



Private sector participation (PSP) models in electricity transmission

May 2018

Electricity transmission networks are natural monopolies and traditionally have been handled by a single national (or in larger countries, provincial) state-owned company or a single national private company. However, in recent years, competition has been introduced for specific assets to build, own and operate the assets and sell the transmission services to the national utility or other users. Is this model of interest to the wider world more generally, or only for developed nations?

International experience

There are fundamentally two main types of PSP model used for transmission:

- Transco model for network utilities
- Build-own operate (BOO) or Build-own operate transfer (BOOT) model for specified assets operated by a utility

The Transco model is the more conventional approach and typically involves a concession or licence given to a private company to own, develop and operate **the network** for a prescribed period of time. The main difference between a concession and full privatisation is that with a concession the ownership ultimately rests with the government.

The BOO or BOOT involves inviting a private company to develop a **specific, distinct transmission asset**, and to maintain and recover the costs of **that specific asset** over a prescribed period of time. The asset may be owned by the developer or the developer may be given a concession. The asset is usually

integrated into the wider network and operated by the system operator.

Brazil

In Brazil, the state-owned company - Eletrobras – owns and operates the majority of the national transmission grid.

Over the past 20 years, Brazil has succeeded in attracting PSP transmission projects worth around US\$ 16 billion. The BOOT model typically involves 30-year concession contracts tendered by the electricity regulator. The bids are evaluated based on discounts to the initial 'Permitted Annual Revenue' specified by the regulator in the tender.

BOOT operators receive fixed, annual inflation-adjusted revenues for the 30-year concession period, subject only to resets to the rate-of-return. The BOOT operators are not exposed to volume risks. Both public and private companies may bid in the auctions, including Eletrobras itself.

United Kingdom

In the UK, offshore transmission owners have been appointed using competitive tenders since 2009. Recently this has been extended to onshore transmission.

To qualify for tendering the projects must be brand new or a complete replacement transmission infrastructure projects that are worth £100m or more. Competitively appointed transmission owners receive regulated revenue in return for constructing and operating their assets. The amount of revenue is bid during the

tender process and fixed for 25 years without any periodic reviews.

Issues to consider

There are three key issues to work through when considering a PSP model for transmission assets:

1. Which assets are involved?

It is important to distinguish where PSP assets end and assets of the national utility begin. This will determine the relative responsibilities for operation and maintenance.

A second issue is the value of the assets that are offered for PSP. In the UK, only projects with a cost of over £100m are eligible for tendering. This is because transaction costs are thought to be such that it would not be worth tendering anything smaller.

2. Land

The land requirement for transmission projects adds a layer of complexity to PSP planning, and responsibilities for obtaining permits and wayleaves need to be carefully assigned in tender documents. Responsibilities for mitigation costs (property values, environmental protection) will also need to be clearly assigned. In some countries where transmission assets can be targets for vandalism or terrorism, some guarantees over security may need to be considered.

3. Pricing arrangements

Transmission PSPs requires a clear framework that creates a balance between investor and consumer interests. The interests of investors are handled by defining transmission fees and

mechanisms to maintain a sufficient revenue stream allowing a suitable return on investments subject to an appropriate allocation of risks to the investor and the user of the transmission assets.

This pricing arrangement usually starts with a total allowable revenue. The issue is then whether the developer or the national utility takes on the volume risk. If volume risk is assumed by the developer, they will be paid per kWh transported. On the other hand, revenue could be guaranteed using contracts with annual fees whereby payment is made regardless of the amount transported provided that the transmission asset is available.

Risk allocation is particularly important for projects in volatile economies in order to attract investors to the region.

Conclusions

At the moment the competitive tender PSP programmes are mainly seen in countries with developed competitive energy markets. However, there is potential for PSP projects to offer a reliable option for transmission investment in some developing nations.

If stable frameworks are put in place in these countries then PSP in transmission should become more attractive. This is especially the case in countries where renewable energy programs, economic growth or regional grid integration are creating a burgeoning need for grid expansion.

In Brazil, PSP has lowered the cost of capital in transmission and we believe this could be attainable by more countries under the correct conditions.

Economic Consulting Associates was established in 1997 to provide economic and regulatory consulting services to industry and government. Our staff have years' of experience carrying out economic, market and policy analyses in the electricity, natural gas and water sectors.

Economic Consulting Associates

41 Lonsdale Road
London, NW6 6RA
Tel: +44 (0) 20 7604 4546
www.eca-uk.com