

BRAZIL

Piracicaba 440/138kV Substation



OVERVIEW

Location

Piracicaba, Sao Paulo, Brazil

Sector

Energy – Transmission

Procuring Authority

Agência Nacional de Energia Elétrica,
ANEEL (the Brazilian Electricity Regulatory Agency)

Project Company

CPFL Transmissão Piracicaba S.A.

Project Company Obligations

Design, Build, Finance, Operate and Maintain

Financial Close

25 February 2013

Capital Value

BRL \$109 million
(USD \$53.5 million – 2013 exchange rate)

Contract Duration

30 years

Key Events

Delays in governmental permitting

SUMMARY

The 440/138kV Piracicaba substation is a small facility situated in the inland region of Piracicaba in the state of Sao Paulo, Brazil, and is designed to connect 440kV high-voltage transmission lines that run through the state to the local grid. The project's entry into service was delayed due to permitting issues and, as a result, the Project Company submitted a request to extend the contract duration to take into account these delays. The Procuring Authority did not to grant an extension. The less complex contract led the Procuring Authority to recognise that smaller and less complex contracts could offer advantages in simplifying contract management.

SUMMARY LESSONS LEARNED

- Optimising contract size and complexity is a key factor for effective contract management.
- Permitting can have a major impact on the construction duration, even for small-scale projects.
- Annual training across a programme of PPP projects can be an effective way to deliver structured training to contract management teams.

PROJECT INCEPTION

Goals and Objectives of the Partnership

The goal of the construction of the Piracicaba substation is to connect the local grid to the national grid as part of a wider objective to improve the reliability of electricity services in Brazil. The facility is a step-down substation, meaning that it is designed to connect the 440kV high voltage transmission lines to the low voltage 138kV local grid. The substation is composed of two sectors: i) the first sector, or step, is the 440kV input lines into the substation and ii) the second sector, or step, is 138kV input lines into the local grid. As in all energy projects in Brazil, the goal of the partnership with the private sector is to further improve the reliability of the electricity grid by benefiting from the private sector expertise and transferring the construction risk to the Project Company.

The Economic and Political Environment during Inception

The project was procured after the effects of the Global Financial Crisis had subsided, and before the economic challenges started in 2014. Brazil ended 2013 on a positive note with GDP growth exceeding economic forecasts, although the country was still suffering from mounting debt. Consequently, in mid-2014, when the global market sentiment turned against emerging markets with high external and fiscal imbalances such as Brazil, the economy experienced a steep downturn.

MANAGEMENT OF THE PPP CONTRACT

Construction Phase

Risks related to financing, design, construction and environmental permitting are generally transferred to the Project Company in Brazil, and the Procuring Authority is then responsible for monitoring the construction progress and the Project Company's performance. The Project Company took on responsibility for the design and construction of the asset according to the specifications set out in the PPP contract.

The Procuring Authority approves compliance of the design to the specifications of the PPP contract, and the Project Company is then responsible for securing the required construction permits and environmental permits to deliver the substation. The Project Company is also required to comply with the requirements of the national grid operator, Operador Nacional do Sistema Elétrico (the Grid Operator), as well as the owner of the high-voltage transmission lines.

The construction phase was agreed to be completed in 22 months, which included the time needed to obtain the required permits. However, obtaining the required permits took longer than anticipated, resulting in a 194-day delay. As a result, the Project Company incurred additional costs due to construction delays until the project entered operation.

The PPP contract has a fixed 30-year term (encompassing the construction and operations phases), and so any delays in construction reduce the length of the operations phase without an extension of time to the contract duration. In response to the delays during the construction phase, the Project Company requested that the contract duration be extended such that the operations phase remained of the length originally envisioned at commercial close. This was not accepted by the Procuring Authority, and the claim is now closed.

Testing and Commissioning

The Grid Operator was involved in the commissioning of the substation, and was responsible for ensuring compliance by the Project Company with the Grid Operator's specifications and procedures. This is to protect the grid from damage and facilitate a smooth integration into the grid, as well as guaranteeing safe operation during the PPP contract period. The owner of the high-voltage transmission line was also involved in the testing and commissioning of the project.

No issues or disputes were faced during the testing and commissioning of the substation. The process was smooth and final approval was given by the Procuring Authority and Grid Operator to start commercial operation in July 2015.

Operations Phase

The operations start date envisaged in the PPP contract was 25 December 2014. However, due to the delays faced in the construction phase, operation did not start until 7 July 2015. Since the start of the commercial operation of the project, no technical issues have been faced, and the Project Company has been receiving its availability payments. The Procuring Authority considers this project a success.

Performance Monitoring and KPIs

Construction

The PPP contract sets key milestones that the Project Company is required to achieve. The key milestones, as set out in the PPP contract are:

- Start of Construction
- Start of Electromechanical Assembly
- Start of Commissioning
- Start of Commercial Operation

Failure to achieve the milestones can result in agreed compensation becoming payable to the Procuring Authority as well as the potential calling upon performance bonds.

The management and monitoring of the contract during the construction phase was done through management

meetings and a software system called SIGET (Sistema de Gestão da Transmissão / Transmission Management System) which tracks the main milestones during the development from financial close to commercial operation. Management meetings are usually held quarterly and, if necessary, site visits and inspections are performed.

Both the Procuring Authority and the Project Company have access to the SIGET software. The Project Company is required to update the project development progress data on a monthly basis to provide the Procuring Authority with visibility over the progress.

Operations

The Procuring Authority's more active role in the monitoring of the project ends with the commissioning phase. Its role in the monitoring of the project is then scaled back to an oversight role whereby the Procuring Authority intervenes only if and when necessary. When the transmission line entered into service, the Grid Operator took over from the Procuring Authority the performance monitoring of the Project Company. The operation is monitored in real time and the associated performance monitoring reports are made available on the public domain.

Payment Mechanisms

The payment mechanisms on Brazilian transmission PPP contracts are uniform across the projects and are availability based. The payment mechanism is such that no revenue is available to the Project Company until the asset is complete and the substation is in operation. This incentivises the Project Company to complete the construction phase in the agreed time.

The Project Company's base transmission revenue is set in the PPP contract, where it is referred to as the "allowed annual revenue" (RAP). The RAP is adjusted annually to take into account inflation, deductions and any other additional revenue (for example authorised expansion of the facilities). The RAP is broken down into monthly payments, and then further reviewed every five years to take into account any scope changes requested by the Procuring Authority, any instances of force majeure and certain other changes.

Deductions to the RAP are calculated using a mechanism referred to as the "PV". The deductions are calculated on the basis of duration of any unavailability of facilities, revenue of the facilities which are out of service, and also take into account whether the outages were planned or unplanned. The deductions are adjusted monthly and their annual cumulative total is limited to 12.5% of the RAP.

The Grid Operator (rather than the Procuring Authority itself) is responsible for paying the Project Company the RAP. The issuing of monthly bills to the users of the facility is also the responsibility of the Grid Operator, which takes

demand risk, and any non-payment of power bills should not affect the Project Company's revenue. The risk of non-payment of bills is low, as there is a large number of payers, and these groups are incentivised to pay their bills as failing to do so would result in a withdrawal of service.

ROLE OF GOVERNMENT

Facilitating Access to Low Interest Financing

The National Bank for Social and Economic Development (BNDES) was created to drive economic development in Brazil by providing attractive financing solutions for eligible projects. BNDES supports credit access and executes the Federal Government's credit policies for national or regional social and economic development. BNDES provided financing to the Project Company at improved rates, which contributed to strengthening the commercial viability of the project.

Land Acquisition

The Project Company on substation projects is required to own the land, and land acquisition can be a challenge. In order to address this challenge, the government provides Procuring Authorities with the administrative power to expropriate land for public utilities and provide appropriate indemnification from the government.

The Procuring Authorities are empowered through an administrative act known as the Declaration of Public Utility. This act facilitates land acquisition for the purpose of the utility projects, preventing unnecessary delays to projects considered vital to providing a public service. The Project Company must own the land for substation projects, as opposed to transmission line projects where right of way is typically sufficient.

RELATIONSHIP BETWEEN THE PROCURING AUTHORITY AND PROJECT COMPANY

Team Set-Up and Staffing

The Procuring Authority's team is relatively small, and made of permanent ANEEL staff. The team consists of approximately three people at any given time. When needed, the team is supported by state lawyers and external financial advisors.

Training and Development

There is an annual training programme provided by the Procuring Authority to its employees. The programme covers a wide range of skills considered key to successful management of PPP contracts.

While a training programme is provided, there is no contract management manual. The training is mainly provided based on experience and knowledge gained from completed and ongoing projects. Seminars, workshops and

dedicated courses are provided by international market leaders and institutions such as the Council on Large Electric Systems (Cigré), universities and equipment producers.

Communications

The relationship between the Procuring Authority and the Project Company is transparent. The Procuring Authority recognises the importance of a good relationship with the Project Company and its positive effect on the success of the project. The Procuring Authority recognised that transparency in the relationship helps in solving challenges faced by the Project Company.

The official communication between the parties is done through formal letters. However, there are management meetings with the Project Company held every three months on this project, and every other contract managed by the Procuring Authority.

KEY EVENTS

Construction Delays

Since the Procuring Authority considers the permitting period part of the overall construction period agreed in the PPP contract, the delays in the permits directly affect the construction duration. In the Piracicaba substation project, some governmental permits took longer than anticipated resulting in a 194-day delay to the start of construction. As per the PPP contract, the operations phase duration is automatically shortened by the length of these construction delays in the absence of a corresponding extension of the PPP contract.

The Project Company attempted to keep the original duration of the operations phase despite the construction delays as part of a claim for additional cost and time overruns during construction. The claim submitted by the Project Company was considered by the Procuring Authority.

The dispute resolution process on energy projects in Brazil is as follows:

- The Procuring Authority has absolute administrative authority in accepting or rejecting a claim;
- If the Project Company is not satisfied with the Procuring Authority's decision, the dispute is typically escalated straight to the judiciary.

This claim did not go beyond the first stage of the dispute resolution process. The Procuring Authority rejected the Project Company's claim and did not extend the contract duration of the PPP contract. The Project Company decided not to contest the decision, and as of the writing of this case study, this claim is resolved and considered closed.

LESSONS LEARNED

Optimising contract size and complexity is a key factor for effective contract management.

The PPP contract is relatively small compared to other contracts managed by the Procuring Authority, such as transmission lines which tend to cover vast areas. The Procuring Authority highlighted that the size of the contract in this particular case had the advantage of being less complex and therefore easier to manage and less resource intensive. The Procuring Authority sees optimal complexity of the contract as one of the contributing factors for effective contract management, and it has therefore put plans in place to scale down future PPP contracts as appropriate, to ensure more effective contract management.

Permitting can have a major impact on the construction duration, even for small-scale projects.

This small-scale electricity substation project offered many advantages from the ease of contract management point of view. However, the project still suffered more than six months of delay to the start of its operations as a result of the delays related to governmental permitting issues. The risk associated with governmental permits should not be underestimated on a project of any scale.

Annual training across a programme of PPP projects can be an effective way to deliver structured training to contract management teams.

There is an annual training programme provided by the Procuring Authority to its employees. The programme covers a wide range of skills considered key to successful management of PPP contracts. All the seminars, workshops and dedicated courses are provided by international market leaders and institutions such as the Council on Large Electric Systems (Cigré), universities and equipment producers.