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Accounting and Reporting Considerations for Renewable Energy Projects — Virtual Power Purchase Agreements

Background

We are pleased to present the first installment in our *Renewables Spotlight* series, which focuses on emerging accounting and reporting topics that apply to the renewables industry.

In recent years, federal and state policies designed to combat climate change have resulted in the rapid development and deployment of new and improved clean-energy technologies, including solar, wind, and battery storage, among others. Many cities, states, utilities, and corporations have also set ambitious clean-energy goals, such as increasing renewable portfolio standards and enacting energy storage procurement mandates, as they address climate change and strive to meet environmental, social, and governance (ESG) objectives. This has resulted in the unprecedented growth of, and demand for, cleaner energy sources. As the industry evolves, new accounting and reporting issues specific to renewable entities and projects have emerged that are affecting the businesses of such entities as well as investors in renewable projects.

The discussion below examines the accounting for virtual power purchase agreements (VPPAs). Such agreements may be top of mind for renewable stakeholders given that their use is trending as a means of meeting corporate green energy requirements.

What Is a VPPA?

Power purchase agreements (PPAs) are commonplace in the utilities industry and are a means through which entities can secure the future output of a power-generating facility for a contracted long-term period at a predetermined price. These agreements can be either for traditional power generation that results in greenhouse gas emissions or for renewable energy. Under a traditional PPA, the buyer takes ownership of the power produced by the power-generating facility and either uses the power for its own operations or sells the power in a secondary market.

In recent years, VPPAs have emerged as a flexible tool through which a buyer can support the renewable energy market, offset its electricity use from traditional sources, and meet its stakeholders' clean-energy goals without drastically altering its current power structure.

Owners of renewable energy sources may be entitled to receive renewable energy certificates (RECs). The number of RECs awarded is typically linked to a power production formula. In a VPPA, the buyer does not take physical delivery of the power produced by the renewable energy source; instead, the power component of the transaction is financially settled while the buyer receives all, or a predetermined amount, of the generated RECs for each year of the contract term for an agreed-upon price. The buyer can use the RECs to meet a renewable portfolio standard requirement or, when the RECs are retired, to offset carbon emissions, thus contributing to the buyer's environmental sustainability objectives.

Basic History

Before we discuss the specifics of evaluating the accounting for VPPAs, it is important to emphasize some basic considerations related to electricity sales through physical PPAs.

Electricity is often sold in conjunction with other energy-related products and services, including capacity (i.e., a charge to secure a supply of energy for a specific period), various ancillary services such as voltage control, and RECs. Producers of power regularly enter into transactions with customers in which items such as energy, RECs, and capacity are bundled together in a single contract, often with one transaction price. In such cases, both parties should first determine whether scope considerations need to be addressed, such as whether the arrangement results in consolidation of the entity producing the power, contains a lease within the scope of ASC 842¹ (or ASC 840), or contains a derivative within the scope of ASC 815.

The revenue standard (ASC 606) explicitly states that if other Codification topics address how to separate and account for the various products and services in a contract with a customer, an entity should look to those topics first. A producer of power should carefully consider its contracts with customers for multiple products and services and assess whether it should (1) apply the guidance in Codification topics other than ASC 606 to account for such products or services that must be separated or (2) apply the guidance in ASC 606 on distinct performance obligations when separating multiple products and services in contracts with customers.

Under ASC 606, a performance obligation is a promise to transfer either of the following to a customer: (1) a "good or service (or a bundle of goods or services) that is distinct" or (2) a "series of distinct goods or services that are substantially the same and that have the same pattern of transfer to the customer." Further, a series of distinct goods or services has the same pattern of transfer if both of the following criteria are met: (1) each distinct good or service in the series meets the criteria for recognition over time and (2) the same measure of progress is used to depict performance in the contract. Therefore, a simple forward sale of electricity for which delivery of the same product is required over time and is immediately

¹ For titles of FASB Accounting Standards Codification (ASC) references, see Deloitte's "[Titles of Topics and Subtopics in the FASB Accounting Standards Codification.](#)"

consumed by the customer would generally be treated as a single performance obligation that is satisfied over the contract term.

An entity that sells, for example, RECs or capacity together with the related electricity may need to assess whether the promise to deliver the RECs represents a performance obligation that is “distinct” from the promise to deliver electricity. Under ASC 606, a performance obligation is distinct if it meets both of the following criteria in ASC 606-10-25-19: (1) the good or service in the performance obligation is capable of being distinct (i.e., the customer can benefit from the good or service on its own or with readily available resources) and (2) the good or service is distinct in the context of the contract (i.e., it is separately identifiable from other goods or services in the contract). If an entity concludes that the promise to deliver the RECs as part of a bundled arrangement, for example, meets both criteria, that promise will be considered a distinct performance obligation. Therefore, the transaction consideration will be proportionally allocated to each performance obligation (e.g., to the electricity and RECs).



Connecting the Dots

We generally believe that under ASC 606, a single sales arrangement that contains terms specific for capacity (e.g., the capability to deliver a stated amount of power for a unit or units in a contract) that are separate from terms for the sale of electricity (e.g., the actual power produced) would have two separate components with distinct performance obligations (i.e., one for the sale of capacity and one for the sale of electricity).

RECs are frequently linked to the output of renewable energy facilities (e.g., one megawatt hour [MWh] of renewable energy generated equates to one REC). However, there is typically a certification process related to the RECs that lags behind the delivery of the associated electricity. Some entities have historically concluded that, although the transfer of the title to RECs may lag behind the selling of the energy, certification is perfunctory after generation of the energy is complete, and the patterns of revenue recognition for RECs should therefore match those for the energy.

The timing of revenue recognition for RECs has been addressed by the AICPA's Power & Utility Entities Revenue Recognition Task Force (the “Task Force”). Under ASC 606, a seller of RECs should consider whether the delivery of RECs is (1) a single performance obligation satisfied over time or (2) multiple performance obligations that are each satisfied at a point in time. The Task Force has reached a consensus that (1) the delivery of RECs reflects multiple performance obligations that are each satisfied at a point in time and (2) control of the RECs is transferred to the customer at the same time as delivery of the electricity — regardless of whether there is any sort of certification lag. At the time the electricity is delivered, no further transfer of control by the seller is required. That is, revenue for RECs should be recognized upon delivery of the electricity to the customer.

Determining the Accounting for VPPAs

When assessing the accounting for a VPPA, a buyer should perform certain evaluations before others. First, it should determine whether it holds a variable interest in a variable interest entity (VIE) that must be consolidated under ASC 810. Next, if consolidation is not required, it should evaluate whether the contract is a lease under ASC 842. Finally, if the contract is not a lease, it should assess the contract for derivative criteria under ASC 815.

ASC 810 and VIE Considerations (PPA vs. VPPA)

Oftentimes, a renewable asset is owned at a project-entity level and the PPA or VPPA is with the project entity. In many typical tax equity structures, the project entity could be a VIE, in which case a buyer would need to evaluate whether it has a variable interest in the VIE through the PPA or VPPA.

Two views have evolved in practice with respect to a traditional fixed-price PPA. These may be relevant to a buyer's conclusion regarding variable interests in a renewable project as well as to its considerations related to a VPPA.

Under one view, buyers have concluded that fixed-price PPAs for renewable energy contracts do not represent variable interests under the *cash flow approach* (see [Section C.4](#) of Deloitte's Roadmap *Consolidation — Identifying a Controlling Financial Interest*). That is, fixed-price PPAs do not absorb the variability in production costs such as operations and maintenance (O&M) costs or the credit risk of the purchaser. Rather, this variability is absorbed by the equity and debt investors.

Under the other view, buyers have concluded that these contracts *do* represent variable interests in accordance with the *fair value approach* (see [Section C.4](#) of Deloitte's Roadmap *Consolidation — Identifying a Controlling Financial Interest*). This conclusion is based on the fact that renewable energy resources have significantly lower variable production costs than traditional fossil-fuel generating units (i.e., they have a lower variable O&M cost profile and no fuel costs). Accordingly, by analogy to the guidance in ASC 810-10-55-28, the fixed-price-per-unit contract would absorb variability related to the underlying assets of the entity (e.g., the windmill or solar panels) if there are changes in commodity prices.

Notwithstanding these views, if a buyer concludes that a project entity is a VIE and the buyer holds a variable interest in the arrangement, the buyer must consider whether it (1) is the primary beneficiary and (2) has both the power to direct the most significant activities of the VIE and the obligation to absorb losses or rights to receive benefits that are significant to the VIE. Typically, the buyer will conclude that it does not have the power to direct the most significant activities since it makes no decisions related to the project entity's operation, repair and maintenance, personnel, power production, or marketing. The buyer therefore typically concludes that no consolidation is required under a VPPA.

ASC 842 and Lease Considerations (Other Than Those Under ASC 840 or EITF 01-8)

Under either a PPA or VPPA, the buyer needs to determine whether the contract conveys to the customer the right to control the use of identified property, plant, or equipment (i.e., an identified asset) for a specific period in exchange for consideration and therefore may be a lease. The identified asset may be explicitly or implicitly specified or may be a physically distinct part of a larger asset. Further, a contract that is a lease cannot include a substantive right of substitution. The customer must also have the right to do both of the following: (1) obtain substantially all of the economic benefits from use of the identified asset and (2) direct the use of the identified asset (i.e., determine how and for what purpose the generating asset is used).

When evaluating whether the customer has the right to direct the use of the identified asset, a buyer would first look at dispatch rights. Because the generating assets in a solar- or wind-sourced PPA or in a VPPA are primarily weather-dependent, there are typically no dispatch rights. In the absence of dispatch decisions, the lease analysis also needs to take into account whether the buyer has key decision-making rights related to determining how and for what purpose the asset is used.

One key decision-making right is related to the buyer's participation in the design of the generating asset before its construction. Participation rights may be an indicator of control since how and for what purpose the generating asset is used may be predetermined as a result of those rights. A second key decision-making right is the ability to make O&M decisions about the generating asset throughout the period of use. These decisions are often among the only ones available to be made during the period of use that affect the economic benefits to be derived from the asset. Note that any requirements that the owner or operator must follow prudent utility operating practices in running the generating asset do not affect which party has the right to direct the asset's use.

In the evaluation of rights to control the asset, a distinction between VPPAs and PPAs is that VPPAs will not result in the buyer's receipt of the majority of the economic benefits from the generating asset, even if the buyer participated in its design. By contrast, a buyer could receive substantially all the economic benefits in a PPA.

Accordingly, we would not expect a buyer to conclude under ASC 842 that a VPPA gives it rights that would convey control of the specified asset; thus, these arrangements typically do not lead to a conclusion that they are a lease.

Derivative Accounting Considerations Under ASC 815

Another important step in the evaluation of the accounting for a VPPA is the analysis of the contract as a derivative under ASC 815. This analysis should begin with an assessment of whether the VPPA includes multiple units of account or a single unit.

VPPAs are periodically settled net in cash on the basis of the difference between the fixed price that was agreed to upon contract inception and a current market price of electricity on each periodic settlement date. There is no physical delivery of electricity.

When the owner of a renewable generating asset produces power from its facilities, it receives a REC for each MWh generated. RECs are market-based instruments that certify that the bearer owns an instrument that represents one MWh of electricity generated from the renewable energy facility. They can be sold to others separately from the MWhs that are produced and sold (e.g., sold to other entities as a carbon credit to offset their emissions). Often, the RECs produced by a facility are included in a physical PPA or VPPA and thus contractually must be physically transferred to the agreement's counterparty. The REC delivery obligation is typically indexed to the volume of electricity in the physical PPA or VPPA; it is not for a fixed number of RECs. The generator/seller is compensated for the RECs delivered through an increase to the fixed price it receives for each MWh generated under the physical PPA or VPPA; that is, a portion of the fixed price economically represents compensation for the RECs delivered.

One or Two Performance Obligations

It is important to determine whether (1) there are separate performance obligations in the bundled VPPA arrangement (e.g., one related to the VPPA pricing/settlement feature described above and one related to the REC) or (2) there is a single performance obligation (e.g., delivery of the REC). As noted above, a performance obligation is distinct if it is capable of being distinct (i.e., the customer can benefit from the good or service on its own or with readily available resources) and the good or service is distinct in the context of the contract (i.e., it is separately identifiable from other goods or services in the contract).



Connecting the Dots

We believe that for a VPPA, the predominant view is that the contract consists of one performance obligation. In other words, the only distinct good is the REC because no physical power is exchanged in the arrangement. Since there is no performance obligation related to electricity, the VPPA pricing feature would not represent a separate performance obligation.

There could be circumstances in which, because of its contractual terms, the VPPA's pricing feature could be a derivative (e.g., an electricity swap) even if the obligation to deliver RECs is not accounted for as a derivative. In this scenario, there are two units of account under ASC 815-15 to consider: the REC host and the electricity swap, which will each result in accounting entries even though there is only one performance obligation (the RECs) in the arrangement. See the [Day 2 Accounting](#) discussion for additional considerations related to accounting for a VPPA that meets the definition of a derivative.

Net Settlement and Readily Convertible to Cash

In the accounting analysis, the arrangement would be analyzed as though it consists of a nonfinancial host contract (i.e., the obligation to deliver the RECs) with an embedded financial feature (the "VPPA pricing feature") that should be evaluated under ASC 815 (ASC 815-15-25-1). Initially, the buyer would assess whether the entire contract meets the definition of a derivative.

Under ASC 815, one criterion for an arrangement to be a derivative is that it permits net settlement. A contract can be settled net if any of the following apply:

- Its terms implicitly or explicitly require or permit net settlement.
- It can be readily settled by means outside the contract.
- It provides for delivery of an asset that puts the recipient in a position not substantially different from net settlement.

It is important to consider whether a contract as a whole meets the net settlement characteristic of a derivative. In other words, a buyer must determine whether, on the basis of the contract terms, the REC can be readily settled by means outside the contract. When performing this evaluation, the buyer must use judgment to determine how much the market can rapidly absorb and the availability of quoted prices for RECs in an active market. This is a contract-specific analysis that is likely to differ on the basis of the markets in which the RECs are produced, the quantity of RECs in the arrangement, and the availability of market and pricing information.

Accordingly, in the absence of explicit terms for net settlement or the delivery of an asset, the buyer would evaluate whether RECs can be readily settled outside the contract. In other words, the buyer would determine whether there is a market for the RECs that would allow it to conclude that they are readily convertible to cash.

For example, net settlement is typically achieved with respect to physical power because there are liquid markets in which the commodity sold in the contract can be immediately monetized. Assets that are readily convertible to cash are interchangeable, and there are quoted prices for these assets in an active market that can rapidly absorb the quantity held by the buyer without significantly affecting the price. Thus, the evaluation of whether a contract for RECs is readily convertible to cash would be specific to the market and the number of RECs to be transacted under the contract.

Buyers may reach different conclusions depending on factors such as contract size and market and because some RECs may not have available market pricing data. However, certain RECs can currently be traded on exchanges or through other brokered transactions, and active markets continue to emerge in which quoted pricing and the number of RECs traded on them could result in a conclusion that the RECs are readily convertible to cash.

Notional Considerations

With respect to the derivative evaluation of the contract as a whole and of the embedded VPPA, another key determination is whether a notional amount exists. In cases in which a notional amount for quantities is determinable (and the other characteristics of a derivative have been met), derivative accounting may be triggered. Buyers should carefully review the contract terms and consider whether potential minimum guarantees could result in a notional amount. For example, contract terms may guarantee or require the delivery of a minimum number of RECs. If such RECs are not delivered during the period specified and a penalty payment to the buyer is incurred to make the buyer whole and replace the deficient quantity of RECs, a notional amount equivalent to the minimum number of RECs defined would typically result. By contrast, arrangements that are unit-contingent and for which there are no minimum guarantees or penalties for nonperformance typically will not result in a notional amount.

Normal Purchases and Normal Sales

Further, under ASC 815-15, if the entire contract meets the definition of a derivative but qualifies for a normal purchases and normal sales (NPNS) exemption, it would be exempt from analysis as an embedded derivative. For a REC to qualify for an NPNS exemption, its market pricing and the VPPA pricing feature must be clearly and closely related. We do not believe that the pricing of a REC in the market is clearly and closely related to the VPPA pricing feature; thus, we do not believe that the NPNS exemption would apply.

Clearly and Closely Related

If the contract does not meet the definition of a derivative in its entirety, the buyer would also evaluate whether the VPPA pricing feature is closely related to the host contract or must be accounted for separately as a derivative under the embedded derivative requirements in ASC 815. Because the VPPA pricing feature (apart from the obligation to deliver RECs) economically represents a net-cash-settled forward swap on electricity prices, its economic characteristics and risk (which are based on electricity prices) would not be considered closely related to the economic characteristics and risks of the nonfinancial host contract (which are based on the price of RECs). Therefore, if the VPPA pricing feature is (1) net cash settled **and** meets the other definitional requirements of a derivative under ASC 815 and (2) is not clearly and closely related to the REC host, and the REC host is a nonfinancial contract and thus is not measured at fair value, the VPPA would be accounted for as a derivative separately from its host contract. In this case, the VPPA would be evaluated as a nonfinancial host contract with an embedded derivative feature.

In summary, proponents of applying the single-performance-obligation approach (when there is no derivative) believe that the accounting evaluation is based on the following key elements:

- The VPPA is a single bundled contract that substantively differs from a physical PPA. In a VPPA, the only output delivered to the buyer is a REC, and the forward fixed-for-floating swap is a pricing mechanism that is part of the overall compensation for the REC. No other identifiable goods or services other than the REC are being delivered under the VPPA.
- Although individual RECs become “detached” from the VPPA as they are being delivered to the VPPA counterparty, the obligation to deliver RECs over the remaining term of the VPPA is not contractually detachable from the VPPA.
- Under U.S. GAAP, VPPA contracts often do not meet the definition of a derivative either because they do not have a notional value or because RECs are not net settleable. As a result, there is only one performance obligation to account for.

If there are two units of account (e.g., a REC and a derivative), a buyer would be required to bifurcate the value between the REC and the VPPA.

Day 2 Accounting

From the buyer’s perspective, after completing the initial accounting assessment, there are several incremental accounting decisions to make. A buyer that has concluded that there is not a derivative (either the REC or the VPPA pricing feature, or the combined contract) needs to determine how to account for the REC once received. We believe that the buyer would typically conclude that the REC is an asset (rather than a government incentive). Further, the buyer would need to evaluate its existing accounting policy related to whether the REC is inventory or an intangible asset. Depending on the facts and circumstances, both approaches have traditionally been supported in practice.

We expect that in allocating costs to the REC, the buyer would recognize such costs on the basis of the cash paid for the REC in a manner consistent with a single-unit-of-account conclusion. A buyer that concludes that a derivative exists would use a different approach to

determine the cost allocated to the REC relative to the value of the derivative. If a derivative is bifurcated, the buyer would split the fixed leg of the VPPA into compensation for electricity and residual compensation for RECs on the basis of frozen inputs at contract inception. Note that the example below does not reflect the existence of a derivative.

Example

Assume the following:

Fixed price under the VPPA	\$170 per MWh
Market price of 1 MWh power at inception	\$120 per MWh
Derivative conclusion	No

If the market price of electricity at the end of the first reporting period has increased by \$10 to \$130 MWh, the swap would result in a net cash payment made by the buyer to the generator. In this simplified example, the buyer owes a net \$40 under the VPPA pricing feature (\$170 – \$130) because it will pay the fixed leg of the swap to the generator and will receive the market price under the contract pricing terms. The buyer will also receive one REC, and its accounting entries would be as follows:

REC (inventory or intangible)	\$40	
Cash		(\$40)

If the price of electricity increases in the second reporting period by \$50 to \$180 MWh, the swap results in a net cash payment received by the buyer from the generator. Accordingly, the buyer receives \$10 under the VPPA pricing feature (\$180 – \$170). In this period, the buyer still receives one REC. However, the accounting treatment under this scenario warrants further evaluation that takes into consideration the VPPA's overall pricing, estimated future payments over the VPPA's life, any related contracts with the generator/seller, and other factors. In these circumstances, the buyer will also need to consider the guidance in ASC 705-20.

The generator in a VPPA is contractually obligated to deliver RECs (the only performance obligation) to the buyer and should apply ASC 606 in evaluating the appropriate period for revenue recognition. As discussed above, the delivery of RECs reflects multiple performance obligations that are each satisfied at a point in time. In applying ASC 606, generators should consider the guidance on variable consideration related to their specific facts and circumstances.

Note that as VPPAs continue to rise in popularity and evolve, entities are encouraged to consult with their advisers regarding the appropriate accounting treatment, particularly for transactions in which the buyer receives RECs **and** cash or in which the seller provides RECs **and** cash.

Impairment and Use of the REC

Buyers must also determine when to expense the REC asset (i.e., they must determine when it has been used). In many cases, the buyer under a VPPA is planning to retire the REC as part of its ESG strategy and reporting. Certification agencies, which track and retire RECs, provide evidence of when RECs are generated and when they are used. We believe that a buyer should record the expense when the RECs are retired.

Since there are markets and exchanges for buying and selling RECs, we believe that a buyer's intent to retire a REC would not provide sufficient evidence of its extinguishment and that the buyer should track and record the expense in the period in which the REC is retired or separately disposed of.

Depending on policy and whether the buyer of the REC applies an inventory or intangible approach, different accounting models to assess impairment would be required. Specifically,

for an intangible asset, an impairment loss would be recognized if the carrying value exceeds fair value. A two-step test is performed under which the asset is initially assessed for recoverability by comparing its (1) carrying value with (2) the sum of undiscounted cash flows from its use and eventual disposition. The amount of loss recognized is then based on the discounted cash flows that would be used to measure the intangible asset's fair value. By contrast, inventory is carried at its lower of cost or market value on the basis of the asset's net realizable value, which is its estimated selling price less reasonably predictable costs to complete, dispose of, and transport.

Finally, if an intangible approach is applied, another accounting question may arise related to whether the asset amortizes over time. While RECs have a finite life, we believe that amortizing them is not required because they do not deteriorate or change over time (i.e., one REC will always equal one MWh of renewable power until the REC expires).

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