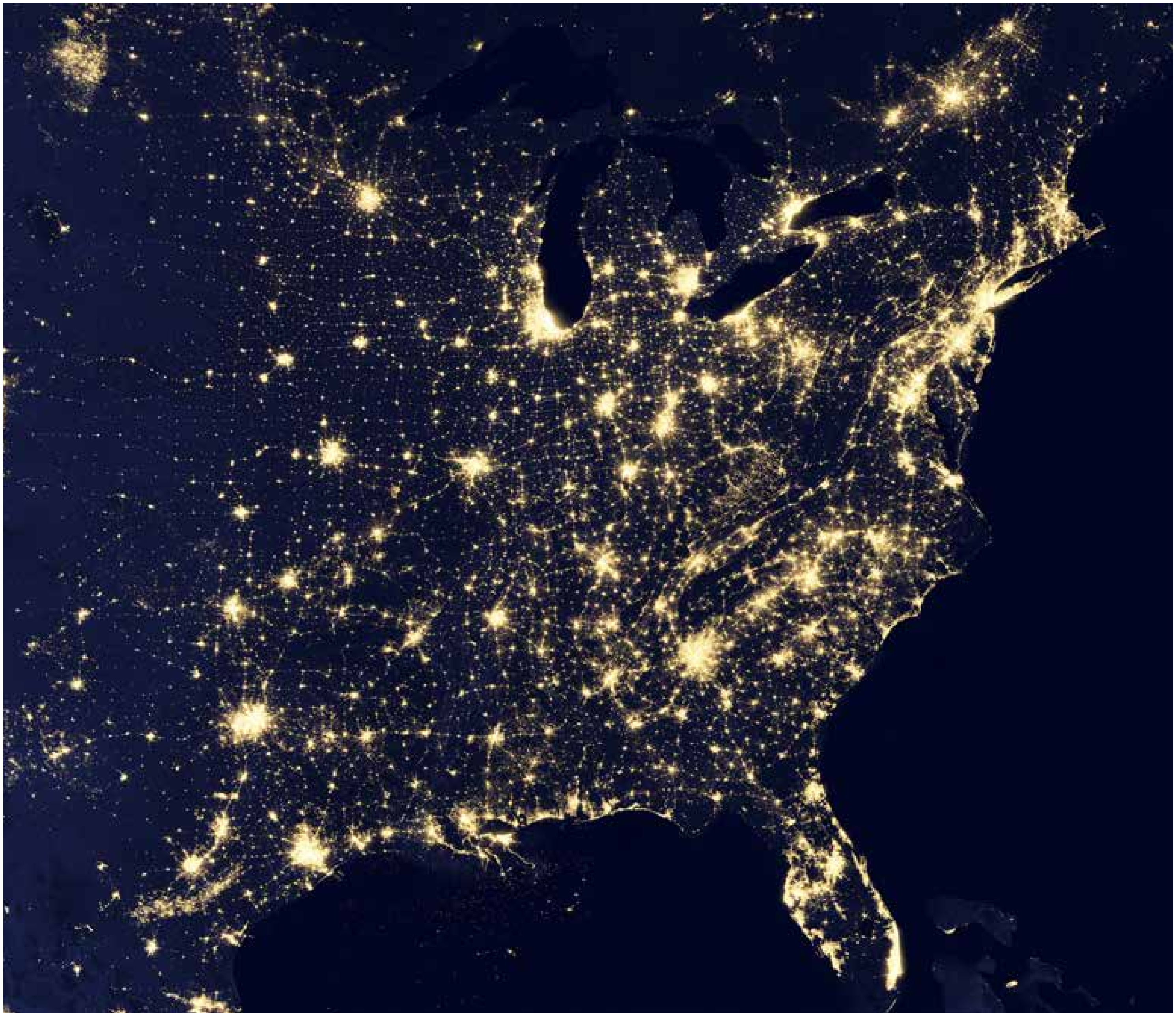
Power Finance & Risk



CORPORATE OFFTAKER ROUNDTABLE 2019

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NOTE FROM THE EDITOR

When participants in a panel discussion start quizzing each other frankly about the minutiae of their accounting practices, you know that the conversation has been productive. Indeed, it seems that our corporate offtake roundtable was a rare opportunity for those involved in procuring renewables to really swap notes.

That's because, while non-utility procurement has exploded in recent years (corporates accounted for some 4.5 GW of contracted capacity in 2018, versus 9.4 GW for utilities, according to *PFR*'s records), it has remained a stubbornly opaque industry of bespoke deals, the intricate details of which rarely see the light of day.

And while activity in this area has clearly ballooned, there is a sense that this lack of transparency represents an obstacle to standardization, simplification and even greater uptake. Who knows how big the market could become if potential offtakers could see under the hood of more deals?

And so, in the spirit of enhancing transparency and understanding about this crucial area of project finance, *PFR* brought together experts from law firm **Kirkland & Ellis** and **Citi** and representatives of **Novartis** and **Goldman Sachs**, some of the latest companies to sign power purchase agreements, to share their experiences.

From the intricacies of avoiding purchased electrons being subject to derivative—or mark-to-market—accounting, to the challenges lenders face when assessing the creditworthiness of the new breed of offtaker, this roundtable addresses the key challenges to be tackled as renewables procurement grows and evolves.

Richard Metcalf
Editor
Power Finance & Risk

Corporate Offtaker Roundtable 2019

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SPEAKERS:

Brian Anast, director structured products – commodities, **Citi**
Kelann Stirling, partner, **Kirkland & Ellis**
Shravan Bhat, reporter, **Power Finance & Risk** (moderator)
Cindy Quan, global chief of staff and head of ESG, corporate services and real estate, **Goldman Sachs**
Robert Fleishman, partner, **Kirkland & Ellis**
Jim Goudreau, head of climate, **Novartis**

PFR: What do you think changed about corporate PPAs last year? We saw a ton of deals with some really interesting new names entering the space. What changed? Was it the tenors? Was it the pricing? Was it the names? Was it the allocations?

Robert Fleishman, Kirkland & Ellis: The volume picked up and we saw more varied types of players, not just the tech companies who were driving the process earlier on, but also smaller commercial and industrial customers in a variety of locations. They are using an increasingly diverse set of tools—regulatory, pricing and contractual—and products to make this happen. Aggregation also is another thing that began to really pick up in the last year or so.

Kelann Stirling, Kirkland & Ellis: The other thing that I would add is the focus on the economic impacts of it for the players in this space. So, it's not just about their sustainability imperatives, they're also look-

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"The more transparency there is, as to what's happening in what state, with what utility, in what region, and with how others can get that information, the easier stream-lining will be."

Robert Fleishman, Kirkland & Ellis

ing at this as a good financial move, and that's become very important for some of the 70-odd buyers entering or active in this market.

Fleishman, Kirkland & Ellis: The other thing is that in the last two years a lot of the actions with respect to clean energy goals, targets, and greenhouse gas emissions are being driven, not at the federal level so much, but increasingly at the state and local level.

PFR: What do you think are some of the states that have handled this move the best?

Fleishman, Kirkland & Ellis: I think it's evolved over time. California certainly was a driver at the beginning of the process, and their energy storage initiatives have helped as well. One state that is a relative newcomer to this is Virginia, which has a regulatory environment that tends to be slower to pick up on changes. We've started to see even Virginia become interested in facilitating transactions with, among others, **Apple** and other companies. The utility there has amazing impact and influence, which is often the case in many states. I know this having worked 17 years for utility—I've seen how that happens.

PFR: Are there any interesting regulatory hurdles or challenges that you would like to see change.

Jim Goudreau, Novartis: There's been a lot of work done in some very prominent states. California got mentioned but also Massachusetts and New York. Interestingly enough, in the last election cycle six new governors came in, pledging to work towards 100% renewable energy. So these new markets that are not traditionally where we would have seen opportunities are Oregon, Maine, Colorado, Illinois, Connecticut, and Nevada. But as we see more and more states do this, it becomes more and more of a patchwork of regulatory frameworks and rules. For us as a C&I customer, we're new into this environment and there are probably established relationships and patterns, and 'muscle memory', if you will, from decades of deals between developers and utilities—as well as certain expectations on what's acceptable and what's not acceptable.

Some of those things have then been built into regulatory frameworks, and you see that manifested in different ways. As more companies like Novartis come to the table, and we have a different set of concerns: we're not selling the power to anyone. We're not doing this to make money off of power generation. We've got a fairly different motivation and it impacts how we look at the deals, and what we would want to see. The ability to customize, while at the same time streamlining and simplifying, is going to be a huge deal across all of those markets. For me, a big concern for Novartis is making this accessible to our supply chain; small or medium type firms who don't have a legal staff, don't have procurement staff and don't have access to energy lawyers and energy buyers.

Cindy Quan, Goldman Sachs: On the Goldman front, it's really interesting being a large, global, financial institution, having to go to different states, different entities and different utilities and yet having a very similar conversation. At the end of the day, as a corporate buyer, you're looking for the same thing in different jurisdictions, depending on how your real estate footprint changes—whether you own space or whether you lease space. Even New York and New Jersey have very different regulations between the two. We're building a new headquarters for one of our subsidiaries up in the Albany area of New York State which also has different incentives. The utilities are moving in the right direction. We (corporates) are looking to pair different components together into a PPA, where it's not just a standalone PPA.

Fleishman, Kirkland & Ellis: Energy regulation is a key factor in a lot of this. We've got federal policies and different state rules. So, what's the antidote and what's the way to deal with that? Transparency. This needs to be balanced with the proprietary nature of some of these transactions, but the more transparency there is, as to what's happening in what state, with what utility, in what region, and with how others can get that information, the easier stream-lining will be. Simplification is key.

Stirling, Kirkland & Ellis: Right now the market's building on large companies like Goldman or Novartis with the capability to do one of these PPAs—and then do a second one much more easily—but that's not really opening it up for smaller companies. I don't think people are just going to go and start posting their PPAs, but the industry groups can start to gather the information and support and promote standardization.

PFR: What kinds of information do you think would be valuable if I'm a smaller supplier?

Fleishman, Kirkland & Ellis: The tenor or the terms of the arrangements and the variety of different kinds of pricing mechanisms that might be available. Is it a tariff item or is it a one-off?

Quan, Goldman Sachs: I also think, just at the bare minimum, a lot of these smaller firms as you mentioned, don't have the budgets to hire legal staff. Not only internal dedicated staff, but also external staff to work on these very complex deals, where a lot of that is the first hurdle before they even get into what are the right questions to ask. They're not even they're yet. They're just at the "is

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this going to be a $100,000 legal budget, or a $1 million legal budget?" stage and if they don't even have that, how do they broach into an industry where everyone's running to get this limited supply of renewables?

PFR: I'm really curious to get this panel's take on the issues we've seen around basis risk and some of the parties who have already been hit by basis risk. I remember speaking to an expert who was saying that the cfo of a corporate offtaker wants to be cashing cheques, not signing them.

"We're pitching something a little bit different: buy where your geographic load is and buy fixed volume instead of as-generated."

Brian Anast, Citi

Brian Anast, Citi: It depends on the kind of basis risk to which you're referring. There are many different kinds of basis. There is the basis between [as-generated] power versus a consumer's actual load. There is basis between different geographical regions. There is basis between node versus hub purchases. From my perspective, it doesn't seem as if most buyers are awfully worried about these types risk as of yet. In general, I think it's probably a better to buy in the geographic region where you actually have load but I also realise that in some of the regulated markets that may not be realistic.

There has been a push towards trying to get the developer or the intermediary to take more risk. But the buyer doesn't always push for that.

Goudreau, Novartis: From a buyer's perspective, one thing to keep in mind is how that risk is assessed, and how it's perceived within the company, is going to change, whether it's a company under GAAP or under IFRS. The way I look at the mark-to-market dynamics of a large virtual PPA is very different than for a U.S.-based company that's operating under GAAP. How one thinks about the fluctuation in asset value is a much bigger deal for international customers funnelling into the U.S. market.

Quan, Goldman Sachs: And even as a global company subject to multiple regulations, depending on where the PPA sits, and the entity which actually signs for the PPA, depends on whether or not that entity has, and can take on, the derivative accounting versus standard accounting. The accounting treatment is really interesting because it actually ends up dictating where it ends up being booked, from an entity perspective.

Even within Goldman, we've got multiple entities. If it sits within our commodities arm, our commodities team does mark-to-market every single day. However, where I sit, within our corporate side we don't do that. Because it was our corporate team entering into the market to procure this PPA, ensuring we did not have mark-to-market accounting was incredibly important for us. We did not have terms and specification in our deal that would push into mark-to-market accounting.

Anast, Citi: Have you ever experienced a situation where you actually qualified for hedge accounting? So, you could do the deal that you wanted, but you had offsetting mark-to-market values on either contract?

Quan, Goldman Sachs: We've looked into that as well, but we wanted to just do straight line accounting for this. We looked at all the different accounting methods to understand what was the most beneficial from our standpoint, given the entities which would actually touch the PPA.

PFR: Who has done the best work to mitigate the risks that can come out of all of these issues?

Anast, Citi: Of course I'm biased so, I'm going to say it's financial intermediaries like Citi. But I don't know that's always necessarily true.

Stirling, Kirkland & Ellis: I think in terms of basis risk, the lenders and the project are going to be aligned. The lenders are going to be highly focused on this and want to make sure that it's adequately accounted for, either via hedging, or shared with the offtaker via PPA pricing. In terms of the financeability of it, sure—if it's addressed correctly and the lenders feel confident that the downside risk for the project is not too great.

PFR: Can you walk us through the sleeved PPA that was signed. How did you come up with that?

Anast, Citi: I'd love to say I came up with it, but it was done way before I was at Citi. Citi signed a lot of long-term offtakes from power plants, but the market was a lot more illiquid than anticipated. So, they reached out to non-traditional counterparties—from a commodity group perspective—to corporates who are signing long-term PPAs. We're pitching something a little bit different: buy where your geographic load is and buy fixed volume instead of as-generated.

Now the problem becomes that everybody doesn't want mark-to-market accounting, which is reasonable. What we've done is, we buy from the plant and then we sell fixed volume, shaped like your load, but we place a retailer in between. The retailer is serving full requirements, you have a block from Citi backing the supply, and generally it seems to qualify for accrual accounting instead of mark-to-market, because there's so much variability around what the retailer actually sells. It's kind of like a green tariff, but it's not a utility, it's a retailer. This only works in certain markets; it works in ERCOT. It doesn't work in SPP because it's not a deregulated market. And so, when you look at the universe of people that should be buying from you, or you should be able to sell to, after you get one or two or three interested, they'll say, "Okay, great. How do we move forward? We like your pricing, we like

"For me, as a buyer, there are a lot of markets where I'm going to be looking for sleeved contracts because we've only got appetite for a certain number of virtual PPAs."

Jim Goudreau, Novartis

your product. It seems to eliminate many of the risks that we would take if we signed the PPA direct. How do we move forward?" And you go to the utility and you find yourself blocked. Why? Because, one, they don't want you dealing with their customer. And two they don't want to do a contract because the utility actually makes more money if they put money out the door in steel or equity, because they get a regulated rate of return on the capital that they place.

Goudreau, Novartis: For me, as a buyer, there are a lot of markets where I'm going to be looking for sleeved contracts because we've only got appetite for a certain number of virtual PPAs. Those automatically go to derivative accounting. We try to stay away from derivative accounting in general.

Quan, Goldman Sachs: What is it that's kicking it into derivative accounting?

Goudreau, Novartis: The mark-to-market. So, under IFRS, it's the way that it's interpreted.

Quan, Goldman Sachs: Do you have a fixed production guarantee?

Goudreau, Novartis: No. For a large project, we may have 100 MW offtake. Based on the shape and based on the intermittencies, it'll go up and down, but based on the pricing variables and dynamics in a market the value of that multi-year asset could shift dramatically. Because it's under derivative accounting, it goes onto the P&L and it could cause major swings quarter by quarter. Obviously, this could be a concern for finance staff.

Having a physical delivery component to most of our new PPAs is a big deal for us so we can avoid derivative accounting where possible. There are some markets where that's easier to achieve and some just don't have the capacity to do that yet. So it's going to be a mixture of on-site generation, generation within the grid—sleeved from another grid—and a lot of different combinations because we're looking at multiple deals currently.

Quan, Goldman Sachs: This whole mark-to-market accounting is really interesting. I feel like we've gotten a lot of transparency around the different items and terms to look for in the PPA. If you have a fixed production guarantee, it would automatically kick you into mark-to-market accounting, but I find that there are newer nuances now.

One that I heard of recently in our solar deal—where, depending on how we end up paying the developer and if there's a credit back—is if we don't do every step in the transaction, we could end up getting kicked into mark-to-market accounting. This is the first time that we had heard of that situation.

It would be very helpful from a buyer's perspective to know what are all those terms that would keep us in accrual accounting, versus kick us over into mark-to-market.

Goudreau, Novartis: Because IFRS is being altered, the World Business Council for Sustainable Development has done some work with The Big Four and some other firms, to try to interpret those changes and push that information out to member companies in the WBCSD. When we were in negotiations for our project in Texas, being able to find information about how to approach deals under derivative accounting was extremely challenging. Similar information would be one of the things that would be most transformative, to open up access for renewables to medium and smaller companies. Until information on how to assess and deal with risk is a bit more open, proprietary solutions will discourage many companies from even attempting a similar deal. The current market approach prevents us from having the transparency that actually allows more companies to come to the table and ask the developer for a new project, because they aren't able to find ways to limit risk.

PFR: I guess the elephant in the room here is the utilities and the fact that it may not particularly be in their best interests that all of these deals happen. How have utilities responded to the growth or corporate PPAs?

"It would be very helpful from a buyer's perspective to know what are all those terms that would keep us in accrual accounting, versus kick us over into mark-to-market."

Cindy Quan, Goldman Sachs

Fleishman, Kirkland & Ellis: It runs the gamut. It depends upon which utility and which state, and, among other things, what utilities view to be the threats in their markets. One factor for many of them is, to what extent is their state really going through a regulatory review of the framework? You have New York with the Reforming the Energy Vision and now you even have Ohio considering some changes. A utility may

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face not just the corporate PPA risk but also increased risk from distributed energy resources and grid modernisation, performance-based ratemaking and other risks.

Stirling, Kirkland & Ellis: One of the articles I read had a good quote about how the virtual PPAs should be considered not a threat, but a driver for the utilities to change and do the green tariffs and try to find ways to meet the needs of the new breed of offtakers.

We were also talking with a client recently that said they were in conversations with a utility which was starting to think more like a transmission company. The utility was trying to figure out what that meant for them internally and what type of assets they don't want to own anymore.

PFR: I've heard you speak about green tariffs in panels in the past but I haven't really seen the growth in them, as much as I thought that I would have done in the last one year. What do you think is holding that back?

Quan, Goldman Sachs: I think it's been pricing. With the green tariffs, we've had conversations, very early on, with **Con Edison**, probably back in 2015 or 2016. They wanted to be in the market as well, and they wanted to streamline it for the buyers. They had a buyers' consortium, asked all of us, all of their major customers to come in and just talk about what we wanted to see, what our goals were in this space.

We all had very similar goals. We had 100% percent renewable energy commitments we needed to meet by a certain time frame. We wanted it easy, we wanted it transparent, and we want it at cost parity.

Check number one for the first statement, check number two for the second statement, not so much check number three on the third statement. That was where they were working towards. How would they get to cost parity with regards to how a customer was currently procuring power from let's say, Con Edison, or **PSE&G**, and what they would see, moving forward, if they entered into a green tariff, and how that pricing would change?

It literally was an apples to apples comparison around: today your pricing will be $0.10/kWh, if you want a green tariff from your utility, you will be paying an increment of whatever percentage to get your power from a green source.

From a customer's perspective that was difficult, because there is no financial hedge to the component. It was transitioning from buying brown power to buying from a green power source and there would be a slight uptick to doing that.

Fleishman, Kirkland & Ellis: So, that gets to the question of the strategy and tactics one uses to try to get green tariffs or corporate PPAs when you may have a somewhat recalcitrant utility. Some have a strategy of trying to go and talk to the public service commission staff and commissioners at a high level. As long as there's not a conflict and ex parte rules are complied with, you can try to generate interest and understanding at the policymaker and staff level if you have a obstinate utility.

The other factor is if there's an economic development angle to a corporate PPA. That can be something that's very attractive to the commissioners.

Anast, Citi: Hey Bob, can I ask how you pursue that path when you're approaching the PSC?

Fleishman, Kirkland & Ellis: I'm a proponent of being very straightforward and saying, "okay, this is as far as we've gotten. Now we're going to go talk to the commission staff" - as opposed to going with backroom tactics.

Goudreau, Novartis: In many markets, especially in the international markets that we're dealing with, the utility says, "here's your green tariff and it costs more, and just trust us—it's green". The ability to have an auditable, transparent, credible source of renewable energy is big for me at Novartis, because we file with CDP [Carbon Disclosure Project]. Everything we do is out there for the public to look at and to review and I've got to know that it's right. I've got to be able to hold up a piece of paper that says, I can really prove where this came from. So there's absolutely a place for green tariffs in our overall renewable portfolio and there's a place for RECs [renewable energy certificates], and there's a place for guarantees of origins, there's a place for virtual PPAs, on-site PPAs, off-site PPAs with physical bordering, etc.

The long-term goal is to get to the carbon neutrality and then also continue to work on the quality of the portfolio. To say I'm green simply because a piece of paper moved from here to there isn't as credible or understandable to our stakeholders and the public.

Fleishman, Kirkland & Ellis: One thing I wanted to underscore in what you just said, is many think of corporate procurement as just one thing. And you identified six or seven key elements of what corporate procurement is, and it will evolve and change in the future as well.

PFR: If I'm a smaller manufacturer or a supplier, I don't have the legal nous to go and sign my own PPA, wouldn't the green tariff with my existing utility be a really nice and simple option?

Goudreau, Novartis: That's certainly the attractiveness; to get into the lower tiers of the supply chain, you flip the switch and you're swapping one utility bill for a different utility bill. In certain markets, that money even pencils out, because you avoid a carbon pricing scheme or a carbon tax in certain international markets. You may not have to buy a GOO [guarantees of origin] or a REC.

The challenge with any small company is, if you're feeding into a supply chain, if [the green tariff] increases your cost of goods sold into that larger supply chain, are you still competitive with your peers? As companies want to increase sustainability and control costs, you have to actually build alliances and networks with suppliers, where this is a commonly held goal.

For instance, one of the other elements of the strategy for Novartis, is that by 2025 we will have sustainability built into our supplier contracts. Naturally, that is going to take time and real change will happen when multiple companies provide that kind of demand-pull into the market.

"We've got federal policies and different state rules. So, what's the antidote and what's the way to deal with that? Transparency."

Robert Fleishman, Kirkland & Ellis

As more companies ask for that, I think we'll see that behavior be viewed as a competitive advantage among suppliers because companies will be picking that supply chain that they want to be a part of, and the partners they want to be playing with. That will apply to both buyers and sellers in a supply chain.

Stirling, Kirkland & Ellis: An example of this is **Alcoa** selling aluminum at premium in Europe, and people buying it because they want to green-up their supply chain. It seems like in the U.S. at least, there's a continuum and entry points - from buying RECs, to green tariffs, to virtual and direct, on-site PPAs. It gets increasingly more complex for the offtaker, so there should continue to be a place for the green tariffs, for folks that can't enter at a different point, but are trying to get on board with the green supply chain obligation from their customers. There will be price pressure though.

Goudreau, Novartis: I think those smaller companies will be less sensitive to the transparency and the credibility of that tariff than a Novartis, or an **IKEA**, or an Apple where people are constantly looking at you. If you make those big, ambitious statements, and strategies and goals, people are going to come look and say, are you doing it correctly? A smaller company typically receives less scrutiny and a less specific green tariff will meet their needs as a customer.

Quan, Goldman Sachs: Yes, but going back to Rob's point: what is the entire portfolio of everything that you're going to do? It's not one-size-fits-all in every single region, in every single location, it's going to be a mixed bag where there's certain locations and countries in which the only option is to buy an I-REC [international renewable energy certificate] or a REGO [Renewable Energy Guarantees of Origin] or GOO. And there's not going to be any other option there, in order to be able to meet that load. But then, as you get into more sophisticated countries, you can start looking into the different options for PPAs.

PFR: If I'm a banker and I'm looking at the offtaker's credit here, how has that discussion evolved over the last few years? We're seeing it's really a norm, that corporate PPA-backed projects get financed in much the same way as others.

Stirling, Kirkland & Ellis: Obviously, the financing institutions are getting more comfortable with the concept, and there's more of an expectation that they're going to be sitting across from Google or Goldman or Novartis, instead of one of the utilities. On the flipside, the developers are getting smart about what needs to be in the corporate PPA to make it financeable.

I think having to explain to the Facebooks of the world, commercial banks need a credit rated entity and a guarantee, or some form of credit support—not from the SPV, but from part of your institution that actually has assets—can be challenging. This is not corporate financing. I don't think that's going to change, I don't think it has changed. I think the banks still need to see credit support to back up the payments under the PPA, just like they do in a more traditional setting.

PFR: Does anyone every say, what if Google goes bankrupt? Will they still be able to honor their agreements? Are those concerns, if any, founded on anything?

Stirling, Kirkland & Ellis: People have seen utilities go through insolvency, and they've seen them continue to pay. They've seen government support jump in. The question for lenders is, will the same be true for corporate offtakers? The banks are thinking about that. I think that it is still true, that if you have a 25-year PPA with a highly rated utility, you're going to have people lining up to finance it because of experience and comfort level.

Fleishman, Kirkland & Ellis: And one thing I would add is, utility bankruptcies are rare. They happen, but they're rare. And that's something that, in all the news reporting of PG&E or whatever financial distress situation is being examined, sometimes that gets lost in the shuffle.

PFR: When you speak to tax equity investors are they more or less comfortable if it's Google or if it's even a smaller corporate offtaker?

Stirling, Kirkland & Ellis: I think that, to a lesser degree, they have the same questions as the banks do around what happens if the corporate offtaker does not perform. Their analysis is focused, not maybe as much on the initial offtaker, but who will the other offtakers be? What will this market look like? Are we going to be dealing with merchant risk, or are they going to be able to replace this Google PPA with another Google PPA, or a Novartis PPA?

PFR: What happens if, say, there's a 200 MW wind farm and you have 50 MW from Amazon, 50 MW from a smaller company, 50 megawatts from a much smaller company? How do they structure and layer that?

"There's going to be increasing demand from customers like me, for power purchase agreements for thermal energy."

Jim Goudreau, Novartis

Stirling, Kirkland & Ellis: I think they have to do more homework, and they have to come up with their own blended credit rating: what is the basic credit rating that we're dealing with here, and how do we price that? And what's the debt-to-equity ratio that we're comfortable with on the basis of that? What's interesting about the multiple offtaker PPA structuring is: can one of them sell to the other? Can your highest rated entity pass their offtake to the lowest rated entity? Because that's going to cause your potential lenders, and tax equity investors, a lot of heartache. You could set it up as buckets, with maybe the lower rated entities allowed to either transfer to the higher, but not the opposite. You need to be thinking a lot about the financing when you're structuring PPAs with a club of offtakers.

PFR: Let's look ahead to next year. What do you see as the areas for growth in this space? Will it remain a "green corporate citizenship" play or become a purely financial decision, where renewable energy is just cheaper?

Fleishman, Kirkland & Ellis: Let me start with a historical perspective. When electric restructuring, and before it, natural gas restructuring, started at the federal level in the 80s and 90s, and then at the state level, it principally was about financial. It was about customer choice, it was about competition but the huge driver—and I lived this for decades, at the **Federal Energy Regulatory Commission**, in-house with a utility and in private practice—was getting a more attractive rate and trying to break up what was viewed as to be the monopoly of the utilities with respect to transmission access, undue discrimination, and so forth.

That was then, this is now. Corporate procurement is about the financial aspects, but it's also about much more and I don't see that changing. The focus is on reducing greenhouse gas emissions, buying cleaner energy, meeting environmental sustainability and other kinds of goals at a corporate level, even when it's not required, and then meeting state requirements, goals, and mandates.

That series of incentives for corporate procurement is baked in and it's just going to expand over time. I doubt it will be, ever, just about the financial aspects of it.

Goudreau, Novartis: The type of buyer and their type of requirement is going to shift over the next two years, and I'll use Novartis as an example. The cornerstone for our program is efficiency: to drop absolute emissions through efficiency and size that load appropriately and shift to renewables. But when you take a look at production processes in our plants, there are certain loads that I can't electrify, which means I can't shift to renewable electricity. So, if my goal is to get to all renewables, if my goal is to get to carbon neutrality, there's going to be increasing demand from customers like me, for power purchase agreements for thermal energy, for steam, for biomass-derived energy, in order to run the industrial plants that still have to get to a certain temperature.

PFR: I think one of the themes that we'll see next year is the aggregation of smaller PPAs bundled together. What will those consolidated PPA contracts actually look like?

Goudreau, Novartis: : We're still learning but one thing that did become very obvious at the beginning of the process, is having very frank discussions upfront about what the end goal was for each one of the companies in the aggregation, both internally and with partners.

Is the company doing it strictly from a carbon play? Are they doing it from a cost control perspective? Are they doing it from a reputational and branding perspective? Once you understand what those equities are for the stakeholders, what's the risk that they're willing to take? And what do they perceive as risk?

Quan, Goldman Sachs: Do all the terms have to be the same between all the parties?

Goudreau, Novartis: No, that depends on who your developer is, but the terms don't have to be the same.

Quan, Goldman Sachs: And the term lengths can be different?

Goudreau, Novartis: We haven't gotten to length issues, but if you take a look at a number of other components, there's an opportunity to tailor the deal to each company that's coming to the table. That's happened before in other wind deals. The 100 MW we have in Texas; we're an offtaker, **Merck**'s an offtaker, **Grupo Bimbo**'s an offtaker. We all had different deals, different terms. It was in the blind, nobody knew.

This is just removing that wall and figuring it out in one step, as opposed to three multiple ones. Obviously, when you get to the final contract negotiations, those are one-vs-one.

PFR: When you go out to procure, is it

more inbound interest from developers or more you putting out RFPs?

Quan, Goldman Sachs: Yes, I feel like we get solicited a lot in the Americas. Developers are calling, saying "we have this project, we need an offtaker, what's your interest?" Not in the other countries. In the other countries, we actually have to put a team together, get legal counsel, put out an RFP, go out to market and ask the market what they have available.

"What is the basic credit rating that we're dealing with here, and how do we price that."

Kelann Stirling, Kirkland & Ellis

Goudreau, Novartis: And we see that too in a lot of different markets. So, we'll go out to the market with an RFP and start to see what the responses are. And I do echo; buy more of it, be smart about it, drive the best deal for your company that you can. But for me, streamlining the process is a bit conflicting. Streamline it, but build that flexibility, that as a commercial industrial customer I can talk to a developer and that the discussion isn't, "I've only developed this this way with utilities, and that's all I'm going to offer you".

I'm not a utility, I'm here for a different reason, and I've got different ends in mind. And so, the developers in a lot of markets have not shifted to that more collaborative engagement approach. But it does have to be simple, you have to be able to get through the deal quickly.

PFR: Which developers have been the most nimble, the most flexible to work with in this space? Larger ones, smaller ones?

Goudreau, Novartis: A mixture. And the flexibility isn't necessarily based on the size, or their experience. You can be surprised sometimes. Look, commercial industrial customers are starting to get to the point that, if those developers and those partners aren't nimble enough, they'll walk away and we'll find another. We'll kill the RFP, we'll go back out into the market, and we'll just keep pushing it until we find the right partner for us.

PFR: To wrap up, I would like to go around everyone and ask you for 2019, what is one thing that is an opportunity, and one thing that's a challenge for the next year.

Fleishman, Kirkland & Ellis: I think the opportunity is to see how energy storage will be brought into the wholesale and retail markets.

In a variety of states, as the pace is quickening and the cost is going down with respect to certain battery technologies. And as the regulatory policies and mandates are evolving, I see electricity storage as a major opportunity in the next year.

PFR: I think we could have a whole panel just on storage and PPAs because they are so interesting and so complicated.

Quan, Goldman Sachs: But naturally, the concept works very well together. It's just... how do you get that executed? Whether it's solar or wind, it's the generation bundled with the storage component that's the opportunity. I do think that is going to be the next in line discussion. Everyone's trying it on step one, around the energy component and the generation component. I think the next large phase will be, how do we store it and use it when we want to use it?

PFR: How would you like that storage component to be structured in the contract?

Quan, Goldman Sachs: I think historically the conversation around storage has always been around how you reduce demand and reduce your demand charge? That drives your electricity bill, at the end of the day. So, when you can, essentially, deploy storage at the right time during the day, it becomes a financial discussion. But now, your source of generation is different. Now you are either generating wind or solar, and it can be on-site. And the thing with on-site that we were talking about before, is that you size the on-site to your design load. But your design load is not going to be your weekend load. The weekend load is going to be very different.

"Ten years ago, we would have never thought that developers would be profitable at these levels."

Brian Anast, Citi

So, you're going to be generating and either backfeeding to the grid, or what are you doing with it? How can you store that power on-site, and then deploy it strategically during the week in those peak times where you're getting those capacity charges? I think that's going to be the next conversation.

Fleishman, Kirkland & Ellis: One of the challenges with incorporating energy storage into these projects is the unique nature

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of energy storage, because it has multiple value or revenue streams. Electric energy, generation capacity, as well as a number of different types of ancillary services.

And the conversations we're having with people in the market are, some say, "I want simplicity—I don't want all of these value streams". However, if they're out there and they're potentially valuable, people are going to want to leverage them and finance these projects.

So, that will be one of the challenges I think, in incorporating solar-plus-storage, wind-plus-storage, and getting into the fine, important details of what these PPAs and related arrangements contractually will look like.

Stirling, Kirkland & Ellis: There's so much "dry powder" that you hear about in the market: Large, new infrastructure funds, green energy funds that the private equity groups have been fundraising for, etc... Is there a continuing or growing relationship between these funds that have ESG imperatives and becoming financiers of projects that are backed by corporate PPAs? They sometimes can take greater risk or thornier deals than a commercial bank could. We've seen and keep hearing about increasing use of funds for direct lending and credit components as opposed to just equity.

PFR: And I want to know what keeps you up at night, for next year?

Stirling, Kirkland & Ellis: Just generally, what's going to happen with the debt markets, and how it's going to impact financing of projects? We ask our clients this question all the time. You get a lot of different answers. I think people generally feel like there's such a high demand in the infrastructure space (and low number of contracted projects), that it may not be impacted. We are not seeing signs of a slow down.

PFR: Jim?

Goudreau, Novartis: Storage, storage, and more storage. We're already putting into our RFPs and into our pulses into the market, the pricing of what a storage component would be. What I would say, from a concern or risk standpoint is making sure that all of these investments in generation and transmission capacity are climate resilient, and that we're not building in a flood zone. That as we take a look at the existing infrastructure today, how are we incorporating projections for sea-level rise, heat events and other factors from climate change that will impact where those are located, and what conditions they're subjected to?

As we move forward to meet rapidly increasing demand in the market, we collectively need to do it in a way that's going to be survivable from an infrastructure perspective.

PFR: So, if I've signed a PPA with a solar farm in California that's near the fire zones, that's going to be a concern.

Goudreau, Novartis: Or, did you build a new wind farm with transmission capacity, that 15 years from now, is going to be inundated multiple times monthly? What happens with these other factors? Because, we traditionally plan based on historical precedent. And we have to shift to planning facing forward. That's where storage comes in.

Anast, Citi: I hate to discount or go short human innovation so while right now things don't look so great and it looks like no matter what we do, we're not going to cap global temperature rise by 2%, at the same time, a lot of companies are doing really cool, innovative things.

We have seen some E&P companies invest in carbon engineering firms. In one, in particular, they're taking the gas from the wells they drill, converting it into power through a co-gen, and then capturing that CO2 and injecting it back into the ground for secondary recovery.

And, I think ten years from now, things are going to look a lot different. I hope we look back and say, wow, we don't even really need to sign any renewable PPAs anymore. We can burn all the fossil fuels we want, because we can just capture all the carbon. But who knows what it's going to look like.

PFR: And what is the challenge that you see next year for corporate buyers?

Anast, Citi: So, particularly in the market, I think something that is both a growth opportunity and a challenge is price... and price. Prices look great. If you look at a wind PPA in SPP or maybe even ERCOT, you'll see it in the high teens, which is a really low price. If you looked back ten years from now, we would have never expected people would be signing contracts at these levels. So that's great for corporate buyers. But for sellers, it's challenging. Ten years ago, we would have never thought that developers could be profitable at these levels. But once again, human innovation has made it so that technology improves and everybody takes a smaller piece. And we can sell at these levels and still actually get projects financed.

