once those projects are contracted, buyers will need to have the patience to wait for the reformed queue process to roll out and for the backlog to clear.

This submission contains information in summary form and is therefore intended for general guidance only. It is not intended to be a substitute for detailed research or the exercise of professional judgment. Member firms of the global EY organization cannot accept responsibility for loss to any person relying on this article.

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United States (SPP)

Previous issues with content: 3 | 5

With thanks to EY

Due to the abundance of wind resources in the region, SPP is still very much a wind market. As of January 2022, of the total installed capacity, 29% was from wind and only 0.2% from solar.

Wind VPPA prices in the ISO remained flat in Q4 2021 as compared with Q3. However, solar VPPA prices increased by 15% as compared with the previous quarter, which alongside PJM is the highest increase among all ISOs for solar projects according to LevelTen's Q4 2021 Price Index.

VPPA project economics are expected to be better in the near term, but less attractive in the long term. In the short term, wholesale prices are expected to be high on account of fuel price increases, supply shortages / project delays and a rebound in demand post pandemic. However, over time, this is expected to give way to lower market prices due to increasing renewable deployment and lower gas prices.

Following Winter Storm Uri in February 2021, SPP has conducted comprehensive reviews and is implementing changes. Its review identified 22 actions, policy changes and assessments related to fuel assurance, resource

planning / availability, emergency response and other critical areas that are expected to improve overall the performance of grid, including in similar situations in the future.

Similar to other operators around the country, SPP is facing interconnection queues that are clogged with a number of requests from developers seeking to connect new generation sources to the grid. It is getting increasingly difficult to interconnect low-cost renewables in areas far from customer load centers – along the border between SPP and MISO that runs roughly from western Minnesota to northwestern Louisiana. In order to alleviate this issue, SPP along with MISO has identified seven possible transmission projects across their joint border that could allow up to 53 GW of potential generating capacity to interconnect with the grid. These projects, costing about $1.8 billion, would relieve transmission constraints that are preventing potential projects along the grid operators' seam from being able to come online.

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Ecuador

With thanks to EKOenergy Label

The nonprofit EKOenergy label helps consumers make additional positive impact with their renewable energy purchases. Growing demand from environmentally-conscious energy consumers and sellers has made EKOenergy-labelled electricity available in Ecuador recently. Ecuadorian canned goods producer Tecopesca and ECOTEC University Samborondón campus started using EKOenergy-labelled renewable electricity from their on-site solar installations as an extra step for the climate and nature.

This year, the International REC Standard Foundation has approved the issuance of I-RECs in Ecuador as well. The availability of I-RECs will facilitate renewable energy trade in accordance with the internationally recognized standards and reporting initiatives in Ecuador.

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Contact us

To provide feedback and/or questions, please contact: supplychain@cebuyers.org

About CEBA

We are a community of nearly 300 energy customers and partners committed to achieving a 90% carbon-free U.S. electricity system by 2030.

Learn more about CEBA

Upcoming NGO-hosted events

LESsor Sustainable Energy Network	May 4– June 16	Email education@cebuyers.org
LESSEN is a 3-month training program for data center and real estate owners and operators to learn how to develop a successful sustainable energy strategy and progress toward energy goals		
BRC – Canada Buyer Boot Camp	April 7 – 8, 2022	Virtual
An in-depth, interactive learning experience for energy buyers covering the fundamentals of PPAs, from risk assessment to pitching your CFO.		
Worldwide Wednesday: Vietnam	April 20, 2022	Virtual
Join us on April 20 to discuss the latest challenges and opportunities in Vietnam's energy markets.		
CEBA Spring Summit	May 16 – 18, 2022	Detroit, Michigan
CEBA's all-member convening will have programming focused on educational content, collaborative workshops, and dialogues to accelerate our new vision: customer-driven clean energy all.		

Global Procurement Update Market Coverage

The following energy markets have been discussed in the Global Procurement Update series

Energy market	Issue 1	Issue 2	Issue 3	Issue 4	Issue 5	Issue 6	Issue 7
Asia							
Australia	✓	✓	✓	✓	✓	✓	✓
China (National)	✓	✓	✓	✓	✓	✓	✓
China (Guangdong)			✓				
China (Jiangsu)	✓						
China (Sichuan)	✓						
India	✓	✓		✓		✓	✓
Indonesia	✓	✓	✓		✓	✓	
Japan	✓	✓	✓	✓	✓	✓	✓
Malaysia					✓		
Philippines						✓	✓
Russia	✓	✓	✓				
Singapore			✓				
South Korea				✓	✓	✓	✓
Taiwan	✓		✓	✓	✓	✓	
Vietnam	✓	✓	✓	✓	✓	✓	
Europe							
Demark			✓				
Germany		✓			✓	✓	✓
France			✓				
Ireland				✓	✓		✓
Italy	✓	✓	✓	✓	✓	✓	
Poland	✓	✓	✓	✓	✓		
Romania						✓	✓
Spain	✓	✓	✓	✓		✓	✓
Sweden				✓			
UK	✓	✓	✓	✓	✓	✓	✓
North America							
Canada	✓	✓	✓	✓	✓	✓	✓
Mexico		✓	✓	✓	✓	✓	✓
United States (CAISO)		✓		✓	✓	✓	✓
United States (ERCOT)		✓	✓	✓		✓	✓
United States (ISO NE)	✓		✓	✓			
United States (MISO)	✓	✓	✓	✓	✓	✓	
United States (NYSO)				✓			✓
United States (PJM)	✓	✓	✓	✓	✓	✓	✓
United States (South Carolina)				✓			
United States (SPP)			✓		✓		
South America							
Brazil	✓	✓					
Colombia	✓	✓		✓	✓		
Ecuador							✓

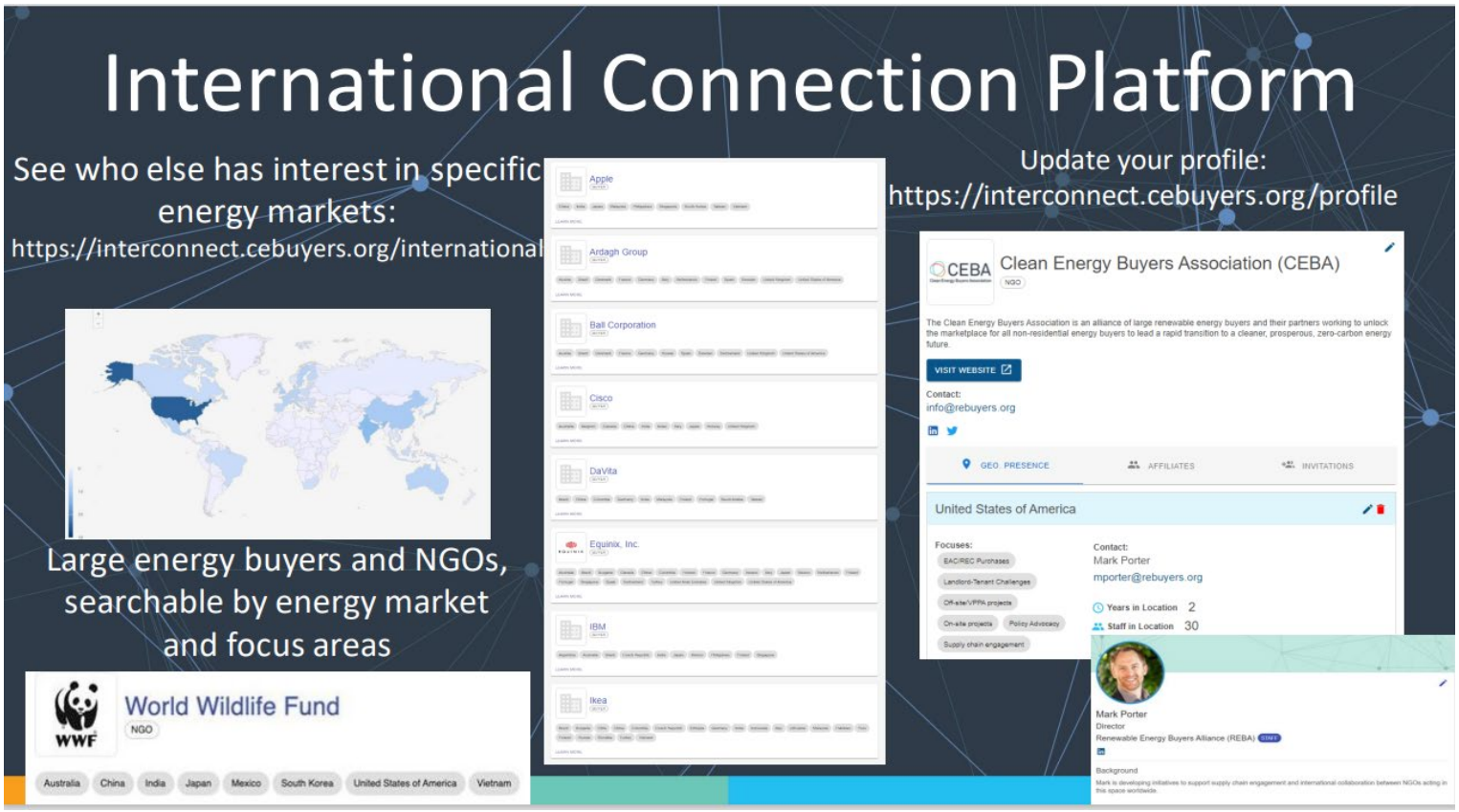
All energy customer companies can connect with peers, worldwide

The International Connection Platform

The International Connection Platform (the Platform) has been built to enable connections and relationships among energy customers and NGOs to accelerate sustainable energy goals in any energy market worldwide.

Through the Platform, you can see who else has interest and experience in specific energy markets, create company profiles, and connect with others working in markets of interest.

The Platform is free to any energy customer and NGO acting to accelerate corporate procurement of renewable energy. To register and use the Platform yourself, visit: https://interconnect.cebuyers.org/international



We would like to thank the We Mean Business Coalition for investing in this unique connection tool and the many partners and members that have been involved in feedback and development of the Platform.

Worldwide Wednesdays: an international connection discussion series

Worldwide Wednesday is a monthly virtual discussion series to share the latest developments and opportunities in renewable energy procurement in international markets of interest. Sessions will be co-hosted by energy customers and NGOs with interest or experience in specific global energy markets. CEBA members can view the Worldwide Wednesdays schedule at https://interconnect.cebuyers.org/events. If your organization is interested in co-leading a session, please contact supplychain@cebuyers.org.