PFR Power Finance & Risk



PFR Hedging & Offtake Strategies Roundtable 2021

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PFR HEDGING & OFFTAKE STRATEGIES ROUNDTABLE 2021

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Taryana Odayar, PFR: This past year has been riddled with supply chain constraints in addition to pandemic-related hold ups and interconnection delays. How have these challenges impacted the way that hedges and offtake contracts are negotiated and structured?

Joan Hutchinson, Marathon: We have seen a couple of things. One, some projects have failed or needed to renegotiate offtake agreements because of timelines being missed or *force majeure* being declared. With new contracts, I see the biggest impact in the terms and conditions shifting to push risk on to the buyers. And that's happening for a couple of reasons; it's because the risks have become greater, and it's also because the supply to demand ratio has changed. The sellers are oversubscribed with buyers wanting energy and RECs from their projects at the same time that they're suffering from these supply chain issues. So, they're in a position to say, 'Hey, can you help me with these risks?' and that has included price increases during the negotiations of a contract.

So, if you think about a traditional RFP process, usually sellers give their best and final price and the price doesn't change unless terms change. Now, in negotiations, prices have gone up since best and finals were provided, and terms and conditions have also shifted to be more onerous to the buyers. If the sellers don't get that from the buyers they're talking to, they can get it from the next set of buyers that are keener to get the output.

Jennifer Kan, Algonquin: From a renewable energy developer's perspective, it's been an interesting and crazy year. There has been strong renewable energy offtake interest from large corporate commercial and industrial customers, and that demand continues to grow. We're seeing competition between C&I renewable energy customers, banks, brokers and hedge funds looking to secure long-term renewable energy through power purchase agreements on new projects to meet their sustainability goals. Customers are inquiring about wind, solar and storage projects across a wide range of power markets, including in places where their physical electricity load is not located. There is also growing awareness of the renewable industry challenges and some customer flexibility in structuring and negotiating offtake contracts.

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There has also been a recent run-up in natural gas prices driving up short-term power prices, and growing customer demand driving up long-term PPA prices. However, that's only partially offsetting challenges that developers are facing with increased project capital costs from modules, supply chain, EPC, interconnection and transmission delays. Many risks that exist today for developers continue to be big unknowns for renewable projects in the future.

The other interesting thing is there's greater sophistication in how renewable energy buyers select their renewable energy development partners. Developers are being measured on environmental, social and governance (ESG), so PPA price and proven development track record are only a few factors that customers consider when signing long-term renewable energy PPA contracts.

Danielle Garbien, Bracewell: From a legal perspective, we are seeing market participants paying closer attention to change in law and market redesign provisions where allocation of compliance costs are being negotiated in offtake arrangements and renewable PPAs. This has become increasingly common, particularly where the deal involves an area of the law or market design that's relatively unsettled in some markets, like behind-the-meter.

With those increased costs as Jennifer mentioned, developers are trying to shift the exposure to a portion of these potential costs to the buyer, which typically the buyer wouldn't take on. So, there is that tension between trying to find a middle ground where both parties are satisfied with the terms of the deal given the uncertainty in the various markets, particularly in ERCOT, as well as changes and potential changes in laws that we have been seeing throughout this year.

Joram Cukierman, Goldman: I'm actually fascinated by this because I sit in a risk management role. So, for us, we are always concerned about risk transfer. There are the corporate offtakers, at times vPPAs, which take on a lot of operating risk for very long periods of time and it surprises me, and I would imagine that that pendulum will swing and in a different direction again.

We saw this before a few years ago with West Texas wind where corporates took wind risk into their books and suddenly had to deal with negative prices and similar impacts. There is a lot of commodity risk that is being transferred to corporates now that are not core to their business to solve for the energy transition or ESG goals.

The other thing to note, is if you look at the current market, the rising construction costs due to supply chains and a variety of other things really gets reflected strongly in the REC market and any of these ancillary markets in addition to the power that gets bought. So, we've seen a significant move up in all these emission-related products, whether it's RECs or CCAs in California. So, I think that is where any shortfall is being made up right now.

Hutchinson, Marathon: I think that's right; the REC market, the carbon market, becomes the balancing act between what peoples' long-term goals are and what their near-term capability is to meet them, so it's a really interesting barometer of how well the market is balancing.

But to your point on risk, I feel that the corporate buyers are trading commodity risk for ESG risk. They have these ambitious goals, and they must meet them in order to have a license to practice, in order to continue to have customers, to continue to meet regulatory requirements or their own targets that have been set for sustainability goals, to attract and retain staff, to hold credit ratings and access low-cost debt, and to attract equity investment. And so, the risk that they're trading off is that commodity risk for the risk of having poor performance in all the areas I just mentioned.

Cukierman, Goldman: That is the trade-off they're making. I think there's an underestimation of what that risk may be.

Hutchinson, Marathon: Every once in a while, we see that come to fruition!

Cukierman, Goldman: Sure, I mean if you needed physical power in February, you would have been pretty unhappy with your vPPA in Texas!

Hutchinson, Marathon: Yes, but in some cases the vPPA settled extremely well for the C&I buyers as long as there was generation. So, they were rewarded for taking risk that time.

Cukierman, Goldman: As long as there was generation.

Hutchinson, Marathon Right. No generation, no settlement. So, they didn't get the downside like they did with hedges.

Odayar, PFR: Fixed-shape hedges seem to have somewhat fallen by the wayside in the aftermath of the Texas power crisis in February. What are some tweaks that might be made to this structure, if any? Are alternative structures being pursued? And how has tax equity tried to de-risk?

Kan, Algonquin: Our increasing preference has been to focus on unit-contingent or as-generated PPAs versus fixed price hedges. There are option products available and provided the structured products are not overly expensive, help manage risk and fit with project economics, then we may pursue these in the future.

Cukierman, Goldman: I can certainly speak to some of these products. We've seen a couple of interesting developments. Tax equity has thought of their investments as a fixed-income investment with very limited operating risk and they have learned that this is just not the case. This is a traditional problem in the power generation space with people trying to turn power generation assets into fixed-income investments and that doesn't seem to work. So, there is recognition that there is some risk management that needs to take place. We've seen a consolidation of projects to developers who have trading capabilities on the side, so a lot of the Europeans and US utilities who have large businesses and can risk-manage are taking on a lot more projects.

In addition to that, there is a desire for some new products. We feel pretty comfortable with fixed-shape hedges, but I understand why developers may not. So, the new products we are seeing include a put option structure that is very similar to what we do in

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the fossil power universe, which is creating a floor power price. The developer buys the put at NTP and the premium becomes part of the overall financing package. It's usually structured to provide tax equity with a minimum revenue amount so that they can underwrite their project. An incremental benefit of the put product is that developers who are developing because they're bullish on the market get all the merchant upside from the project. The downside is that these products are not cheap.

The other product that a lot of clients have asked us about and that we've spent a fair amount of time on, and this is really more in the context of restructuring existing hedges, are these end-of-month settlement products. So, instead of taking power into the delivery month, you settle them the same way that natural gas on exchanges settles, like two days prior to the delivery month, and then you have the benefit on a forward basis your exposure to commodity price risk is protected, but in the delivery month itself you don't have some kind of obligation on the other side that you need to deliver on.

The benefit of that structure is it slots in fairly neatly without any kind of real cost when you convert existing fixed-shape hedges into that product. The downside is that the market is not particularly liquid and there is no kind of obvious index you can use like you can in natural gas. But those are those are two commodity hedge products that we see a lot of interest in.

And the other thing we've seen is a slightly different solution, which is a much stronger interest of corporates in participating as tax equity providers and taking the RECs and figuring out some kind of solution for the energy with a third-party like ourselves. Basically, no longer solving the ESG puzzle for the corporate through the energy hedge, but rather through tax equity and RECs.

Garbien, Bracewell: We have seen a greater interest in proxy revenue swaps as they relate to wind projects and more recently solar projects. We are also seeing some projects bifurcate the projected output of a facility where a portion of the energy is sold under a vPPA at a hub price and the remainder is sold behind-the-meter or partially merchant.

Hutchinson, Marathon: I would agree with everything that's being said. I thought that was really well put. The other two things I would say, and this has been a longer-term trend, but we have been seeing some comfort with merchant projects, especially going through financing there's some potential upside that developers do want and so we have seen projects about 70-80% contracted be



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financed. Now, that's when the percent contracted is on an as-generated basis and not contracted with put options structures.

And then the last thing I would add is that some big balance sheet players have been willing to do a shorter-term hedge with an option to cover the balance of the tax equity duration, but they've been willing to indemnify or to securitize any losses that would flow through to tax equity using their balance sheet. So, they're basically putting their money where their mouth is and protecting the other participants in the project in a way that is great if you are a big, well-funded company.

Odayar, PFR: We could potentially see an upheaval in the way that renewable energy tax credits are doled out if Build Back Better passes in Congress. The package includes expansions and extensions to the ITC and PTC, as well as a direct-pay feature in lieu of tax equity. If passed, how might this change the way projects are financed and contracted?

Garbien, Bracewell: If the bill passes, it could be very advantageous for the renewable markets and energy transition initiatives. With increased opportunities in the tax equity market and potential direct-pay feature, developers should be better positioned to finance projects and provide more opportunities for hedge providers and offtakers.

Odayar, PFR: Jennifer, from a developer's perspective, what are your thoughts?

Kan, Algonquin: As developers, we believe Build Back Better will be valuable in helping transition the electricity grid to renewables in a reasonable timeframe. The PTC and ITC and direct-pay provisions can get a little complicated because there's multiple financial levers to consider, however we're hopeful that the final proposal when passed will help alleviate pressure around securing third-party tax equity on renewable energy projects.

Odayar, PFR: There are also some stipulations tied to the way the tax credits would be dished out in terms of domestic labor and equipment requirements. Any thoughts around how that might impact financings?

Hutchinson, Marathon: I'll start with some comments on the broad question. There's a lot of competition for tax equity dollars. So, when you think about offshore wind, carbon sequestration, all of these demand tax equity investments as well and they're incredibly large. We've seen over the last handful of years that the market has been quite tight and it's about to double. So, to the extent that we can have direct-pay, that helps solve the problem of a limited supply of tax equity.

And, as has been mentioned, we have seen corporate customers come into the market to do tax equity plus RECs.Marathon advised **Nestlé** on that structure and it's a really nice structure for them plus gives them the ability to have the RECs for the accounting that's required for their targets. So, we're doing the best we can within the tax equity markets as they're structured now, but direct-pay takes away the bottleneck.

It will also be interesting because it should allow structures that are now restricted by tax equity's interest in them to be placed on projects. This may or may not be good from a risk perspective. People may be bolder without tax equity's requirements needing to be met, but it should definitely enhance the ability to get projects built, so overall that could be good.

I'm not sure what to say about the terms and conditions on Build Back Better. It's going to really matter on the details. I think the labor will be mostly a cost issue so long as we have the supply of labor to meet the requirements, and as for the requirement to have components from US manufacturing, it's a supply-demand question and maybe cost as well. Any constraints will flow right through to the price of power and to the timing of development.

Cukierman, Goldman: On our desk, we are agnostic to the tax environment and tend to try to solve for what our clients need. It will be what it will be. The reality is there's a huge amount of capital that is looking to invest in this space and to everyone's points, I just think that that capital is going to find its way into the market somehow.

So, the constraint that is tax equity today is a real constraint, and I would imagine that no matter what we're seeing and by having higher prices for both RECs and the power markets, if you really want to accelerate the build out of renewables to the aspirational levels, then you're going to have to find solutions outside of the tax equity market. The traditional direct-pay construct will allow you to replicate the structures we saw when we built out natural gas generation in the mid-2000s ride, which is kind of project finance constructs where the risk really sits with the lenders rather than the tax equity and they tend to have a much shorter duration of risk on. So, I think it would be perceived as more risk, but it it's just going to be, in my opinion, shorter-duration risk.

I think we took a little bit of a step back in renewable development in 2021, but there's so much money looking to invest here that we will figure out a way regardless of tax regime, Build Back Better, etc.

Odayar, PFR: And Joram, have you seen any new entrants on the energy trading side who are expanding the types of structured products available or who have been pushing the limits over this past year?

Cukierman, Goldman: We've certainly seen new entrants in the environmental products space. We've not seen a huge amount of new entrants in the energy risk space. There is more risk-taking by balance sheet renewable developers who just have to manage risk. I think there's a lot of activity in the environmental space, whether that's REC trading on the back of what we're seeing or carbon trading. Joan brought this up at the beginning, but there's somewhat of a convergence of renewable energy focused into this broader and energy transition and decarbonization focus. We saw that institutional investors were very focused on that and we're seeing hedge funds and private equity firms all looking to invest in this space as well.

Odayar, PFR: ESG consciousness has certainly grown significantly over the last couple of years. Danielle, how would you say this has moved the needle in the ways that corporate offtakers do business?

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Garbien, Bracewell: We're seeing a significant uptick in the corporate PPAs. Many of the large oil and gas players with ESG requirements are getting more involved with the development and operations of renewable assets where they have the means to invest in those kinds of projects. So, certainly we're seeing an increase in development from various sectors that weren't traditionally in the market.

Kan, Algonquin: Corporate offtakers are demanding their partners have ESG performance that aligns with their ESG values. Algonquin has partnered with corporate, municipal, commercial and industrial energy customers to achieve their ESG and sustainability goals. I'm very proud to work for Algonquin, a company that makes ESG a strategic priority. Algonquin Power & Utilities Corp has declared a net-zero by 2050 target for scope 1 and 2 emissions. We've exceeded our goal of greater than 30% women in leadership, with 40% women on the executive team, and 33% women in the total workforce. Algonquin is recognized for ESG leadership through its MSCI AA leader rating, **S&P Global** evaluation, and Bloomberg Gender Equality Index. The board and senior management takes ESG seriously in the overall compensation model.

Odayar, PFR: When it comes to financing merchant renewable energy projects, how do equity and debt look at the re-contracting period? How much value is ascribed to the merchant tail after the contract expires?

Hutchinson, Marathon: We see such an incredible infusion of equity looking for a home in the US market, whether that is European or Asian companies wanting to establish themselves and have platforms here, or whether it's development companies that are looking to buy projects. The demand is incredible. We've seen **Apex** and other firms raise equity at great terms and conditions. So, there is no lack of equity for investment in projects and no lack of equity for investment in platforms.

Some of these companies that are looking to invest have started to invest in pipelines. They're looking at DG, they're looking at ancillary services to the renewable energy space because there's so much money that they can't put it directly into the renewable energy space.

Debt has been pretty consistent. When we look at financing projects, one thing that we've seen move a little bit is that often debt was sized to the contract period, and now we see debt sized to the contracted period plus a little bit of merchant duration. You still will have a term that's shorter than the amortization of the debt, so you might have a seven-year term but 10- to 12-years and more on the debt. Then, of course, the linchpin tends to be the tax equity availability. Tax equity financial terms and conditions haven't changed too much over time – it's more the availability and the protections that are put into place. Like when can you do cash sweeps and so on to manage the risk that tax equity feels is in their projects.

I would like to emphasize that what Jen said is critical to the marketplace in that if you're a developer, it's not enough just to say, 'This is my project, these are my milestones.' You have to show that what you're doing with your projects meets the partners' objectives, so it's developing projects with ESG in mind, social justice in mind. We advise all our clients that you can't walk into a meeting with a corporate and just talk about the engineering aspects of your project. You have to talk about what good your project is doing inside that community. And then to Jen's point, that broadens not just your projects, but perhaps your entire corporation to show that you're in alignment with the entities that are buying your power.

Cukierman, Goldman: It's an interesting conundrum because we will have some corporates who have made decisions to contract for an asset through their sustainability group,s but the Treasury department then gets tasked with risk-managing the asset. Those groups have very different concerns, so there's certainly a push and pull that is pretty unique and pretty new.

Odayar, PFR: There are various hedge products that have not been traded very often in certain markets like congestion revenue rights as well as deal-contingent swaps. Might power trading desks see an uptick in any of these in the near future?

Cukierman, Goldman: Our participation in California congestion products is relatively new, but we are not entirely new to the risks as we've traded financial transmission rights for years in ERCOT and PJM. It's a complicated product in the context of long-dated renewable transactions because most of these congestion products really don't trade out further than three years or however long the longest auction for transmission is in any individual market.

And they're very, very complicated to understand, so I would be very hesitant pitching a transaction like that to a corporate customer because I think there's a sophistication of understanding required about power markets, which would require us to do a lot of educating to make sure that people know what they're entering into.

As for deal-contingent swaps, that is a common product in fixed-income, but I prefer not to use those. We've spent a fair amount of time thinking about it and I understand that at some point you would like to pin down a number so that you can pin down your other numbers. But the reality is, power is the least liquid and most volatile product, and the most complicated problem in renewables development. So, if you ask a commodity hedge provider to lock that price and make it contingent, I'm sure we can come up with a price, but I'm not sure that's the most efficient number to lock down because by definition that's going to be the most expensive product to lock down. But we have been asked about it and we are very hesitant.

Odayar, PFR: Let's talk about a product that *is* fairly popular and has been around for a while – gas netbacks. They offer protection and maintain positive margins, but because the size of the margin can shrink depending on the price of gas, it doesn't really provide a fixed margin to lever against. What does the future of hedging for quasi-merchant gas-fired projects look like?

Garbien, Bracewell: There continues to be

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interest in heat rate call options with a combination of a revenue put. Depending on the client, the way they balance out those risks, it varies based on individual portfolios.

Cukierman, Goldman: Danielle, the HRCO is the only product that has been around longer than I have! The gas netback structure was always very attractive as a story around gas production being co-located with gas-fired generation and prices being very low. The product as a whole has always been a very complicated product to understand, and you have to create boundaries around prices to make sure that the product works correctly. So, I haven't seen a whole lot of new activity. We still see a lot of appetite in revenue puts and still see principally an appetite in replacing both revenue points and gas netback transactions with HRCOs.

Odayar, PFR: Moving on to a different generation profile, energy storage, how do you think about hedging these assets and providing revenue contracts so that they get financed?

Garbien, Bracewell: We have seen a lot of interest within the energy storage sector to structure transactions outside of the traditional tolling and capacity arrangements that energy storage developers have entered into in the past along with an increase in financing opportunities for these projects. Rather than a toll or capacity arrangement, some developers are considering revenue puts and related products which leaves merchant optionality.

The market has grown more comfortable with energy storage in general and it's capabilities and the technology, such that the financing and offtake arrangements for storage projects – whether co-located or standalone – are becoming more fungible.

Odayar, PFR: Jennifer, what are the prospects of using combinations of hedges for solar or solar-plus-storage projects, similar to how large wind projects can obtain a traditional PPA combined with a corporate PPA or proxy revenue swap?

Kan, Algonquin: Solar projects have the same hedging and PPA contracting options as wind projects. For storage projects, we're exploring tolling arrangements or partnering with customers to share in the profit from energy revenue and ancillary services. In some markets like California, storage helps manage the extreme volatility in prices where there is a lot of renewable energy with intermittent generation. We are also looking at developing projects where wind, solar and battery are co-located so that it can provide 24/7 renewable energy load-matching for customers in the future.

Odayar, PFR: There is a dizzying array of these various types of structured products. Volume firming agreements (VFAs),

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PPA settlement guarantees, solar revenue puts, proxy revenue swaps with the insurer as the swap counterparty, proxy PPAs, and so on. Are these all considered fairly established products now or are they still evolving?

Kan, Algonquin: I'm a big fan of simplifying customer offtake contracts during this renewable energy transition and fostering strong customer relationships. Unbundling energy and renewable energy certificates, while layering in lots of structured products, hasn't been required with strong customer demand for PPAs in the market. Behind the scenes from a trading perspective, we seek to layer in risk management products including swaps, options and congestion management products.

Cukierman, Goldman: It's an interesting problem, because if you think about the renewable space in particular, offtake arrangements that are really to satisfy tax equity have been somewhere around north of 10 years. And the interesting thing to us has always been that our market changes so much over the course of 10 years, that the ability to predict what works even five years from now is really difficult. And 10 years from now is almost impossible. So, simple is always better.

That said, when it comes to renewable energy transactions, no two transactions that we've done have looked alike. In the end, there's always some reason that you need to create some angle to make the deal work. My experience has been that all these contracts got restructured over time because the market changes and you must be aware of that as you go in to contract. There will be some event, whether it's a weather event or an operational event or the tax equity wants to get out of the deal or whatever it is, that requires a complete renegotiation of a deal.

Garbien, Bracewell: From my perspective, I have seen clients consider volume firming agreements in connection with entering into a vPPA to try to cancel out some of the risk, but I haven't seen one go forward in the sense that the economics aligned with entering into a VFA with the vPPA.

Hutchinson, Marathon: I think the problem with renewable energy is that it's variable energy and so with that level of uncertainty, when you try to put a swap or an option on it, that premium becomes incredibly high because you're not just dealing with price volatility, but volume volatility on an hourly basis and that granularity matters. I think that **REsurety** and **Allianz** did a good job finding a place where they could play and provide a revenue guarantee. It changes your P50 expectations and saves you from some of the downside. It does have a cost to it, but it's very complicated to structure something that covers the volume variability in such a volatile price market.

Cukierman, Goldman: From what I understand, this is also a proxy. So, what is an interesting problem with this product is that the operational risk component of it is not transferred. If you think about a Uri-like event, you're settling against what your generation was supposed to be based on the model, not what it actually was. So, you're not reducing operational risk, you're merely dealing with a subset of the risk that you have.

Hutchinson, Marathon: Price and volume are covered, but the operation risk lives with the developer or the owner of the asset. So, that's exactly right. If the wind was blowing and your operations stopped, you're still measured on the wind blowing.

Odayar, PFR: Basis differential hedges are also important. Depending on the location of the project, the basis differential can be a significant risk, so being able to hedge against that would be valuable. Are you seeing such products in the market? Are they a good decision?

Garbien, Bracewell: In certain PPAs, I have seen the parties agree to share the basis risk between the node and the hub, both the upside and downside of the differentials. Formulas vary depending on the structure of the transaction, but the risk sharing is definitely negotiated.

Hutchinson, Marathon: It goes back to it being more of a seller's market. Sellers have had to take the basis risk. Now they're saying that the basis risk can be quite hard to get financed as tax equity is more sensitive to it, and they're in a position where they can negotiate with buyers to share that risk, and so that sharing is happening. If a project owner wants to contract with a third party to take basis risk, they have to pay them to take that risk and it's a really high cost because it's a variable resource. You don't know when it's going to generate and so it's a very complex analysis with respect to price. Often, the best thing to do is for the projects to manage basis risk themselves, and hence we see storage in some projects because managing basis risk is one of their advantages.

Kan, Algonquin: As a renewable energy developer, we evaluate the basis risk of projects upfront. We look at transmission congestion risk, consider the available ISO-traded congestion products, and put on spread trades as required. We seek to actively manage the congestion risk with tradeable products and monitor the differential between the project's point of interconnection and the settlement hub.

Cukierman, Goldman: We generally advise our counterparties – and I'm not talking about renewable project counterparties, but all of our power counterparties – to hedge with the liquid product that is most closely related to the location where power is generated. If you have a West Texas Panhandle project, you're doing that because you want a higher price point, which generates better returns, but you are exchanging that for taking significantly more risk and that risk needs to be managed. This is a classic problem in power generation as a whole and is not new to the renewable space at all. It works until it doesn't, and when it doesn't, the tears are usually pretty big.

To me, the projects that do best are the ones that are selected carefully, that are in good locations, connected to large transmission lines and the economics allow them to take some of this risk in-house. You don't need to add incremental risk to make the economics work because those risks can very much outweigh the results over time, especially, for example, on a 10-year deal in Texas where the transmission system and basis market has been all over the place. So, in my opinion, it's not an advisable strategy. ■

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