

THE LAW OF WIND
—Power Purchase Agreements and Environmental Attributes—

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I. The Basics.

A. The Parties.

1. **The Seller.** The seller is often the developer and owner of a wind plant that will generate energy and environmental attributes (“output”). But the seller may also be a power marketer that is buying the output of a plant and selling it to one or more purchasers. If a company is reselling output, the resale power purchase agreement (“PPA”) will usually track the relevant terms of the underlying PPA because the marketer will not want to promise more than it has the right to deliver. As a result, the marketer will often use a “back-to-back” PPA for the resale. The resulting terms will be almost the same as those in the underlying project PPA, except for price or other unique items that the marketer does not wish to pass through to the ultimate buyer.

2. **The Buyer.** The buyer is often a utility that purchases the wind project’s output to serve its load. The utility may also be motivated by a “renewable-portfolio standard” or other regulatory policy that encourages the development of wind power and other forms of renewable energy. In a state that permits direct access, the buyer may be a retail purchaser, such as a manufacturing facility that wishes to hold itself out as a green company. Power marketers may also buy output for resale to one or more third parties. Power marketers sometimes can purchase all of a project’s output (something that no other single market player may be able to do), enabling the owner to finance the plant.

3. **Credit Support Provider.** The PPA will require the buyer to buy the output that the seller delivers. It may also require the seller to pay the buyer if the project is not built on schedule or fails to achieve certain performance standards. Each party will be concerned about the other’s ability to satisfy these payment obligations. If one party is not creditworthy, the other may require it to provide a guaranty or post a letter of credit or other security to ensure that amounts due under the PPA will be paid.

B. Regulatory Concerns.

1. **Exempt Wholesale Generator and Market-Based Rates.** Unless the wind plant is a “qualifying facility” (“QF”) or is owned directly by a utility to serve its customers, the project owner will want to self-certify to the Federal Energy Regulatory Commission (“FERC”), or petition the FERC for a determination, that the owner qualifies as an exempt wholesale generator (“EWG”) under the Energy Policy Act of 2005. The seller will also need to obtain authorization from FERC under section 205 of the Federal Power Act to enable the seller to charge market-based rates, even if all sales are made under a single contract. (For more information on this and other energy regulatory issues, see [Chapter 12](#), “Regulatory and Transmission-Related Issues”).

2. **Qualifying Facility.** If the wind plant is a QF under the Public Utility Regulatory Policies Act of 1978 (“PURPA”), the wind energy that it generates can be sold at wholesale rates. Under PURPA, the local utility (unless exempted under the provisions of the Energy Policy Act of 2005) must buy the output of a QF at a price not less than the utility’s avoided cost.

To be a QF, a wind plant must be either:

- an “eligible wind facility,” in which case its application for QF status or self-certification of QF status must have been filed with FERC not later than December 31, 1994 and

construction must have commenced not later than December 31, 1999 (or reasonable diligence was exercised to complete the project); or

- a wind facility that has a power production capacity that, together with the production capacity of any other wind facilities located at the same site and under common ownership, is not greater than 80 MW.

3. **Retail Sales.** With certain exceptions, power sold to an end user (*e.g.*, to a residential customer or an industrial user) is a retail sale that may make the seller subject to regulation as a public utility under state law. Because such regulation is costly, plant owners usually avoid retail sales of wind energy. In states that have implemented deregulation, it may be possible to sell power at retail rates to certain end users. In addition, at least one state (Oregon) exempts from state regulation retail sales from wind and other renewable resources. The law of the state in which the end user is located must be checked to see if any retail sales are permitted and, if so, under what circumstances.

II. The Term.

A. **Project Financing.** If the wind plant is financed with limited recourse financing, the term of the PPA should be sufficient to amortize the project debt. Capital costs per megawatt hour (“MWh”) of energy produced are relatively high for wind plants because they produce only when the wind is blowing. Thus a wind farm with an installed capacity of 100 MW and a 33 percent capacity factor will, on average, produce only 33 average MW (“aMW”) of electricity. To produce the revenues needed to amortize the project debt, the term of the PPA must usually be in the range of at least 20 years.

If the term of the PPA is 20 years, lenders will generally be willing to amortize the debt over a 15- to 17-year period. In project financings, the debt amortization period generally needs to be shorter than the PPA term, to allow “work-out time” in case the project encounters financial difficulties in later years. Generally, only the base term of the PPA is taken into account, because the lender has no assurance that the purchaser will elect to continue the PPA into a renewal term.

B. **Useful Life.** Wind plants generally have an economic life of at least 25 to 30 years. Because the purchaser under a PPA effectively pays for the entire capital cost of the project (plus a profit to the owner), the purchaser normally will want the PPA to capture the entire value of the project by covering the entire economic life of the facilities. Therefore it is common to see PPA terms that are either a 20-year base term with two five-year renewal options, or a 25-year base term with one five-year renewal option. Because the entire capital cost of the wind farm will generally be amortized over the base term of the PPA, it is possible to eliminate the cost elements that relate to the project debt from the power price during the renewal terms, making it less than the power price during the base term. The project owner thus preserves its return on the project but does not get a windfall return during the renewal terms.

C. **Effective Date.** The PPA will be binding on the date it is signed (often called “effective date”). This ensures that the purchaser will buy the output once the project is built and that the project owner will build the project and not sell its output to anyone other than the purchaser.

D. **Commercial Operation Date.** The term of the PPA usually begins on the effective date, but the length of the term is often defined by reference to a “commercial operation date.” For example, the term might end on the 25th anniversary of the January 1 following the commercial operation date. Thus if the term was 25 years and commercial operation began on November 1, 2001, the term would end on January 1,

2027. In other PPAs, the term begins on the commercial operation date and extends for a specified number of years.

Because the commercial operation date often sets the term (and sometimes the point at which the price switches from a “test energy rate” to a “contract rate”), it is important to define “commercial operation date” carefully. “Commercial operation date” can be defined as the date on which all of the turbines in the project and all other portions of the project necessary to put it into operation with the interconnection facilities and the transmission system have been tested and commissioned and are both authorized and able to operate and deliver energy to the transmission system in accordance with prudent utility practices.

In some cases, “commercial operation date” is defined in a manner that allows the project owner to achieve commercial operation even if it has installed fewer than all of the turbines called for by the PPA. For example, the PPA may call for an installed capacity of 50 MW, but the commercial operation date may occur when 48 MW of capacity have achieved commercial operation (*i.e.*, when the project has been “substantially completed”). Such PPAs typically require the seller to continue building the project until all of the project’s installed capacity has achieved commercial operation. If the seller achieves commercial operation for substantial project completion but thereafter fails to complete the project, it may be liable to the buyer for liquidated damages.

E. Termination Before the Commercial Operation Date. PPAs usually include “off-ramp” provisions that enable one or both of the parties to terminate the PPA if certain events occur or fail to occur. Common reasons for early termination include the (1) failure of a public utility commission to approve a PPA; (2) inability to obtain an interconnection agreement or needed transmission rights; (3) inability to obtain wind leases, rights-of-way, or other land rights required to build the project; (4) inability to obtain permits required to build or operate the project; (5) inability to obtain an authorization to sell power at market-based rates; (6) the project’s failure to reach a certain minimum size by a certain date; and (7) the project’s failure to achieve commercial operation by a certain date. Termination rights require careful negotiation to make sure that all possibilities have been considered. A party is usually required to use diligent or reasonable efforts to satisfy the conditions set forth in the PPA before it can invoke the failure to satisfy such a condition as a reason to terminate the PPA (*e.g.*, the seller could not assert the inability to obtain a permit as a basis for terminating the PPA unless the seller had used diligent efforts to obtain the permit).

III. Purchase and Sale.

A. Delivery Point. The PPA will require the sale of energy to occur at a specified delivery point. If the energy is to be delivered at the plant in a “busbar” sale, the delivery point will usually be the high side of the transformer at the project’s substation. In a busbar transaction, the buyer provides the transmission required to transmit the energy from the plant to the point where the buyer intends to use it (or to deliver it to another party in a resale transaction). The PPA may also require the seller to deliver energy to a specific point some distance from the plant, in which case the seller will be responsible for securing the required transmission to the delivery point, and the buyer will be responsible for obtaining the transmission required to take the energy at the delivery point. Transmission ancillary services can be fairly costly and should be specifically allocated in the agreement. Title and risk of loss pass from seller to buyer at the delivery point.

B. Pricing.

1. Contract Rate. Price is usually the most important part of the PPA. The price may be flat, escalate over time, or contain other features. An escalating price is often tied to a “contract year” that

begins at a specified point after the commercial operation date is achieved, thus encouraging the seller to lock in the initial price and the escalation rate by achieving commercial operation as soon as possible.

2. **Test Energy Rate.** Because a wind turbine can generally function independently of other wind turbines, the PPA may require the purchaser to buy power from the turbines as they are installed, connected to the transmission grid, and made operational, even though the project as a whole has not achieved its commercial operation date. To encourage the seller to achieve commercial operation as soon as possible, such energy is often sold at a test energy rate, which is lower than the contract rate that will be paid once the commercial operation date is reached.

3. **Excess Rate.** A PPA often requires the seller to specify how many MWhs the plant is expected to produce each year. This output estimate may form the basis of an output guarantee or a mechanical-availability guarantee. To encourage the seller to make an accurate estimate of expected output, the seller may be paid less than the contract rate for each MWh of energy in excess of, for example, 110 percent of the estimated annual output.

C. **Environmental Attributes.** Environmental attributes are the credits, benefits, emissions reductions, environmental air-quality credits and emissions-reduction credits, offsets, and allowances resulting from the avoidance of the emission of a gas, chemical, or other substance attributable to the wind project during the term of the PPA, together with the right to report those credits. Environmental attributes are sometimes called “green tags,” “green tag reporting rights,” or “renewable-energy credits.” The PPA should make it clear that production tax credits and wind energy incentives (such as those that may be provided under a state program) are not part of the environmental attributes and thus are not being conveyed to the purchaser.

The PPA should clearly state whether energy is being sold with or without the environmental attributes. Failure to do so can (and has) led to disputes about whether the generator or the offtaker is entitled to the ownership and use of the environmental attributes. If environmental attributes are being sold, the seller will usually warrant title to the attributes but will not warrant the current or future use or value of the attributes or whether and to what extent they will be recognized by law. In effect, the purchaser assumes the risk that the law or the market might change in a way that reduces the value of the environmental attributes.

D. **Allocation of Taxes and Other Charges.** The PPA should specify who pays any sales, excise, or other taxes arising from the transaction. Although most states do not tax wholesale energy sales, the parties may wish to consider allocating the tax liability that might result from future legislation.

IV. **Permitting and Development.**

A. **Commitment to Develop.** The PPA will make the project owner responsible for developing and constructing the project. The seller usually prefers a PPA that requires it to sell the project’s output only if the project is actually built. A buyer tends to view such a PPA as a put and will usually insist that the seller make some commitment to develop the project. Many tense negotiations revolve around what the seller will or will not be required to do to develop the project, as well as the off-ramps that each party has if the project does not achieve certain stated milestones.

B. **Status Reports.** The buyer is typically interested in the ongoing development of the project, because it needs to know when the energy will be delivered onto its system or when it will need to take a hedge position. As a result, the PPA usually requires the seller to deliver regular reports to the buyer about the status of permitting and construction.

C. **Milestones and Delay Damages.** The PPA often includes a schedule of certain project milestones (*e.g.*, the date by which the seller must secure project financing, the date by which turbines must be ordered, the date by which all permits and the interconnection agreement must be in place, and the commercial operation date). If the seller fails to achieve a milestone, the buyer may have a right to terminate the PPA, collect delay damages, or require the seller to post additional credit support. The seller will therefore want to limit the number of milestones and bargain for some flexibility, especially in cases when a delay in achieving an interim milestone is not likely to delay a project's completion date. Sellers sometimes prefer PPAs that provide that the buyer's only remedy if the seller fails to meet a project milestone is to terminate the PPA without recovering damages. Buyers are concerned that this gives the seller a right that resembles a put and strongly prefer to require the seller to suffer some consequences if project milestones are missed. Many interesting negotiations revolve around the off-ramps that the seller will have, versus the damages it will pay to the buyer if it fails to build the project in accordance with the PPA. A common middle ground is for the seller to agree to pay delay damages up to an agreed-on cap, which defines the limits of the seller's exposure if the project is not built, but gives the seller an incentive to use diligent efforts to finish the project on time.

V. **Interconnection and Transmission.**

A. **In General.** The PPA usually requires the seller to bear the cost of interconnection (including any network upgrades required by the new project) and all costs of transmitting the energy to the delivery point. If the seller is the project owner (as opposed to a marketer), it will also be responsible for negotiating the interconnection agreement with the transmission provider. The buyer will be responsible for arranging and paying for transmission from the delivery point. (For more information on interconnection and transmission-related issues, see [Chapter 12](#), ("Regulatory and Transmission-Related Issues").

B. **Shaping.** Transmission is often very expensive for wind projects because the intermittent nature of the resource can produce generation imbalance penalties and the party responsible for transmission has to pay for the maximum transmission capacity that the project can produce, even though the project will deliver that much energy only part of the time. To reduce these costs, a project owner may enter into an integration and exchange agreement (often called a "shaping agreement") with a utility that has a load that can be served by the project.

In general, a shaping agreement allows a project to deliver energy into the utility's system as the energy is generated. The intermittent energy serves the utility's load. In the following week or month, the utility redelivers the energy that it has received as a flat product at an agreed-on point of delivery. Not surprisingly, the utility will charge a fee for this service. Shaping can also be accomplished through market transactions, but this typically requires the developer or the non-utility provider of the shaping services to have access to a sophisticated trading desk.

VI. **Performance Incentives.** A seller will usually prefer to enter into an "as-delivered" PPA, which means that the seller is obligated to deliver only what the project actually produces. A buyer will often require the seller to warrant or guarantee that the project will meet certain performance standards. Such guarantees usually enable the buyer to recover all or part of its incremental cost of purchasing replacement power in the market to the extent that the project fails to perform as expected. Performance guarantees enable the buyer to plan around the plant's expected output and strongly encourage the seller to maintain a reliable and productive project.

A. Output Guarantees. The PPA may include an output guarantee to the buyer. An output guarantee requires the seller to pay the buyer if the project's output over a specified period fails to meet a specified level. The period may be biannual, annual, or seasonal. The PPA usually allows the owner to operate the project for one or two years before the output test is applied, enabling the owner to fix any problems at the project. The owner should offer such a guarantee only if very confident about the project's wind regime, wind variability, and capacity factor.

Wind turbine manufacturers generally do not provide output warranties to project developers. Rather, the project owner assumes the risk that the wind at the project will produce enough energy to meet the project's revenue requirements.

B. Availability Guarantees. The owner of the wind project is usually more willing to offer the purchaser a mechanical-availability guarantee than to offer an output guarantee. Such an availability guarantee requires the wind turbines in the project to be available a certain percentage of the time, after excluding hours lost to force majeure and a certain amount of scheduled maintenance. Mechanical-availability percentages usually range from 90 percent to 95 percent, but they may decline over the life of the project to reflect wear and tear on the turbines.

Wind turbine manufacturers typically provide availability warranties that support the project owner's mechanical-availability guarantees for the first few years of the project. However, such warranties generally last only five years or less, and the seller is usually on its own if it chooses to give a mechanical-availability guarantee that covers the period after the manufacturer's warranty expires.

C. Power-Curve Warranties. Wind turbine manufacturers also may warrant the ability of the turbines to produce a specified output at specified wind speeds. The power curve represents a calculation of the amount of energy that the turbines are rated to produce at different wind speeds. Power-curve warranties are intended to compensate the project owner for lost revenues resulting from inefficient turbine operation, *i.e.*, the failure of turbines to operate within a certain percentage (typically 95 percent) of the power curve. Power curve warranties are not usually passed through to buyers under PPAs.

D. Liquidated Damages. If a guarantee is not met, the PPA usually provides a mechanism for determining the damages suffered by the buyer. First, the parties determine the output shortfall (stated in MWhs) relative to the amount of output that the buyer would have received had the project lived up to its guarantees. Second, the shortfall is multiplied by a price per MWh determined by reference to an agreed-on index. Because market indexes cover only power prices and do not include the value of environmental attributes, the PPA may include an adjustment to account for the assumed value of the environmental attributes or may use a firm price index as a proxy for the value of the energy plus the environmental attributes. The amount of liquidated damages is usually determined once per year. The seller pays the liquidated damages to the buyer or credits the damages against amounts owed by the buyer under the PPA. The seller may seek to cap liquidated damages on an annual or aggregate basis.

E. Termination Rights. To protect against chronic problems at an unreliable wind plant, the PPA may allow the buyer to terminate the PPA if the output or mechanical availability of the project is below a stated minimum for a certain number of years.

VII. Curtailment and Force Majeure.

A. Curtailment. The PPA often describes circumstances in which either party has a right to curtail output. For example, the seller may have a right to curtail deliveries if the plant is affected by an emergency condition. The PPA may permit the buyer to curtail for convenience, in which case the PPA usually requires the buyer to pay the purchase price for the curtailed generation and the after-tax value of the production tax credits that the seller would have earned had the buyer not curtailed the plant's output. Facility curtailments caused by transmission congestion or conditions beyond the point of delivery are often handled in the same manner, although the topic of curtailment is frequently a difficult issue in PPA negotiations.

B. Force Majeure. If energy is curtailed at a party's discretion or because the party is at fault, the PPA usually requires the curtailing party to pay damages to the other. If curtailment is caused by an event beyond a party's control, the party's duty to perform under the PPA may be excused. For example, if a disaster disables the transformer at the delivery point, the seller would be excused from delivering energy, and the buyer would be excused from taking and paying for energy, until the transformer is repaired. The party responsible for maintaining the transformer would, of course, be required to use diligent efforts to make repairs.

Parties often heavily negotiate force majeure provisions. Good provisions should carefully distinguish between events that constitute "excuses" (which relieve the affected party from its duty to perform) and those that are "risks" (which are simply allocated to a party). The ability to buy energy and environmental attributes at a lower price or sell them at a higher price is generally not a force majeure event. Moreover, a party's inability to pay should not constitute a force majeure event under the PPA. A well-drafted force majeure clause will usually list a number of items that both parties agree are force majeure events, as well as list items that the parties agree are *not* force majeure events.

VIII. Operation and Metering.

A. Operation and Maintenance. The PPA generally outlines the seller's responsibility to operate and maintain the project in accordance with prudent utility practices. Such duties typically include regular inspection and repair, as well as completion of scheduled maintenance. To make it clear that the parties do not intend to allow the buyer to use the prudent utility practice standard to improve on the output guarantee or mechanical availability guarantee, the PPA will often provide that the liquidated damages due for a failure to achieve guaranteed output or mechanical availability is the buyer's sole remedy for an underperformance by the wind project.

B. Metering. The metering provision is used to determine the quantity of output for which the seller will be paid. The PPA usually requires one party (typically the seller) to install and maintain a meter. The other party typically has the right to install a check meter. If the seller's meter is out of service or generating inaccurate readings, the PPA should specify how the parties will determine the project's output. Tests should be conducted regularly to verify the accuracy of the seller's meters. The PPA usually states how often such tests will occur, at whose expense, and what form of notice will be given to each party. The PPA should specify how much variance in the meter's accuracy will be permitted and how repair or replacement of defective meters will be handled.

C. Real-Time Data. The PPA may require the seller to provide the buyer with real-time data (including meteorological data, wind speed data, wind direction data, and output data).

IX. Billing and Payment.

A. Billing and Payment. The PPA will describe how invoices are prepared, when they are issued, and how quickly they are paid. The billing provision often states that an invoice is final if not challenged within a certain period of time (usually one or two years). The PPA usually sets forth procedures for raising and resolving billing disputes and the interest rate and penalties that apply to late payments.

B. Right to Audit. The buyer will typically have the right, upon reasonable notice, to access those records of the seller necessary to audit the reports and data that the seller is required to provide to the buyer under the PPA.

X. Defaults and Remedies. The PPA will usually list events that constitute defaults. These may include:

- failure by any party to pay an amount when due;
- other types of material defaults, such as the seller's failure to use commercially reasonable efforts to achieve a material project milestone;
- the bankruptcy, reorganization, liquidation, or other similar proceeding of any party; or
- a material default by a party's guarantor.

The default clause should specify how long the defaulting party has to cure a default. If the default is not cured within the agreed-on period, the nondefaulting party usually has the right to terminate the agreement and pursue its remedies at law or in equity, to suspend performance of its obligations, or to seek specific performance and injunctive relief. The remedies clause may also limit remedies or place a cap on a party's damages—for example, in some PPAs the buyer's only remedy for the seller's failure to achieve a given milestone is to terminate the PPA without seeking damages.

XI. Project Lenders and Equity Investors. Even if the project is expected to be financed off of a developer's balance sheet, the terms of the PPA will usually take into account the possibility that the PPA will be assigned to a lender as collateral for project debt. The PPA will therefore contain provisions authorizing the seller to assign the PPA as collateral, requiring the buyer to provide consents, estoppels, or other documents needed in connection with financing, and giving the lender various protections (including additional time to cure defaults). The PPA may also include provisions to address the concerns and cure rights of future tax equity investors.

XII. Buyer Options to Purchase the Project or Special Purpose Entity. In recent years, utilities have shown a growing interest in owning wind energy projects. In PPAs, this interest often takes the form of an option to purchase the project or the entity that owns it on or after a specified date. Such options should be handled carefully. An option to purchase the project or the interests in the special purpose entity that owns the project for anything other than the project or entity's fair market value at the time of exercise has been generally disfavored by tax attorneys. Other types of options can raise a fundamental question as to whether the owner of the project is an owner for federal income tax purposes or whether the financing arrangement is something other than "ownership" (*e.g.*, a loan). Revenue Procedure 2007-65 explicitly provides as one of the qualifying elements that there is no developer/investor/related party purchase option for less than fair market value (at exercise).

XIII. Boilerplate and Examples. The PPA will also address “boilerplate” matters, such as confidentiality, representations and warranties, governing law, the limitation of consequential damages, dispute resolution, consent to jurisdiction, and waiver of jury trials. Because the transaction between the parties may involve complex calculations, the PPA should also include a number of carefully considered examples that illustrate how those calculations will work in certain scenarios.