THE LAW OF WIND
—Regulatory and Transmission-Related Issues—

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Long before a wind energy developer begins generating the first MW of power, the developer must decide on a regulatory structure for the project, negotiate and execute transmission and interconnection agreements, and purchase necessary transmission ancillary services. This chapter presents a general discussion of these issues. Before embarking on a particular course of action, it is highly recommended that a developer seek the opinion of qualified counsel, especially considering that many of the laws and regulations relating to these topics may be affected by recent legislation and ongoing rulemaking proceedings.

I. Regulatory Structure Issues—PUHCA, EWGs, and QFs. The Energy Policy Act of 2005 was signed into law on August 8, 2005, repealing in part the Public Utility Holding Company Act of 1935 ("PUHCA 1935") and enacting the Public Utility Holding Company Act of 2005 ("PUHCA 2005"). By opening the door to certain utility acquisitions and mergers that had been prohibited since 1935, PUHCA 2005 is likely to trigger a consolidation of the electric utility industry, which will present both challenges and opportunities for wind energy developers.

Under PUHCA 1935, nonexempt wind energy project companies were subjected to extensive regulation by the Securities and Exchange Commission ("SEC"). Although the SEC will no longer be regulating nonexempt wind energy project companies, PUHCA 2005 has (1) granted state regulators and the Federal Energy and Regulatory Commission ("FERC") broad access to books and records of such companies and (2) provided for FERC review of the allocation of costs for nonpower goods or services between regulated and unregulated affiliates of such companies.

Wind energy project companies can obtain exemptions from these requirements. The two most common exemptions are for the project owner to obtain status as either an exempt wholesale generator ("EWG") or a qualifying facility ("QF"). Each of these categories is summarized below.

A. Exempt Wholesale Generator Status. In an effort to stimulate wholesale electric competition, Congress enacted the Energy Policy Act of 1992, which created an exemption from PUHCA 1935 for independent power producers that qualify as EWGs. EWG status is determined by FERC, and the EWG status begins once the independent power producer files an application with FERC. EWG status is available to any generator of electricity, regardless of size or fuel source, so long as such entity is exclusively in the business of owning and/or operating electric generation facilities for the sale of energy to wholesale customers.

Independent power producers should be aware of several issues associated with EWG status. First, the "exclusively own and/or operate" requirement mentioned above typically requires the creation of a special-purpose entity to own the wind generation facility and sell its electric output. Second, EWGs are restricted to wholesale sales and therefore cannot take advantage of retail sale opportunities in jurisdictions that have approved retail direct access. Finally, EWGs are restricted in their ability to enter into certain types of transactions (such as leases) with affiliated regulated utilities.

Rates for wholesale power sales by EWGs are subject to FERC regulation under section 205 of the Federal Power Act. As a result, an EWG must apply for and FERC must grant market-based rate approval, *i.e.,* power-marketing rights, before an EWG can sell bulk wholesale power at market prices. FERC generally grants market-based rate approval, provided that the applicant and its affiliates (if any) demonstrate a lack of horizontal market power (electric generation) and vertical market power (transmission and other barriers to market entry) in the relevant markets, and have satisfied restrictions on affiliate abuses contained in FERC regulations. Because FERC

recently adopted new criteria for satisfying these requirements, wind developers should contact knowledgeable attorneys before filing for market-based rate approval. Once FERC grants market-based rate approval, the EWG will have ongoing filing and reporting requirements.

B. Qualifying Facility Status. The Energy Policy Act of 2005 has changed the rules for QFs, introducing both risk and opportunity. Developers of new wind projects, as well as sellers under existing QF contracts (especially with contracts that will be expiring soon), will want to familiarize themselves with these changes.

During the energy crisis in the late 1970s, Congress passed the Public Utility Regulatory Policies Act of 1978 ("PURPA") to encourage the development of cogeneration and small renewable energy projects, including wind projects, which are referred to as QFs. Before the passage of the Energy Policy Act of 2005, PURPA was important to wind energy developers for several reasons, one of which was the exemption for wind QFs producing up to 30 MW from most of the provisions of the Federal Power Act and from certain types of state utility regulations. The Energy Policy Act of 2005 (and FERC's interpretation thereof) has limited the applicability of these exemptions, making it more difficult for projects to obtain such exemptions. On the other hand, the Energy Policy Act of 2005's elimination of PURPA's ownership requirements is likely to generate new interest in utility ownership of QF facilities—increasing the value of both new and existing QF projects.

The Energy Policy Act of 2005 has narrowed the advantages that wind generation QFs previously enjoyed compared to EWGs. First, as mentioned above, QFs no longer enjoy broad exemptions from the requirements of the Federal Power Act. Significantly, QFs over 20 MWs, not making PURPA sales and without existing contracts that predate the effective date of FERC's new rules, no longer have an exemption from the need to obtain authority from FERC to sell power at market-based rates before selling energy from the project as discussed above. Second, the Energy Policy Act of 2005 weakened the "must buy" obligation that allows QFs to require retail public utilities to purchase QF output at the utility's "avoided costs," *i.e.,* the costs the utility would have incurred but for the QF purchase. Utilities may now petition FERC for an exemption from PURPA's mandatory purchase requirement if the utility can demonstrate that a QF in its service territory would have nondiscriminatory access to competitive wholesale markets for energy and capacity that meet certain standards. The potential loss of this "must buy" requirement could be significant because state-established avoided cost rates have often exceeded prevailing wholesale market prices and such published rates have been an effective negotiating tool for gaining favorable pricing under non-QF renewable energy sale agreements. One clear advantage of QFs over EWGs is that PURPA does not restrict the ability of QFs to make retail sales to the extent such sales are allowed under state law. Another distinction between QFs and EWGs is that QFs are generally interconnected under state regulators' interconnection rules, which may or may not be advantageous for a particular project. A QF may have an option to interconnect under FERC rules.

C. Other Ongoing Regulatory Requirements. Whether a wind developer is an EWG or QF, or has FERC approval to sell power at market-based rates, the wind developer may also be subject to other filing and reporting obligations at FERC. For example, FERC's prior approval is required before the developer disposes of FERC-jurisdictional facilities above certain dollar thresholds. This prior approval requirement generally applies to indirect disposition of such assets, which can include the sale of project membership interests to investors, and accordingly, consultation with a knowledgeable FERC attorney is advised in connection with any plans by the developer to restructure, sell, or otherwise dispose of its assets. Likewise, FERC may require updates to the market-based rate filing, EWG application, and/or QF certification in connection with changes in the material facts on which FERC relied in granting such status. Finally, FERC notice or approval may be required when certain directors or officers will hold similar positions in related affiliates. The foregoing list is not

exhaustive and is intended to highlight only some of the various FERC notification and filing requirements related to jurisdictional wind developers, and therefore consultation with knowledgeable attorneys is recommended.

II. Transmission and Interconnection Issues. To obtain project financing and gain access to markets for project output, wind project developers must negotiate agreements to interconnect with the transmission system of the applicable transmission provider. In addition, a developer will need to obtain any necessary transmission service to deliver project output to the purchasers of that output. Most lenders and many investors will require evidence of executed generation interconnection and/or transmission service agreements as a condition of financing or project purchase. Most transmission providers are subject to jurisdiction by FERC, and therefore transmission service agreements and generation interconnection agreements are generally subject to regulation by FERC. Interconnection to utilities exempt from FERC interconnection rules raises unique questions, which should be considered when selecting project sites.

A. Generation Interconnection Agreements. A generation interconnection agreement is a contract between the generation owner and the transmission provider that owns the transmission system with which the project will be connected. In regions where the transmission system is owned and operated by separate entities, FERC will require that both of those entities sign the interconnection agreement. FERC Order No. 2003 establishes standard interconnection procedures and a standard interconnection agreement for generators larger than 20 MW ("Large Generators"). Similarly, FERC Order No. 2006 establishes standard interconnection procedures and a standard interconnection agreement for generators with a capacity of 20 MW or less ("Small Generators").

Generally, the two main purposes of interconnection agreements are (1) to identify and allocate the costs of any new facilities or facility upgrades that need to be constructed and (2) to set forth the technical and operational parameters governing the physical interconnection.

1. Interconnection Facilities and Cost Allocation. In general, before the execution of an interconnection agreement, the transmission provider will commission a series of interconnection studies, at the interconnection customer's expense, to determine what new interconnection and transmission facilities need to be constructed to accommodate the new generation facility and the cost of such construction. Because wind projects typically span large geographical areas and are often located in remote places, substantial new facilities and facility upgrades may be required.

Order Nos. 2003 and 2006 directly assign the costs of interconnection facilities and distribution upgrades to the interconnection customer. Network upgrades (*i.e.,* upgrades to the transmission system at or beyond the point of interconnection) are treated differently, however, and even though the costs of upgrades may initially be borne by the interconnection customer, those costs may be reimbursed to the interconnection customer in the form of transmission credits. In certain transmission systems, however, such as those controlled by the Midwest ISO or the PJM Interconnection, the interconnection customer will not be entitled to all or part of this reimbursement. For most interconnections of Small Generators, it is unusual to have network upgrades. The nature of the network upgrade reimbursement (partial or full) may also impact whether and to what extent tax gross-ups must be included in the payment by the interconnection customer.

Determining the point of interconnection for purposes of distinguishing between interconnection facilities and network facilities is an area of potential dispute between the parties. Transmission providers have an incentive to design interconnections in a manner that places the majority of the new facilities on the customer's side of the

interconnection, thereby depriving the customer of a transmission credit to offset the costs of such facilities. Consistent with FERC precedent, only such facilities as are necessary to reach the point of interconnection are properly classified as interconnection facilities. Agreements to reclassify interconnection facility costs as network upgrades, or vice versa, have not been found to be "just and reasonable" and have been rejected by FERC.

2. **Technical and Operational Issues.** Interconnection agreements address such technical and operational issues as reactive power factors, responsibility for electrical disturbances, metering and testing of equipment, exchange of operating data, and curtailment events. In connection with its adoption of standard procedures and agreements in Order No. 2003, FERC commenced a separate rulemaking to establish certain technical standards applicable to interconnection of Large Generators that would be included in Appendix G of the Large Generator Interconnection Agreement. This rulemaking resulted in FERC Order No. 661, which adopted several rules of interest to the wind energy industry. In some cases, transmission providers attempt to impose technical requirements and control area service that go beyond that typically approved by FERC. Wind developers should pay close attention to the costs of and obligations imposed by transmission providers through technical requirements and control area services by contacting a knowledgeable attorney.

One operational issue of particular importance to wind plants has been reactive power factors. Interconnection agreements will specify the applicable reactive power factor within which the generator is required to maintain its operation. Variations in wind output, however, may make it difficult for wind generators to meet such reactive power requirements. Wind project owners often have to incur additional expenses to install substantial additional capacitor banks to meet the reactive power requirements. Order No. 661 addresses this issue by providing that Large Generators must maintain a power factor standard only if the transmission provider's system impact study shows that such a requirement is necessary to ensure safety or reliability. The specific power factor standard, if applicable, requires a wind plant to maintain a power factor within the range of 95 percent leading to 95 percent lagging, measured at the high-voltage side of the substation transformers.

Order No. 661 also requires a wind plant to provide supervisory control and data acquisition capability, which improves system reliability by enabling two-way communication between the transmission provider and the wind farm.

Finally, the most significant aspect of Order No. 661 involved the low-voltage ride-through ("LVRT") standard. Previously, wind turbines had responded to drops in voltage by disconnecting the generator from the grid. FERC's LVRT standard provides for a transition period standard and a post-transition period standard. The transition period standard applies to wind generating plants subject to Order No. 661 that have either (1) interconnection agreements signed and filed with FERC, filed in unexecuted form, or filed as nonconforming agreements between January 1, 2006 and December 31, 2006, with a scheduled in-service date no later than December 31, 2007, or (2) wind generating turbines subject to a wind turbine procurement contract executed before December 31, 2005, for delivery through 2007. The transition period standard requires wind generating plants to remain in service during a fault for up to nine cycles at a voltage as low as 0.15 p.u. If the fault remains after such time, the wind generating plant may disconnect from the transmission system. The post-transition period standard requires the plant to remain in service during a fault for up to nine cycles at a voltage as low as zero volts. If the fault remains after such time, the wind generating plant may disconnect from the transmission system. Under both standards, the voltage level is measured on the high-voltage side of the generating plant step-up transformer.

B. Transmission Service Agreements. Interconnection service or an interconnection by itself does not confer any delivery rights from the generating facility to any points of delivery. Therefore, unless the project owner is able to sell the output of the project at the point of interconnection with the transmission grid, the project owner will be required to obtain transmission service from one or more transmission providers to wheel project output to the purchaser. An alternative is for the project owner to sell some or all of the output under a contract shifting the transmission obligation to the purchaser. This typically requires that the contract terms qualify the sale for designation as a network resource by a load on the transmission system to which the project is interconnected. In addition, acquiring adequate transmission service is essential to obtaining debt or project financing on reasonable terms and conditions.

Transmission providers are required by FERC to offer transmission service on an open, nondiscriminatory basis pursuant to a transmission tariff that will govern the terms by which such service is provided. Upon receiving a request for service, the transmission provider will evaluate available transmission on its system and determine whether additional transmission facilities need to be constructed to accommodate the requested service. In major parts of the United States, the transmission provider is a Regional Transmission Organization ("RTO") or Independent System Operator rather than the actual owner of the applicable transmission facilities. Acquiring transmission service from nonjurisdictional transmission providers raises additional questions that depend on the nature of the entity, the scope of its transmission facilities, and other issues beyond the scope of this chapter.

Under FERC's general transmission pricing policy, generators pay the greater of the incremental costs or embedded costs associated with requested transmission service. Incremental costs refer to the additional system costs (*e.g.,* construction of new facilities and upgrades) resulting from the requested service. Embedded costs reflect an allocation of system costs to the various users, generally based on MW of service. Wind projects, because of their remote locations, may necessitate substantial system upgrades that will result in the transmission customer paying an incremental cost rate that exceeds its pro rata share of the system costs.

Although the average output of wind projects is in the 30 to 40 percent range, during periods of adequate wind flow, wind projects can operate at or near full capacity. As a result, the owners of wind projects typically need to have available transmission service to accommodate the full project capacity. One result is that much of this transmission capacity will go unused during periods when wind flows amount to less than full operation. Another result is that the cost of transmission for a wind project will normally be substantially higher on a per-MWh basis than the cost of baseload thermal generation. Sometimes combinations of firm and nonfirm transmission, or transmission and redispatch, can be more cost-effective than purchasing transmission for the project's maximum capacity. The challenge is convincing third-party financiers to accept such arrangements.

These transmission pricing rules may be different if the transmission provider is an RTO. The rules of the existing and proposed RTOs may in fact be much more favorable to wind generation than FERC pricing. For example, an RTO may recover the fixed costs of the applicable transmission system from end users, with a generator facing only any transmission congestion charges. The RTO also may eliminate rate "pancaking," which is the imposition of multiple transmission charges for use of more than one transmission owner's transmission facilities.

III. Ancillary Services—Imbalance Charges, and Firming and Shaping Products. Project owners will be required under the transmission provider's tariff to either provide or purchase transmission ancillary services, which are products designed to ensure the reliability of the transmission system. Of these products, generation imbalance service often poses the most difficult issues for wind operators. Generation

imbalance service is a product that allows a generator to deliver an amount of energy that differs from the amount it had prescheduled for an hour.

Most transmission providers had historically priced generation imbalance service based on the cost or value of the generation, plus a premium. For example, a transmission provider may have charged generators 110 percent of the cost of providing replacement energy in hours when the actual output of a generator was less than scheduled output, and compensated generators 90 percent of the value of energy produced in excess of the amount scheduled. In addition to this basic charge, penalties attached if the difference between scheduled and actual generation exceeded a specified threshold. Such charges were intended to promote accurate scheduling and to prevent system reliability concerns associated with large-scale imbalances; however, these penalty-type imbalance charges punished wind generators for variations in output over which the generators lack control.

Acknowledging that existing energy imbalance charges under Schedule 4 of the open-access transmission tariff ("OATT") and the generator imbalance charges described in FERC Order No. 2003 are the subject of "significant concern and confusion in the industry," FERC found that imbalance charges varied widely, were excessive, and penalized transmission customers whose actual generator or energy imbalances deviated from corresponding schedules without reference to the actual cost of providing imbalance service. This approach made sense if customers could predict generation output with a high degree of accuracy and control the quantity dispatched. FERC recognized, however, that the penalty did not make sense when applied to intermittent generation, which cannot be forecasted as reliably and for which the customer has little control over dispatchability.

Accordingly, FERC adopted new rules in Order No. 890, which designed a tiered structure for imbalance charges, with increasing imbalance charges as the imbalance increases into the next largest tier. Order No. 890 also provides at least two benefits to intermittent resources. First, the new rules provide for monthly netting of imbalance charges within the first tier. Second, intermittent projects are not subject to the third tier of deviation charges. Although these new rules can provide significant benefits to wind power resources, it is important to understand that transmission providers may be permitted to adopt different provisions applicable to intermittent resources within their control areas.

To avoid imbalance charges, wind project operators may look to other generation suppliers to provide firming and shaping products to accommodate their uncontrollable variations in output. Such products consist of arrangements whereby the supplier will take or provide energy, as applicable, in hours when the actual generation differs from the scheduled amount. Several transmission providers in the Pacific Northwest have sold a limited amount of shaping and storage service, generally using the hydro system's flexibility to store and shape wind into peak and off-peak blocks.

In addition to imbalance charges, some transmission providers are requiring wind generators to pay for a wind integration service, which is typically a capacity charge that may be designed similar to the load regulation charges found in Schedule 3 of the transmission provider's tariff. Transmission providers have justified these new charges by citing the variability of wind and the resulting strain that such variability place on the transmission system. Wind integration charges can be highly complex in design and, thus, wind developers and generators should contact knowledge attorneys when facing this issue.

IV. Greater Access to the Transmission Grid. On February 16, 2007, FERC issued Order No. 890, which reforms OATT rules, and is designed, in part, as an effort to improve transparency of transmission service and reduce transmission barriers for new projects. These amendments may result in increased and improved access to the transmission grid for renewable energy developers. Order No. 890 is the first major

reform of the OATT since it was enacted 10 years ago. The details of Order No. 890 are too voluminous to be adequately covered in this chapter, so only a few key points will be discussed.

A major obstacle to making more transmission capacity available is the fact that under current practice, long-term requests for service from a new generator may be denied based on the unavailability of transmission in only a few hours of a year, even though firm service is nonetheless available for the large majority of hours of the year. To address these concerns, FERC created two new options: conditional firm service and modified redispatch service. These two services provide new options for intermittent resources that can generally be constructed more quickly than the transmission upgrades necessary to deliver power on a firm basis.

Conditional firm service addresses the "all or nothing" problem transmission customers currently face. Conditional firm is a type of transmission service that wind advocates have promoted as a partial solution to the lack of available firm transmission. Under this service, a conditional firm customer could enter a long-term contract for the capacity that is available on a path. The customer would have firm service except for time periods designated in the contract and would have priority over nonfirm service for the hours in which available transfer capability ("ATC") is not available.

Modified redispatch service, which adjusts the output of various generators to allow transactions that would otherwise be blocked by congestion on certain transmission paths, is routinely used by integrated utilities (those with transmission and generation) to serve native load and network customers, and to make off-system sales. Order No. 890 requires transmission providers to offer and study the use of redispatch service to create additional long-term firm capacity on a transmission system. Under the rule, customers would agree to pay the costs of redispatch service during the periods when firm ATC is not available.

Finally, Order No. 890 contains other amendments that may increase access to existing transmission capacity and/or promote transmission expansion in key areas. For example, Order No. 890 (1) establishes a consistent methodology to determine ATC and make certain elements of ATC more consistent; (2) requires transmission providers to participate in an open and transparent regional transmission planning process; (3) reforms pricing policies related to imbalances, credits for customer-owned transmission facilities, and capacity reassignment; (4) revises rules under which a transmission provider must provide rollover rights and require the provision of hourly firm point-to-point service; and (5) requires transmission providers to post all business rules, practices, and standards on the Open Access Same-Time Information System, and to include credit review procedures in their OATT. The details of Order No. 890 are too voluminous to be adequately covered in this chapter and, therefore, wind developers and generators should consult a knowledgeable attorney for an update on this and other FERC proceedings.

V. Reliability Standards. Recent developments in federal law have transformed historically voluntary standards into mandatory reliability standards with accompanying obligations and potential sanctions for failure to comply. In compliance with federal law requiring it to do so, FERC issued Order No. 672 on February 3, 2006, qualifying the National Electric Reliability Corporation ("NERC") as the continent-wide, FERC-certified Electric Reliability Organization ("ERO") responsible for proposing and enforcing mandatory reliability standards. As the ERO, NERC is responsible for monitoring and improving the reliability and security of the bulk electric system and, to do so, NERC has the authority to propose and enforce mandatory reliability standards and assess fines upward of $1 million per day for noncompliance. Pursuant to the Federal Power Act, all reliability standards must be just, reasonable, not unduly discriminatory or preferential, and in the public interest. NERC has delegated to designated regional entities the authority to monitor and enforce the reliability

standards. In addition to their delegated duties, regional entities may also enforce region-specific reliability standards.

The reliability standards may apply to users, owners, and operators of the bulk electric system, and the specific applicability of a particular standard is specified therein. The regional entities are tasked with maintaining a Compliance Registry, which lists organizations against whom the reliability standards are enforceable. If a bulk electric system user, owner, or operator fails to register with the Compliance Registry, then the regional entity may take steps to register that user, owner, or operator. The Compliance Registry lists organizations by function, and compliance is analyzed by reference to function-specific reliability standards.

As is most relevant to wind developers, NERC requires that certain generator owners and operators register with the Compliance Registry. A generator owner is an organization that owns generating units, and a generator operator is an organization that operates generating units and supplies energy. There are minimum requirements before a generator owner or generator operator is required to register, and a wind developer should consult with a knowledgeable attorney regarding such requirements. Though initially exempted from registration, QFs are now required to comply with the reliability standards as well.

In addition, wind developers should also be aware that NERC has upheld the registration of generators for transmission functions due to long interconnection lines. Wind developers may be more exposed to such a registration than other generators due to the fact that wind resources often require long interconnection lines to reach a nearby transmission system. Upon such registration, those generator owners are required to comply with transmission owner reliability standards, which may be very burdensome for some generator owners. Thus it is important that wind developers pay close attention to the quickly evolving requirements imposed by reliability standards.

Overall, the mandatory reliability standards pose a challenge to an industry that recognized voluntary standards for many years. Given the breadth of the reliability standards and the punitive sanctions attached, industry participants must take appropriate steps to determine whether they should register with the appropriate regional entity, to understand each function, and to implement a comprehensive program that will track and ensure compliance.

VI. Summary. Recent developments have made access to the transmission grid both easier and more economical. In particular, the implementation of standardized interconnection procedures and agreements for Large Generators and Small Generators subject to Order Nos. 2003 and 2006 help streamline the interconnection of renewable power sources with the transmission grid. Similarly, FERC's clarification of LVRT and other issues in Order No. 661 has promoted standardization of technical requirements for interconnection of wind energy. Nevertheless, much work remains in order to fully use existing transmission infrastructure and promote new transmission in key regions to allow new wind generation to reach markets.