Drafting and Negotiating Power Purchase and Sale Agreements

Mark J. La Fratta
McGuire Woods LLP
Richmond, Virginia

Synopsis

§ 7.01. Introduction

§ 7.02. Terminology

[1] — Power Purchase and Sale Agreements
[2] — Tolling
[3] — LD Power/Unit Contingency
[4] — Dispatch
[5] — Equivalent Availability
[6] — Heat Rate

§ 7.03. The EEI Form Contract

§ 7.04. Issues List for Power Purchase Agreements

[1] — Term
[2] — Pricing
  [a] — Energy Pricing in a PPA
  [b] — Energy Pricing in a Tolling Agreement
  [c] — Heat Rate Adjustments
  [d] — Start-up Payments
  [e] — Capacity
[3] — Ancillary Services
[4] — Purchase and Sale Obligations
  [a] — Minimum/Maximum Takes
  [b] — Exclusivity
  [c] — Conditions Precedent to Effectiveness
[6] — Test Power
[7] — Fuel
[8] — Planned Maintenance Outages
  [a] — Procedures and Records
  [b] — Availability Notifications
  [c] — Dispatch in Conjunction with the Interconnected Utility

Chapter 7
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§ 7.01  **Introduction.**

Today, it is common that the owners of power generation facilities attempt to contract with long-term purchasers of the power generation through a “power purchase agreement.” These power purchaser agreements are frequently well over one hundred pages long (including appendices and attachments). Because these power purchaser agreements are generally the only source of revenue for the developers of such facilities, it is critical to the developer/owner that such agreements are drafted and negotiated with great care. Generally, these facilities are “project financed.” This generally means that the financing is usually structured such that the lender’s recourse is against the project revenues only. The power purchase agreement is then the source of loan repayment. As such, the lender takes a critical look at this agreement as well.

The power purchase agreement is then the cornerstone of development of a power generation facility. Whether you represent the developers of such facilities, lenders to such facilities, fuel suppliers to such facilities, contractors or equipment suppliers to such facilities or potential investors in such facilities, a knowledge of the terminology, risks and issues encountered in such agreements is crucial to the effective representation of your clients.

In 1993, the author addressed the Eastern Mineral Law Institute’s 14th Annual Institute and presented a paper on the subject of Drafting of Power Purchase Agreements with Independent Power Producers (“the
That paper focused on the development of the market for long-term power purchase agreements and risk apportionment between buyers and sellers under such agreements.

This chapter will focus briefly on the changes that have taken place in the market place since 1993 and focus in more detail on the issues to be addressed in a current power purchase agreement.

As discussed in the 1993 paper, a power generation facility was generally only developed if the developer executed a long-term power purchase agreement with a utility for the output of the facility.

In the mid and late nineties, deregulation changed the approach. The mere forecast of possible deregulation led utilities to begin resisting any long-term commitments. It became increasingly difficult to find a utility that could make a long-term commitment. The utilities were not certain of what treatment such contracts would receive in the oncoming deregulation.

It was generally believed that the era of the long-term power purchase agreement was over. Most attorneys practicing in this area and developers developing the projects for which the power purchase agreements were negotiated believed that long-term sales were a thing of the past. Deregulation, it was believed, had ended the need for long-term power purchase agreements. The literature in this business discussed the development of “merchant plants.” The merchant plant would be a plant developed by a speculator who would build a plant to sell into the market on a short term basis. Short term trading would take the place of single long-term contracts.

By about the year 2000, entities that developed power projects sometimes were entities that traded in power on a daily, weekly or monthly basis. Trading, however, is very risky. Not all developers were interested in the volatile trading business. There are entities in this business who are in the business of developing power plants to sell “availability.” They are now succeeding in finding a long-term buyer of their output. The contracts are generally for a long-term period of 20 or 25 years. The entities obtained

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project financing for these power plants the old fashioned way, with no recourse other than to project revenues. Their customers are power marketers.

The power marketers do the trading and speculating. The power marketers buy the power from plants, some regulated, some not, sometimes under long-term contracts, sometimes under short term arrangements. The marketers then trade on a daily basis or perhaps flip the generation on a relatively long-term basis to another marketer or a utility system.

Until the early nineties, nearly all plants not built by utilities were qualifying facilities (QFs) under the Public Utility Regulatory Policies Act (PURPA).\(^2\) Today, few projects are QFs. Most of the projects today are exempt wholesale generators under the Energy Policy Act and are not concerned with qualifying under PURPA.

PURPA created a class of power generation facilities with rights to sell power to utilities. It amended certain sections of the Federal Power Act.\(^3\) Amongst other things, these amendments removed many barriers to entry into the power market. Title II of PURPA required non-regulated utilities (such as municipal utilities) and state regulatory commissions to consider several standards, including basing rates on cost of service, elimination of declining block rates, establishment of time-of-day rates, consideration of seasonally differentiated rates, evaluation of interruptible rates, and load management techniques. Title II also described this new class of electric power generation facilities, and the characteristics and standards for facilities to “qualify” for certain benefits. Chief among these benefits was the right to force utilities to purchase the facilities’ electric output. It took several years for the number of “qualifying facilities” or “QFs” to be significant, but these QFs forever changed the utility business in America.

PURPA obligated utilities to purchase electricity from these facilities. Under PURPA, there are two basic categories, “cogeneration” and “small power production.” Cogeneration is used to describe the useful production of two forms of energy, from the burning of fuel in a single plant. To

\(^2\) 42 U.S.C. § 824a-3 (Suppl. 1988).
qualify, at least five percent of the total energy output of any cogeneration facility must be useful thermal energy.\(^4\)

Small Power Production facilities (SSPs) generally are fueled by waste, renewables, wind, or geothermal energy or are hydroelectric.\(^5\) SSPs are limited to 80 MW.

The National Energy Policy Act of 1992 ("Energy Policy Act") was passed in October of 1992.\(^6\) It provided needed reform of the Public Utility Holding Company Act (PUHCA)\(^7\) as PUHCA related to the development of non-utility generation. Specifically, the Energy Policy Act addressed two areas significant to the non-utility generation industry, \textit{i.e.} (i) creation of the new status of "electric wholesale generators" or "EWGs" and (ii) transmission.

Electric Wholesale Generators under the Energy Policy Act enjoy many of the exemptions available to Qualifying Facilities under PURPA. EWGs are exempt from Securities Exchange Commission regulation under PUHCA. This status is obtained from the Federal Energy Regulatory Commission (FERC). An Electric Wholesale Generator may or may not be a Qualifying Facility.

With regards to transmission, the Energy Policy Act amended Section 211 of the Federal Power Act to provide for true open access to transmission, and wholesale trading is expanding. Almost no plants are developed by regulated utilities for native load. Plants are built by unregulated entities, subject to the free market.

There are trading companies and there are developers. One interesting phenomenon is that the entities in this business that both develop plants \textit{and} engage in daily trading generally do not engage in daily trading from plants that are owned by their sister companies. On the contrary, in an effort to avoid putting "all eggs in one basket," the development subsidiary of an energy company will generally attempt to sign long-term contracts.

\(^5\) 18 C.F.R. § 292-203(a), 292-204(a), (b), 292-206.
for the output of its plants while at the same time its trading subsidiary is buying power under long-term contracts from other similar plants. Some entities only trade. Some entities only develop plants. Most plants have at least a portion of their output sold under negotiated long-term power purchase agreements.

§ 7.02. Terminology.

Contracts for the sale of electric energy and/or capacity over the last 20 years have been titled as power sales agreements, power purchase agreements, power purchase and operating agreements, tolling agreements and conversion services agreements. Generically, they will be referred to below as “PPAs.” Tolling and conversion services agreements are generally the same thing. Tolling or conversion generally refers to agreements whereby the “purchaser” of the power provides the fuel for the generation of electric power. Agreements called power sales agreements or power purchase agreements generally are agreements to sell electricity where the generator is obligated to procure its own fuel for the generation of the electric power sold under the agreement.

References to “tolling agreements” are generally to “physical” tolls whereby the purchaser of the output of a facility must provide (and not merely pay for) the fuel to generate the electricity it dispatches from the plant. Occasionally, people use the phrase “virtual toll” or “economic toll” to describe a power purchase agreement where the energy price is indexed to the market price of fuel. Such a contract, because the energy price is indexed to the cost of fuel, is the virtual economic equivalent of a tolling arrangement, but it is not actually a “tolling agreement.” The difference is that in a traditional power purchase agreement the fuel is actually procured by the generator rather than the tolling customer, even if the energy price is indexed to fuel markets.

Deals that are described as “Firm LD” generally refer to obligations wherein from the first minute of failure to deliver power called for by the
purchaser of the power, the generator has some financial liability to its customer. If the generator’s plant is not available, the generator must arrange for replacement power from somewhere or reimburse the buyer for the “cost of cover” for substitute performance from another source. In contrast, other deals are described as “unit contingent.” A unit contingent sale is contingent on a particular generating unit being available to deliver the power. Generally, this means that there is some allowed portion of time during which the unit is expected to be unavailable and therefore not deliver power. Contracts that are unit contingent usually provide fairly specific liquidated damage type remedies for poor availability rather than cost of cover for replacement power when a unit is down.8

8 These terms will be discussed in more detail below in discussion of the form Edison Electric Institute master agreement. See Section 7.03 infra.


The term dispatch in this business is used in slightly different ways by different segments of the industry. For people generally employed by the developers and/or utilities involved with power plants, “dispatch” generally means the right to control the generating level of a plant. To dispatch a plant merely means to control its output. The plant can be dispatched on-line, off-line, or to increase or decrease output. This is the proper usage for the term in a PPA.

In contrast, some people employed by developers use the word “dispatch” to mean the plant is running. In other words, a plant is dispatched if it is running. This usage, while common, is not wholly accurate.

During the PURPA Qualifying Facility era, particularly in the 1980s and early 90s, many lenders thought that the word dispatch meant a plant was “turned off.” This usage is incorrect, but still lingers in some corners. The original QF contracts were “must run.” There were no dispatch rights for the purchasing utility. Most people believed that PURPA required that the utility purchase power as it was made available 100 percent of the time from a Qualifying Facility. The utility could not refuse power, even if it meant turning down its own plants.
In the mid eighties, utilities began to introduce the idea of some “limited dispatch” rights in contracts. This generally meant that for some portion of time, the utility would have the right to dispatch the plant, i.e., control the generating level. Initially, such dispatch rights were limited to a few hundred hours per year. For utilities, as stated above, “dispatch” generally meant the right to control the output at a given time. More often than not, the QF contracts were high priced. If a utility is left to its own discretion as to the operating level of a plant, the utility will make the decision based upon principles of economic dispatch. A high priced facility will be shut down frequently during the period a utility has dispatch rights. That is how lenders and some developers began to see the word “dispatch” as meaning when a plant was turned off.


Generally, PPAs today are performance based. Compensation for the generator will increase or decrease as the “availability” of the plant increases or decreases. If a plant has excessive forced outages (e.g. shut downs because of equipment problems) or requires excessive maintenance, the plant’s “availability” will be reduced. To receive the full capacity payment over a given time period, “availability” must meet or exceed a guaranteed number. This is usually expressed as a percentage.

There are various formulas available to calculate availability of a generating facility. The North American Electric Reliability Counsel (NERC) has a very complicated set of formulas that take several pages to fully describe all its component formulae. Some plants have contracts that are simply calculating the availability as equal to delivered kilowatt hours divided by dispatched kilowatt hours converted to a percentage. In other words, if you deliver 100 percent of what is requested you have 100 percent availability. If you deliver 95 percent of what is requested by the tolling customer or power purchase agreement customer you are 95 percent available.

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9 NERC documents and formulas are available at www.nerc.com.
In a “tolling” type contract (where the customer provides the fuel for generation of the electricity it dispatches from the facility, there is generally a “heat rate” guarantee. The heat rate is the quantity of fuel (generally in Btus) the plant will consume to generate a kilowatthour of electricity. This is similar to the miles per gallon an automobile user expects to achieve. If the tolling customer provides fuel, the tolling customer should be entitled to expect a guaranteed rate of conversion of such fuel to electricity. That guarantee is the “heat rate guarantee.” If the plant’s heat rate is high (i.e., it is consuming more fuel than predicted by the guarantee per kilowatthour) then the tolling agreement will usually provide that the generator pay for the “excess” fuel. Conversely, if the heat rate is low (i.e., consuming less fuel than predicted by the guarantee per kilowatthour) tolling agreements generally provide that the generator will be compensated for the “fuel savings” caused by this low heat rate.

§ 7.03. The EEI Form Contract.
The Edison Electric Institute (EEI) is an electric power industry trade group generally made up of the nation’s investor owned electric utilities. It is located in Washington, D.C. and is involved in lobbying before Congress and the FERC and working on trade issues in the electric power business generally. A couple of years ago, EEI formed a committee of representatives of its member utilities and power marketers to develop a standard set of terms and conditions for power trading. At times, there were as many as 80 people working on the development of this document. Some might say it’s a miracle that a group that large could develop a document. While in this chapter I am intending to address long-term power purchase agreements generally, it is important that anyone involved in long-term power purchase agreements be familiar with the EEI master agreement form contract. The EEI form was developed by this committee as an agreement to be “on the shelf” for future potential routine trades. In that way, trading personnel would not have to negotiate the entire set of terms and conditions for an individual trade. Two counterparties could have this agreement in place and merely exchange a fax of some particular
details of the transaction and a day’s trade would be fully documented. Why is this important when looking at long-term agreements? There are two reasons: first, in the EEI document certain terminology has been developed that EEI and some of its members are attempting to develop into standard industry language, particularly in the area of description of electric power products that are traded on a daily basis. As a result, standardized terminology will make its way from these trading documents into long-term purchase agreements. Second, there are an increasing number of parties that actually use this master EEI trading contract for long-term purchases. The document was not designed for such long-term purchases. When parties use it, many changes are negotiated to the standard form documents and are generally attached to the front of the document to try to transform this “standby on the shelf agreement” into a long-term power purchase agreement.

For short term transactions the “legalese” portion of the contract is not exchanged between the parties. It has been executed and is in the counterparties’ files at both ends of the transaction. The only thing that is exchanged is a set of EEI cover sheets that describe the particulars of the individual transaction. When people use this approach for a long-term transaction they supplement this cover sheet/transaction description with wholesale deviations from the master agreement form to cover the long-term purchase. It makes for a very cumbersome document.

California seems to be a place where it is becoming quite popular to utilize this EEI master form for long-term agreements. I do not mean to imply that we should all do what they do in California. Recent years demonstrate that the California approach to electric power is perhaps something that we should not be emulating. Anyone utilizing the EEI form should be very careful to understand that the document is full of

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10 The EEI form is available for viewing or download at www.eei.org.
11 In the 1993 Paper, the present author made the following observations concerning California. Paraphrasing Sir Winston Churchill, the author stated that when Sir Winston Churchill said “You can always count on the Americans to do the right thing…after they’ve tried everything else,” he must have been thinking of Californians.
trading jargon that will be very misleading to people who are not involved in trading of power on a short term basis. The most egregious example of this is the phrase “Firm (LD)” power. The definition in the EEI form reads

Firm (LD)’ means, with respect to a Transaction, that either Party shall be relieved of its obligations to sell and deliver or purchase and receive without liability only to the extent that, and for the period during which, such performance is prevented by Force Majeure. In the absence of Force Majeure, the Party to which performance is owed shall be entitled to receive from the Party which failed to deliver/receive an amount determined pursuant to Article Four.12

I do not know why the EEI committee chose the phrase Firm LD power. While it is true that in any contract, any term can be defined any way the parties desire, in this case the letters “LD” in that definition will give parties reviewing the contract a very different meaning than what is defined in the agreement. When most lawyers see something described as an “LD” obligation, they will think that the letters LD stand for “liquidated damages.” I have actually been in negotiations where the parties negotiating over a deal utilizing some EEI terminology have argued that the LD means liquidated damages. One party clearly thought that their obligation was to pay “LDs.” This is not true.

Firm LD power in the EEI context describes an obligation where from the first moment that a generator fails to deliver power as required under the contract, the generator is liable for the cost of cover incurred by the purchaser to replace the generator’s power with substitute or cover from another party. The damages are not liquidated at all. They are cost of cover. This is clear in a review of EEI contract sections and definitions.

The EEI master contract section 4.1 defines the remedy for “Seller Failure” as “If Seller fails to schedule and/or deliver all or part of the Product pursuant to a Transaction, and such failure is not excused under

12 See Schedule P Products and Related Definitions of EEI form.
the terms of the Product or by Buyer’s failure to perform, then Seller shall pay Buyer, on the date payment would otherwise be due in respect of the month in which the failure occurred, or, if “Accelerated Payment of Damages” is specified on the Cover Sheet, within five (5) Business Days of invoice receipt, an amount for such deficiency equal to the positive difference, if any, obtained by subtracting the Contract Price from the Replacement Price. The invoice for such amount shall include a written statement explaining in reasonable detail the calculation of such amount.” In other words, the Seller pays the Buyer the amount that the Replacement Price exceeds the contract price.

The Edison Electric Institute document defines “Replacement Price” as basically the cost of cover. The EEI definition of “Replacement Price” reads:

the price at which Buyer, acting in a commercially reasonable manner, purchases at the Delivery Point a replacement for any Product specified in a Transaction but not delivered by Seller, plus (i) costs reasonably incurred by Buyer in purchasing such substitute Products and (ii) additional transmission charges, if any, reasonably incurred by Buyer to the Delivery Point, or at Buyer’s option, the market price at the Delivery Point for such Product not delivered as determined by Buyer in a commercially reasonable manner; provided, however, in no event shall such price include any penalties, ratcheted demand or similar charges, nor shall Buyer be required to utilize or change its utilization of its owned or controlled assets or market positions to minimize Seller’s liability. For the purposes of this definition, Buyer shall be considered to have purchased replacement Product to the extent Buyer shall have entered into one or more arrangements in a commercially reasonable manner whereby Buyer repurchases its obligation to sell and deliver the Product to another party at the Delivery Point.\(^\text{13}\)

Another term where EEI terminology can be important for long-term contracts is the use of the phrase “Into” a particular utility area, for

\(^{13}\) Note that *Black’s Law Dictionary* defines “liquidated damages” as “the sum which party to contract agrees to pay if he breaks some promise and, which having been arrived
example, “Into TVA” or “Into Entergy.” EEI defines “Into [utility] (the ‘Receiving Transmission Provider’), Seller’s Daily Choice” as meaning when “in accordance with the provisions set forth below,”

(1) the Product shall be scheduled and delivered to an interconnection or interface (“Interface”) either (a) on the Receiving Transmission Provider’s transmission system border or (b) within the control area of the Receiving Transmission Provider if the Product is from a source of generation in that control area, which Interface, in either case, the Receiving Transmission Provider identifies as available for delivery of the Product in or into its control area; and (2) Seller has the right on a daily prescheduled basis to designate the Interface where the Product shall be delivered.

If you purchase or deliver an “Into Product,” you generally fulfill your delivery obligation. Merely getting into the applicable zone is enough.

This can be important when negotiating replacement power rights in a PPA. If the generator’s obligation is to deliver from a plant and the plant from time to time is not available, purchasers will generally permit the generator to receive full compensation if replacement power is delivered that is equivalent. If your plant is in an area that trades “Into” products the equivalency of replacement power is more predictable.

at by good faith effort to estimate actual damage that will probably ensue from breach, is recoverable as agreed damages if breach occurs. In re Plywood Co. of Pa., 425 F.2d 151, 154 (1970). Such are those damages which are reasonably ascertainable at time of breach, measurable by fixed or established external standards, or by standard apparent from documents upon which plaintiffs based their claim. Ramada Development Co. v. U.S. Fidelity & Guaranty Co., 626 F.2d 517, 525 (1980). Black’s defines “cover” as “The right of a buyer, after breach by a seller, to purchase goods in open market in substitution for those due from the seller if such purchase is made in good faith and without unreasonable delay. The buyer may then recover as damages the difference between the cost of cover and the contract price plus any incidental and consequential damages but less expenses saved in consequence of the seller’s breach. U.C.C. § 2-712(1), (2).”
§ 7.04. Issues List for Power Purchase Agreements (PPAs).


The term of the contract even in “long-term” situations may be only a few years or may be 25 or 30 years. The length of the term is often dictated by pricing and financing considerations. It has been almost always true that relatively short-term capacity has a higher price per kilowatt than very long-term capacity. Even in long-term deals the first year or two generally determines the price for the entire term. For example, if your client wants to sell power over a 20-year period generally, the price over that 20-year period will vary considerably depending on whether that 20-year period includes the immediately following summer period or begins a year or two thereafter. If you are negotiating a 20-year tolling contract to begin in June 2004, you will get a given price. If you are able to commit to coming on-line for the summer of 2003 you will almost certainly get a considerably higher price not just for the year 2003 but for years 2004 through 2023 as well.

The shift of the last year of the contract to make the contract begin one year earlier, i.e. from 2004 to 2003, will have a tremendous impact most of the time on the pricing of the contract. The reasons for this are simple. Near term forecasts of pricing have a greater confidence level for buyers. Pricing based upon near-term forecasts is generally higher than the price a purchaser is willing to pay far out into the future.

The length of the contract term can be affected by force majeure as well. The issue is whether the existence of a force majeure during development or during the term of the contract should extend the term. In other words, if there is a one-year permitting delay early in the contract should another year be added so that the term of the contract applicable to the operating period of the facility is shifted forward rather than being reduced to the extent of the force majeure.

As will be discussed below in Section 7.04.[12], changes in taxes or other laws may be treated differently in a longer versus a shorter term. Generally, the longer the term of the contract the more likely you are to see reopeners of the pricing as a result of changes in law or taxes. Short-term contracts generally do not provide such relief. Longer term contracts frequently do.
Generally there are distinctions between the price for electric energy (kilowatt hours actually delivered) and capacity (kilowatts of capacity available to be dispatched but not necessarily involving the delivery of any particular quantity of energy).

[a] — Energy Pricing in a PPA.
Energy Pricing generally involves compensation for the quantity of kilowatt hours actually delivered. In a true PPA, energy pricing will include both fuel and non-fuel components. The fuel component should be indexed to the price of fuel. It is almost never advisable to have a contract, particularly a long-term contract, where there is the potential for a mismatch between the price of energy and the variable cost to produce that energy. No one will benefit from such a mismatch. The fuel risk is best born by the purchaser of power in a dispatchable PPA. The purchaser of power will only expend the cost for that fuel when dispatch of the facility consuming such fuel is “in the money,” in the words of energy traders. The electric market generally causes dispatch decisions based upon principles of “economic dispatch.” In other words – fill required energy needs with the most economic source. If the variable costs justifies dispatching the plant, it will run. Virtually all plants out there are dispatched on variable cost basis. Generally 90 percent or more of the variable costs of operating most power plants is fuel. Economic dispatch decisions are almost totally made on the basis of fuel.

If a contract deviates from this bedrock principle of energy being indexed to fuel costs, one counterparty or the other will eventually be hurt. One thing everyone can count on is that the price of fuel, particularly natural gas, will change. If you agree to a natural gas price that does not change, you will be guaranteed to have a mismatch. An unhealthy counterparty is never good for either the unhealthy counterparty or the

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14 A developer should earn its profit in the capacity payment discussed infra in Section 7.04.[2][e].
healthy counterparty. The inevitable ensuing problems will only be good for us lawyers.

The non-fuel variable costs involve an allowance for maintenance costs and personnel associated with actual operation. These costs are going to be a fraction of the total energy price in a pure PPA where the generator is responsible for fuel procurement.

[b] — Energy Pricing in a Tolling Agreement.

In a tolling deal the non-fuel variable operating and maintenance expenses will be the only pricing for the production of energy. There will be no fuel component for energy generated by the facility. Recall that in a tolling deal the customer is responsible for the provision of fuel necessary to meet its dispatch for the generating facility.

Many tolling agreements include the right for the generator to provide power from other locations in lieu of tolling at its facility. This is generally a right that is exercised when there are problems with the generators’ facility. In such cases the generator has the right to provide replacement power from another source. Generally that will mean fuel will be consumed at another plant site. For replacement energy under a tolling agreement a fuel component to the energy price will need to be added. It will generally be an indexed price of the fuel. Basically, if the generator delivers energy from another plant rather than “tolling” or converting the tolling customer’s fuel, the generator will incur a fuel charge and the tolling customer will not. The tolling customer’s fuel savings determined by the indexed price of fuel is then paid to the generator as a component of the energy price.

[c] — Heat Rate Adjustments.

As mentioned above in the “terminology” section, most tolling agreements will include an adjustment to the generator’s compensation for generation to the extent that the heat rate (i.e., the rate of fuel consumption per kilowatt hour generated) is above or below the guaranteed heat rate. If the generator’s heat rate is higher than guaranteed, then fuel consumption exceeds the quantity guaranteed by the generator. The generator will be required to reimburse the tolling customer for these excess fuel costs. If the generator’s heat rate is lower than guaranteed, the tolling customer will have fuel cost savings. These savings are generally paid to the generator.
[d] — Start-up Payments.

Most agreements — be they true PPAs or tolling — will include a payment for each start-up of the facility. The dollar amount varies widely by fuel type and by the type of agreement, but is generally in the thousands of dollars. Sometimes the number of starts permitted is limited in the course of a year, sometimes it is limited in the course of a day. Many times the amount of the money is driven by the quantity of gas that will be consumed to start up a facility. In addition, most gas-fired plants today are operated with a long-term service agreement with the supplier of the combustion turbines. The number of start-ups under such agreements triggers charges from the manufacturer engaged to provide long-term maintenance services and affects the timing of such maintenance. These charges are generally passed through in the start-up payment to the tolling or PPA customer.

It is also common to see a two- or three-tiered start-up payment. In other words, a given payment for a certain number of starts and a higher payment for all starts above that given number. Occasionally, the first X number of starts will be free and then a larger payment will be required for starts above X. In a tolling deal, the start-up payment will not include startup fuel if startup fuel is provided by the tolling customer. However, if the tolling customer provides startup fuel, such startup fuel needs to be factored into calculations of the plant heat rate.

[e] — Capacity.

Capacity pricing is designed to cover several items. The largest single item is a recovery of the capital cost necessary to build the plant. Such figure will be amortized over a number of years comparable to the life of a plant. The customer under the PPA will then pay a capacity payment generally on a monthly basis per kilowatt of dependable capacity proportional to the number of years of the term of the contract. The capacity payment is where developers generally include their profit.

In addition, the capacity payment should also include (i) components to cover fixed fuel transportation costs, for example, pipeline improvements or fixed charges for transportation; (ii) interconnection costs with the transmission system to which the plant will be interconnected; (iii) transmission system upgrades made to make it possible to transport
the power output across the transmission system to which the plant is connected; and (iv) potential adjustments for high or low availability achieved by the generator.

It will also be important to include provisions on how the dependable capacity is measured. As mentioned above, there are numerous formulas used to determine the level of availability of capacity. There generally are also periodic tests to establish the dependability level of the capacity from time to time.


Ancillary services can be the source of difficulty in negotiation of a PPA. There are certain ancillary services that are known and traded in today’s environment, for example, spinning reserve, reactive power and automatic generation control. Generally, the purchasers under PPAs and tolling agreements want to include language that provides that ancillary services from the facility belong to the purchaser and the compensation for those ancillary services are included in the energy and capacity payments. This is not adequate. Spinning reserve, for example, may actually require consumption of gas and therefore will require the generator to incur a cost. This cost is not covered by the energy price because no kilowatt hours are generated and the energy price is generally only paid when energy is delivered. In a tolling deal, if all gas is provided by the tolling customer, then the generator does not incur a cost for the gas. However, that quantity of gas consumed to keep the facility on spinning reserve needs to be deducted from any heat rate calculations for the fuel consumed to generate electric power at a guaranteed heat rate.

In addition, customers under PPAs will try to ensure that if a market develops for additional “ancillary services,” these will also be covered by the capacity and energy payments. If you are representing the generator you should be careful to ensure that the agreement provides that if new ancillary services are identified and are requested to be produced by the generator, that the generator be compensated for the cost of producing those ancillary services beyond the ancillary services that are known today. It is appropriate that such ancillary services belong to the tolling or PPA customer, but if a cost is incurred to create such services, it should be paid for by the customer.
[4] — Purchase and Sale Obligations

[a] — Minimum/Maximum Takes.

In the 1980s and early ’90s it was very common in power purchase agreements for the contract to provide for minimum and sometimes maximum takes of power from a facility. The minimum take was designed to ensure a minimum cash flow. With true industrial Qualifying Facilities, both a minimum and a maximum were frequently provided to ensure that operation of a power plant provided for a minimum to coincide with the minimum operations required to operate the power plant in tandem with the consuming host mill, and maximum takes to allow the mill to consume electric or thermal needs with a priority over what could be taken by the purchasing utility. Lenders have always been very fond of minimum takes in contracts to ensure revenue streams. In today’s environment, the guaranteed revenue is generally provided by the capacity payment. Most projects are financed on the basis of the capacity payment today without regard to receipt of energy payments as long as the energy payment is a break even.

[b] — Exclusivity.

Most PPAs today will provide that the purchaser has exclusive dispatch rights or control over the output from a plant. Sales to third parties from the generator will generally only be permitted during a period when either/ or the purchaser is in default. In addition, some agreements provide for sales of test power and pre-commercial operations power to third parties. Frequently tests and pre-commercial power are relatively non-firm and therefore have little value.

Sales to the interconnected utility during emergencies are also common exceptions to exclusivity. Emergency dispatch on or off line or other disruptions by the interconnected utility will occur and will be part of the interconnection agreement providing for connection with the transmission grid. For a power plant to deliver power into the transmission grid, it is obviously necessary to be interconnected with that grid. Reliability councils and power pools¹⁵ establish rules for the operation of the grid in

¹⁵ E.g., the New England Power Pool (NEPOOL) or PJM (covering much of Pennsylvania, New Jersey, Maryland and Delaware).
various locations. There are times when the operator of the grid (be it the interconnected utility, a pool or a regional transmission organization) will need to assume control over the operating level of plants in their area to ensure system protection. Generally such emergencies occur at a time of very high demand. If demand is high it is possible that the plant will already be dispatched on line by the customer. It is important to make sure that the tolling or PPA provides for emergency dispatch.

[c] — Conditions Precedent to Effectiveness.

Both sides in a PPA will want some conditions precedent to the effectiveness of the power purchase agreement. Generally a developer wants to be able to terminate the contract without obligation if within a certain reasonable time at or near the beginning of the term of the contract, the developer is unable to fulfill certain conditions. These generally include the receipt of all necessary permits, the interconnection with the grid and the financing of the project. Buyers will frequently require that the obligation to purchase the energy and capacity from the facility be conditioned upon certain certifications from the developer that it has acquired all the permits, that it has constructed the plant in accordance with prudent utility practice and that interconnection is complete.

Some buyers will attempt to provide a condition precedent that transmission services be available. Developers of plants should resist this type of clause. The purchaser should not enter into a tolling agreement unless it can obtain transmission in that area. The availability of transmission is generally the purchaser’s risk, not the seller’s risk.


More often than not, PPAs today are written such that the obligation to initiate commercial operations of a facility is on or about the beginning of a peak summer season. Prior to that date, there are several months during which the energy and capacity are not very valuable to a purchaser. Once the peak season begins the energy and capacity are generally extremely valuable. As such, June 1 is more often than not the deadline for the initiation of commercial operations in these types of agreements. If the facility is not able to initiate commercial operations by that date, the PPA usually provides for daily liquidated damages in the tens of
thousands of dollars per day per unit for each day of delay after June 1. Frequently this liquidated damage obligation is subject to a cap that is generally in the eight figure range. Generally, there are *force majeure* exceptions to this that provide for an exclusion of the liquidated damages to the extent of the *force majeure* delay.

If the plant is ready and able to run but for problems caused by the purchaser, then generally compensation is made to the generator even though the plant is not running. Sometimes this takes the form of reimbursing the seller for debt service, sometimes it is a liquidated specified amount.

Most agreements provide that if delay in commercial operations extends for a long period of time and is not caused by the purchaser, the purchaser may eventually terminate the contract. Such a period is usually specified in the contract and is generally in the range of a year or more.


Testing of systems of the plant will take place during the last two to four months prior to commercial operation. During this process, electricity is generated in increasingly large amounts for brief periods of time. In the last month before commercial operation, the plant will run at full load for several hours at a time in final acceptance testing. In addition, the PPA will generally require periodic testing one or more times a year to verify the dependable capacity level. Generally, this power is short term in nature and it is non firm. As such, it will be difficult for the customer under the PPA to market such test power at a high price. This is frequently addressed with separate compensation from the energy dispatched by the purchaser. For example, the developer can sell that test power to a purchaser, the purchaser can market it and split the revenue with the developer rather than compensating for it with the normal energy payments, or the parties can negotiate some other arrangement.


If the agreement is a traditional PPA rather than a tolling deal, it is appropriate for the purchaser to receive full disclosure of the fuel arrangements made by the generator. In a traditional non-tolling PPA, the generator must procure fuel to run in response to dispatch orders from the purchaser. If the contract is properly structured, the fuel cost will be a
“pass through.” The purchaser is paying for the fuel. The purchaser ought to be entitled to some reasonable degree of information to ensure that it can see that there is a reliable supply of fuel to meet dispatch.

If the contract is a tolling arrangement, fuel arrangements are the responsibility of the purchaser. Despite this, the generator has one key fuel issue. The lack of fuel should not be considered a forced outage for the plant. If the only reason the plant is not available is that the tolling customer has not delivered fuel, then the purchaser should pay the entire capacity payment without adjustment. Conversely, if the agreement is a traditional PPA where the generator is responsible for fuel procurement to meet the dispatch needs of the purchaser, then lack of fuel may be a forced outage or it may be considered a force majeure. Treatment of force majeure outages is addressed elsewhere in the chapter.


There are several principles to be kept in mind in the area of scheduled maintenance for a facility and its impact on availability calculations and forced outages. The duration of outages is sometimes specified in contracts. At other times contracts merely provide that the generator should be permitted reasonable amounts of outage time consistent with prudent industry practice or original equipment manufacturer recommendations.

Coordination of the scheduling of maintenance outages is generally done well in advance with the approval of the purchaser. Frequently, there are provisions allowing for the purchaser to request the rescheduling of outages at the purchaser’s expense. These facilities generally require a major maintenance period that is longer in duration every few years. In addition, gas turbines generally require an off-line compressor wash to maintain heat rate guarantees about once a month during peak periods when the plant is running at a very high capacity factor.


[a] — Procedures and Records.

Generally, PPAs and tolling agreements provide for the joint development early in the contract term of operating procedures and record keeping requirements. Contractually such a provision is merely an “agreement to agree.” Such procedures are necessary, however, to
determine the means of communication notices and protocol for dispatch of the facility and communicating forced outages and the like.

[b] — Availability Notifications.

Most PPAs and tolling agreements require that periodically (generally on a daily, weekly and monthly basis) the operator will notify the purchaser of its facility’s availability in the upcoming period. Likewise the purchaser will provide similar non-binding notices to the generator of its expected dispatch hour-by-hour over the upcoming period. At some point such notices must become binding for the plant to be able to operate. Advanced notification of expected dispatch to the generator is particularly critical in a traditional PPA where the generator is responsible for procuring the fuel necessary to meet the dispatch orders from the purchaser.

Operation in a traditional PPA fueled by gas may require a “day ahead” binding commitment for gas. In a tolling arrangement, advanced notification of expected dispatch for fuel purposes is not necessary.

c] — Dispatch in Conjunction with the Interconnected Utility.

The operating procedures for dispatch must also address communications with the interconnected transmitting utility. If the facility is to deliver power into the grid, there must be communication with the operators of the grid. If the purchaser is going to have the power transmitted across the grid it will also need notification to the transmitting utility. The responsibility for such communications should be addressed either in the operating procedures or in the PPA itself.

d] — Design Limits.

In the current environment virtually all contracts are fully dispatchable by the purchaser. The purchaser has virtually the complete say (other than during emergencies) on the operating level of the plant. Its rights are tempered, however, by the design limits of the facility. The design limits for the facility will provide parameters within which the purchaser will exercise its dispatch rights. These will include notice periods for hot, cold and warm starts, minimum run times per start, maximum number of starts, ramp rates to increase and decrease the generating level of the facility and other technical matters.
[e] — Imbalances.
A generating facility delivering power into a system can lead to electrical imbalances. When the quantity of electricity delivered into the grid deviates from what the grid was notified as to the level of the delivery there will be an electrical imbalance. Generating facilities consuming gas from a network of pipelines can lead to fuel imbalances. When the nomination of fuel consumed does not ultimately end up being approximately the same as the quantity of fuel consumed, there is an imbalance. Generally, there are tolerance bands within which the small minute by minute imbalances will be absorbed. In addition gas and electric utilities balancing services can be purchased. PPAs and tolling agreements generally address the allocation of the risk and the cost of imbalances and the cost for balancing services.

[f] — Forced Outage Notice.
Generally, PPAs and tolling agreements require immediate notification to the purchaser of forced outages and/or deratings experienced by a generating facility. The initial notice is generally followed by a more detailed explanation as to the cause and expected duration of the outage.

[g] — Metering.
PPAs and tolling agreements generally include provisions requiring certain metering devices and procedures for the testing and recalibration of such metering devices both for fuel and for electricity.

[h] — Billing and Payments.
Billing and payments in these types of agreements are as would be typically found in any large supply agreement. The provisions generally address timing of invoices and payments, disputed payments, set off rights, record keeping and interest on late payments.

PPAs generally address the responsibilities between the generator and the purchaser for interconnection. Generally, interconnection both with the local pipeline and the local utility to get access to the grid are fully the responsibility of the generator. Interconnection with the gas pipeline generally requires the construction of some sort of lateral pipeline that
will be dedicated to delivering fuel into the facility site. Likewise special lines will be constructed to deliver the power from the facility to the grid. Costs for these facilities should be included in the capacity charge as part of the fixed cost of developing the project.


As with any large sales contract these agreements generally include typical representations and warranties the parties make about themselves, addressing their organizational matters and good standing within applicable jurisdictions, authorization to enter into the transaction, enforceability of the agreement and representation that there is no litigation that is going to have a material adverse effect on the ability to perform under the agreement.


Change in law risk is frequently shifted from the generator to the purchaser or vice versa depending upon the length of the contract term. The shorter the contract the more likely it is that the generator will bear the “change in law” risk. The longer the term of the contract the more likely it is that the “change in law” risk (including new taxes) will be shifted to the purchaser. Any PPA should include language addressing who pays the existing taxes known at the time the contract is executed. It is easy to allocate the appropriate responsibility for taxes to the extent that the taxes are known.

If the law changes and new taxes or environmental programs or other governmental impositions become law that affect the cost of operating the power plant, it is reasonable to pass such costs through if they will apply to the market for electricity generally. In that way they will eventually find their way to the ultimate consumer.


Most PPAs now days have rather detailed insurance clauses that require both parties to maintain certain coverages. Generally parties are named as additional insured on each other’s liability policies. Business interruption coverage can be required, and if it is available, frequently can be used as a compromise to address the costs and risks of unavailability of the plant caused by force majeure events.

The definition of force majeure in these agreements generally conforms to the definition found in any large transaction. The bottom line is that parties are generally not held to be in breach to the extent that their failure or delay in performance is caused by circumstances beyond their reasonable control. While it is certainly appropriate and common to list examples of force majeure events, drafters should be careful to provide that the list of examples is merely a list of examples and does not override the basic principle that to qualify as force majeure it must be a force beyond the reasonable control of the party claiming the force majeure. Frequently these agreements include specific exceptions to the force majeure principle. This usually amounts to the section of the agreement that says that certain things shall not be considered force majeure.

The force majeure clause will typically include some procedures notification and required mitigation efforts to overcome the force majeure. The clause should also address the effect that unavailability of the plant caused by force majeure events will have on the payments under the agreement. Once again, business interruption coverage should be taken into account in the negotiation of such language.

Generally the force majeure provision will also include the opportunity for the non-affected party to terminate the contract if the force majeure event delays or prevents performance an inordinate amount of time, generally in the neighborhood of one year.

§ 7.05. Other Miscellaneous Provisions.

Like any major transaction document, PPAs should include typical “housekeeping” provisions such as notices, severability, order of precedence between main contract and appendices, successors and assigns, survivability, confidentiality, entirety of agreement and waiver of consequential damages. If the project will be “project financed” be careful to provide that a collateral assignment in the PPA can be made to a lender and that the purchaser will execute a document reasonably acceptable to the lender evidencing the purchaser’s consent to such assignment.
§ 7.06. Conclusion.

Power Purchase Agreements and Tolling Agreements are the keystone to development of power generation projects. Even for a merchant project, the developer will generally have at least a portion of the plant’s output sold under a PPA to an “anchor tenant.” The PPA is generally the only source of significant income for a power generation project. As the PPA is so crucial to the power generation project, fuel suppliers, lenders, equipment suppliers and construction contractors should have a working knowledge of PPAs and the issues raised therein.