

THE LAW OF LAVA
—Delivering the Goods:
Regulatory and Transmission-Related Issues—

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Producers of renewable geothermal energy, like other sellers of electricity, must understand and meet the regulatory requirements applicable to the sale of power generated by their resources. In addition, in order to access the electric transmission grid, geothermal energy producers must negotiate and execute an interconnection agreements and transmission service agreements, and purchase necessary transmission ancillary services before the geothermal developer begins generating the first MW of power. 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 The Energy Policy Act of 2005 repealed in part the Public Utility Holding Company Act of 1935 (“PUHCA 1935”) and enacted the Public Utility Holding Company Act of 2005 (“PUHCA 2005”). By opening the door to certain types of utility acquisitions and mergers that have been prohibited since 1935, Congress set the stage for a consolidation of the electric utility industry that will present both challenges and opportunities for renewable energy developers and producers.

Under PUHCA 1935, unless exempted, geothermal energy project companies were subject to extensive regulation by the Securities and Exchange Commission (“SEC”). Although under PUHCA 2005 the SEC will no longer be regulating non-exempt geothermal energy project companies, the Energy Policy Act of 2005 has (1) granted state regulators and the Federal Energy Regulatory Commission (“FERC”) broad access to books and records of such companies, and (2) provided for FERC review of the allocation of costs for non-power goods or services between regulated and unregulated affiliates of such companies.

Geothermal energy project companies can obtain exemptions from these remaining requirements. The two most common means of obtaining exemptions are for the project owner to obtain status as an exempt wholesale generator (“EWG”) or for the project to obtain status as 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 for independent power producers that qualify as EWGs. EWG status is determined by FERC, and the EWG status generally begins at the time 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. Certain incidental activities may also be permitted. 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 geothermal 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 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 either cost-based or market-based rate approval, *i.e.*, power-marketing rights, before an EWG can enter sales for resale of power. FERC generally will grant market-based rate approval, provided that the applicant and its affiliates (if any) demonstrate that they do not have or have adequately mitigated horizontal market power (in electrical generation) and vertical market power (in transmission and other barriers to market entry) in the relevant markets. The Commission also imposes certain restrictions governing transactions and conduct between power sales affiliates where one or more of those affiliates

have captive customers. Once FERC grants market-based rate approval, the EWG will have ongoing FERC filing and reporting requirements.

B. Qualifying Facility Status. The Energy Policy Act of 2005 also changed the rules for qualified facilities (commonly referred to as “QFs”), introducing both risk and opportunity. Developers of new geothermal projects, as well as sellers under existing QF contracts (especially those sellers 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 (*i.e.*, QFs). Prior to the passage of the Energy Policy Act of 2005, PURPA was important to renewable energy developers for several reasons, one of which was the exemption for many QFs 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) limited the applicability of these exemptions, making it more difficult some types of projects to obtain such exemptions. On the other hand, the Energy Policy Act of 2005’s elimination of PURPA’s limitations on utility ownership of QFs has generated new interest in such utility ownership—increasing the potential value of both new and existing QF projects and the range of possible geothermal transaction structures with electric utilities.

The Energy Policy Act of 2005 narrowed the advantages that QFs previously enjoyed compared to EWGs. First, as mentioned above, QFs no longer enjoy such broad exemptions from the requirements of the Federal Power Act. Significantly, owners of QFs over 20 MWs (unless making state-imposed avoided costs sales or making sales under contracts that predate the effective date of FERC’s new rules) now need a FERC-approved tariff before selling energy from the projects. 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 often have 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 sometimes are 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 geothermal developer is a EWG or QF, or has FERC approval to sell power at market-based rates, the geothermal 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 geothermal developers, and therefore consultation with knowledgeable attorneys is recommended.

II. Transmission and Interconnection Issues. In order to obtain project financing and gain access to wholesale power markets, geothermal resource producers must negotiate agreements to interconnect with the transmission system of the applicable transmission provider. In addition, a developer will generally need to obtain any necessary transmission service to deliver output from the project 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 or operates the transmission system with which the project will be connected governing the interconnection of the project with the transmission system. In two landmark orders (Order Nos. 2003 and 2006), FERC established standardized procedures and agreements for the interconnection of generating facilities with the interstate transmission facilities owned, controlled, or operated by the nation's investor-owned utilities. 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"). Developers may discover less favorable contract terms when negotiating interconnection agreements with nonjurisdictional utilities, which would include many municipal utilities, cooperatives, and public utility districts. In some cases, these entities have adopted FERC's standardized procedures and agreements, but in other cases such utilities are likely to either continue to use either their own forms of agreement or offer revised versions of FERC's standardized procedures and agreements.

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.

- 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 geothermal resources are often located in remote locations, 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. Making things more difficult, cost allocation methodologies in these and other regions are often in flux. 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.
- 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.

More recently, certain regional transmission organizations, such as the Midwest Independent System Operator, the California ISO, and the Southwest Power Pool, have reformed their interconnection procedures and agreements in response to crippling backlogs and delays in the existing queues. Generally, queue reform has implemented a "first-ready, first-to-advance" methodology, requiring larger study deposits that may be nonrefundable and stricter adherence to progress milestones, and allowing fewer opportunities for developers to delay the process. Queue reform is happening across the nation, and each reform to FERC's traditional approach to interconnection responds to the problems faced in a particular region. Thus, it is important to engage knowledgeable counsel in order to remain aware of how the interconnection process may vary from one area to the next.

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. 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 (for example, 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.

Some geothermal projects, because of their remote locations, may require 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.

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 geothermal resources 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. Obviously, rate pancaking is an important consideration for geothermal resources that are located far from energy markets.

C. Ancillary Services. 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. These services include, for example, replacement of transmission losses and provision of operating reserves.

D. Greater Access to the Transmission Grid. FERC's Order No. 890 series rules are 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 geothermal energy developers. 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. Conditional firm service addresses the "all or nothing" problem transmission customers currently face. Conditional firm is a type of transmission service that renewable advocates have promoted as a partial solution to the lack of available firm transmission. Under this service, a conditional firm customer may enter a long-term contract for the capacity that is available on a transmission 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 capacity ("ATC") is not available on a firm basis.

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, the Order No. 890 series contains other amendments that may increase access to existing transmission capacity and/or promote transmission expansion in key areas. For example, the series: (1) establishes a

methodology to determine ATC and to 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 the Order No. 890 series are too voluminous to be adequately covered in this chapter and, therefore, geothermal developers and generators should consult a knowledgeable attorney for an update on this and other FERC proceedings.

III. Reliability Standards. Recent developments in federal law have transformed historically voluntary standards into mandatory reliability standards that include ongoing, audited obligations and the potential for sanctions as a result of compliance failures. 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 per violation for noncompliance. The Federal Power Act requires that all reliability standards must be just, reasonable, not unduly discriminatory or preferential, and in the public interest. In addition, NERC has delegated to designated regional entities the authority to monitor and enforce the reliability standards, and the regional entities may in turn enforce region-specific reliability standards.

The reliability standards apply to certain users, owners, and operators of the bulk electric system, and 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.

NERC requires that certain generator owners and operators register with the Compliance Registry. A generator owner is broadly defined as an organization that owns generating units, and a generator operator is an organization that operates generating units and supplies energy. There are thresholds that may dictate whether a generator owner or generator operator must register, and a geothermal developer should consult with a knowledgeable attorney regarding such requirements. Though initially exempted from registration, QFs are now required to register with the appropriate regional entity and comply with the reliability standards as well.

In addition, geothermal developers should also be aware that NERC in some instances has upheld the registration of generators for transmission functions due to the generator’s operation or control of long interconnection lines. 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 geothermal 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.

IV. 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 will help streamline the interconnection of renewable power sources with the transmission grid. Similarly, FERC's proposals to strengthen the OATT by addressing ATC calculation and transmission planning and requiring greater transparency in business rules and practices are steps in the right direction. Nevertheless, much work remains in order for the existing transmission infrastructure to be fully utilized and to and promote new transmission in key regions needed for new geothermal generation to reach markets eager to purchase energy from this remarkable resource.