Power Purchase Agreements (PPAs) and Energy Purchase Agreements (EPAs)

Full Description

Key features of a Power and Energy Purchase Agreement (PPA)

A Power Purchase Agreement (PPA) secures the payment stream for a Build-Own Transfer (BOT) or concession project for an independent power plant (IPP). It is between the purchaser "offtaker" (often a state-owned electricity utility) and a privately owned power producer. The PPA outlined here is not appropriate for electricity sold on the world spot markets (see Deregulated Electricity Markets below). This summary is focused on a base load thermal plant (the issues would differ slightly for mid-range or peaking thermal or hydro plants).

- Where a government agency enters into an arrangement for a private power company to establish a power plant and sell on the power to the government agency, the public agency typically enters into a PPA.
- The PPA usually takes the place of a BOT or concession agreement: in addition to obligations relating to the sale and purchase of the power generated, the PPA also sets out the required design and outputs and operation and maintenance specifications for the power plant.
- Sale of capacity and energy - the power producer agrees to make available to the Purchaser the contracted capacity of energy and deliver the energy in accordance with the PPA.
- Charges for Available Capacity and Electrical Output - the charging mechanism in the PPA is generally a pass through arrangement: the price charged for the power will consist of a charge (availability charge) to cover the project company's fixed costs (including a return on equity for the project company) plus a variable charge to cover the project company's variable costs. The availability charge relates to the availability of the power plant and the variable charge is calculated according to the quantity of power supplied. The purchaser will want a guaranteed long-term output from the project and so the availability charge is typically the minimum that it will be paid, provided that the plant can be shown to make sure power available.
- Third party sales - the ability to make third-party sales can enhance the finance ability of the project and cushion the purchaser against risks such as a reduction in the purchaser's monthly tariffs. This flexibility also has the advantage that, given the long-term nature of the PPA, if the market is deregulated at a later date then the PPA may not need to be completely replaced. However, purchaser's are often nervous about allowing third-party sales as they want to be sure that all capacity is available to them at all times and so the PPA may include an exclusivity period during which all power producer is be supplied to the purchaser. Flexibility may need to be incorporated into the PPA to ensure that this exclusive period is not an impediment to future development/ deregulation of the electricity market. Exclusivity provisions in PPAs can create challenges for development of energy markets.
- Underperformance and delays by power producer - the PPA may provide sanctions or require the power producer to pay liquidated damages if the power producer fails to deliver power as promised; in particular, if the construction of the project is not completed on schedule or does not perform as required when completed. Lenders will be concerned to ensure that liquidated damages do not have too damaging an impact on debt coverage ratios.
- Force majeure or purchaser breach of contract - the power producer is usually not required to pay damages for delays resulting from events beyond its control.
- Testing regime - this should be objective and designed to confirm levels of contracted capacity, reliability and fuel efficiency or heat rate, ideally certified by an independent engineer.
- Termination - the PPA will need to provide for what happens on termination (whether at the end of the
term of the agreement or early termination for default etc), including obligations of the power producer on hand-over of assets, calculation of buyout price for IPP (if this is contemplated), what happens to employees of power producer if IPP transferred to purchaser on termination.

- Project operation - issues typically include scheduled outages and maintenance outages, operation and maintenance, emergencies and keeping of accounts and records.
- Change of law - PPA should address impact on tariff in event of a change in applicable law and the mechanism for tariff adjustment. Lenders will be anxious to ensure that the cash flows of the project required for debt service are protected against changes in law.

For more detailed analysis of the issues involved in PPAs of this type, see the IFC guide to power purchase agreements (1996) - found at Annex 2 (page 160) of the World Bank Concessions Toolkit (pdf).

It is examples of this type of PPA which are provided below. The sample PPAs have been divided up into those more relevant to smaller and rural power projects, and more complicated PPAs relevant to larger projects in developing countries.

**When to use a Power Purchase Agreement**

Power purchase agreements (PPAs) are used for power projects where:

- the projected revenues of the project would otherwise be uncertain and so some guarantee as to quantities purchased and price paid are required to make the project viable;
- there is a possibility of competition from cheaper or subsidized domestic or international competition (e.g., where a neighboring power plant is producing cheaper power) - the PPA provides some certainty of being protected from such competition;
- there is one or a few major customers that will be taking the bulk of the product. For example, a government utility may be purchasing the power generated by a power plant. The government will want to understand how much it will be paying for its power and that it has the first call on that power. The project company will want certainty of revenue; and,
- the purchaser wishes to secure security of supply.

**Sample PPAs: Emergency Power and Mobile Plants**

**Power Purchase Agreement (PPA) for short term temporary, mobile, or emergency power** Short term, temporary or emergency power purchase agreement for purchase of power from a mobile plant (on skids). Prepared by international law firm for a small-scale rural power project in Africa, together with an Implementation Agreement.

**Sample PPAs: Small and Rural Projects**

**Power Purchase Agreement (PPA) for Small Scale Rural Power Projects** Part of suite of documents prepared by international law firm for use in small scale rural power projects. Documents prepared for country in South East Asia.

**Power Purchase Agreement (PPA) - short-form agreement developed for small scale power projects in Namibia** Standard short-form power purchase agreement developed for small scale power projects in Namibia. This is part of a suite of documents including a fuel supply agreement that can be found on the Namibian Electricity Control Board.

**Kenya - Power Purchase Agreement (PPA) - simplified agreement developed for Kenya** Short-form relatively simplified power purchase agreement developed for the Kenyan Electricity Regulatory Board for use in "hydro, geothermal or gas fired" power generation facilities. It anticipates both a capacity charge and an energy charge. Seller is to sell all the net electrical output of the plant to purchaser. The Energy
Regulatory Commission provides also a link to a Model PPA for larger renewable generators more than 10MW and a PPA for smaller renewables projects less than 10MW on its Renewable Energy Portal.

Tanzania - Short-form relatively simplified power purchase agreements developed for Small Power Producers in Tanzania - Standardized PPA for Main Grid Connection and Standardized PPA for Isolated Mini Grid Connection together with Standardized Tariff Methodologies for each case and Detailed Tariff Calculations, which can all be found on the EWURA web site. Also see Guidelines for development of small power projects.

Sample PPAs: Mid-sized and Large Projects

Power Purchase Agreement (PPA) for medium to large scale oil fired plants (Example 5) - Longer-form sample power purchase agreement for use in developing countries for oil fired plants. Prepared by international law firm for the World Bank as an outline of provisions commonly found in power purchase agreements in international private power plants.

Power Purchase Agreement (PPA) and Implementation Agreement produced for Pakistan's Private Power and Infrastructure Board by international law firm (issued 2006) - standard form power purchase agreement and implementation agreement for fossil fuel fired electric power generation facility developed by international law firm for Pakistan's Private Power and Infrastructure Board, together with a Model Pricing Schedule for PPA, and the Policy that set the general framework that led to the production of the three standard form documents Policy 2002 (PDF).

Long Term Draft Power Purchase Agreement (PPA) produced by Indian Central Electrical Regulatory Commission (CERC) (for projects where location and fuel is specified) (pdf) - Draft power purchase agreement developed by CERC for Indian IPP market - intended for long-term agreements (more than 7 years) for use for setting up power stations where location or fuel is not specified. Attached link is draft request for proposals - for draft PPA go to page 70.

Power Purchase Agreement (PPA) produced by Pacificorp for large scale power plants (pdf) - Draft power purchase agreement developed by Pacificorp for power plants in excess of 1000 kilowatt net output - relatively short-form agreement. Drafted in the context of U.S. regulatory structure.

Deregulated Electricity Markets

The above PPAs should be distinguished from power purchase agreements in a deregulated electricity market where the agreements are typically contracts for purchase of power from a private producer where the power plant is already in existence or where the power plant is being constructed at the initiative of the private producer. For examples of this type of PPA click on the following sample links: Edison Electric Institute Master Power Purchase & Sale Agreement (PDF) (4/25/2000) and Tri-State PPA.

Sample Power Purchase Agreements: Renewable Energy

- Carbon Capture and Storage
- Geothermal
- Hydropower
- Solar Power
- Wind Power

French Standard Power Purchase Agreements (PPAs):

Small Plants/Renewable Energy Sources (Les modèles indicatifs de contrats d'obligation d'achat d'électricité)

French standard power purchase agreements (Les modèles indicatifs de contrats d'obligation d'achat d'électricité) for small installations / renewable energy sources
, within the framework of the law of 2000 (loi no.2000-108 du 10 février 2000) and decree relating thereto (decret no.2000-877 du 7 septembre 2000) and decree of 2001 (decret no.2001-410 du 10 mai 2001) setting out the terms on which the grid and power distributors are to purchase electricity from the small power producers and wind power - Arrêté du 8 juin 2001 fixant les conditions d'achat de l'électricité produite par les installations utilisant l'énergie mécanique du vent telles que visées à l'article 2 (2o) du décret no 2000-1196 du 6 décembre 2000.

Further Reading

- [An Analysis of Independent Power Projects in Africa: understanding development and investment outcomes](PDF)
- [SARI Generation Pricing Report 2003](PDF)
- [Nigerian Notice of Proposed Rulemaking PPA for Captive Customers]
- [Private Participation in Renewable Energy Database]