Tariff based bidding process for transmission: The first Indian experience

Ajay Talegaonkar and Ravinder

Abstract—There is policy shift towards private investment in the electricity supply industry. In India, the process of private sector participation in transmission is in nascent stage. Central Electricity Regulatory Commission decided to get implemented two projects forming part of Western Region System Strengthening Scheme-II through 100% private sector participation based on international competitive bidding. This paper describes some of the important measures taken to bring clarity in the bidding process as well as in the responsibilities and obligations of parties involved. Tariff coming out of the bidding process is found to be significantly lower than two benchmarks based on estimated capital cost of the projects. It is concluded that minimization of uncertainties and consequent reduction in risk perception of the bidders lead to success of the bidding process. This success also establishes competitive bidding as a viable option for private sector participation in transmission sector.

I. INTRODUCTION

A. Legal framework for Private Sector participation in transmission

In the early nineties, there was a policy shift towards privatization and to begin with electricity generation was opened for private investment. Few years down the line, transmission sector was also opened for private sector participation. For the first time, transmission was recognized as a distinct activity and the Indian Electricity Act, 1910 was amended with provision of licence for this activity. The Central Electricity Regulatory Commission (CERC) constituted under the Electricity Regulatory Commissions Act, 1998 was assigned the responsibility to grant licence for this activity. The Central Electricity Regulatory Commission (CERC) constituted under the Electricity Regulatory Commissions Act, 1998 was assigned the responsibility to grant licence for inter-State transmission with the approval of the Central Transmission Utility (CTU). Licensees were to construct and operate the transmission system under the supervision of CTU. Similar provision was there for licensing of the intra-State transmission system. The Central Government designated Power Grid Corporation of India Ltd. (POWERGRID) as CTU. However, in spite of few sporadic attempts, private investment in transmission did not take place. First private investment in transmission came through joint venture (JV) route, when POWERGRID selected Tata Power as its JV partner for implementing transmission system associated with Tala Hydro Electric project in Bhutan. Meanwhile, the Electricity Act, 2003 was implemented in May 2003 in which dominant role of CTU with regard to transmission licensing was done away with. The new Act inter-alia provides for competitive bidding for transmission in accordance with the guidelines issued by Central Government. However, interestingly, decision to carry out first tariff based competitive bidding was taken by the CERC before guidelines for tariff based bidding were issued.

B. Background of the projects

The twin transmission projects for which tariff based competitive bidding was carried out for the first time in India, were initially not envisaged for execution through this route. To begin with, POWERGRID had invited for Private Sector Participation for entire Western Region System Strengthening Scheme-II (WRSSS-II) for implementation through Joint Venture route. The scope of this scheme was for implementation of 17 No 400 kV transmission lines, 3 No 765 kV transmission lines, and extension of 18 existing substations and establishment of 3 new sub-stations. Estimated cost of the entire scheme is of the order of Rupees 52,000 Million. Evaluation was to be carried out on project cost and financing package offered. Even before notice for International Competitive Bidding was issued inviting proposals for qualification of parties to become Joint Venture Partner(s) of POWERGRID, Reliance Energy Ltd (REL) made an application to CERC on 11.8.2004 through its Special Purpose Vehicle (SPV) Reliance Energy Transmission Ltd (RETL) for grant of licence for certain elements of WRSSS-II. Subsequently, RETL filed amended application for licence covering entire WRSSS-II. During hearing in CERC, it was suggested by CEA that WRSSS-II be taken up in four (4) sets in order to encourage competition and have responsive bidding. POWERGRID considered the suggestions of CEA and split WRSSS-II into 4 sets (referred hereafter as projects A to D), keeping in view (i) the geographical location of transmission line elements so that specific areas of the Region/State are covered under the same set; and (ii) attractiveness from the point of view of Private Sector Participation. CERC rejected the application for grant of Licence to M/s. RETL in July 2005 [1] stating that execution of projects A and D, involving 765 kV and 400 kV Quad Lines, shall be done either by POWERGRID on its own or through a JV. In its order, CERC elaborated that with the limited experience available in private sector in India, it may not be possible for them to independently construct and operate 765 kV lines and 400 kV Quad lines. CERC,
however, concluded that time is ripe for involving private sector in transmission. Realizing that Central Government had not issued guidelines for competitive bidding for transmission at that point of time, CERC directed POWERGRID to initiate actions for selection of private party through 100% equity participation (i.e. through Independent Power Transmission Company or IPTC route) for projects B and C for which approval of process & procedures be taken by POWERGRID from CERC.

II. IMPROVING THE BIDDING PROCESS

A. Change over from cost based bidding to tariff based bidding

In compliance to CERC order, POWERGRID submitted Process & Procedure for selection of Bidders for implementation of transmission lines associated with WRSSS-II projects B & C through 100% private sector participation via IPTC route to CERC in September 2005 which was approved by CERC expeditiously. The procedure still envisaged selection of the IPTC based on quoted capital cost and financial package. Total 28 bidders were issued the Request for Selection (RfS) documents.

It emerged from the pre-bid conference that one of the major area of concern for the prospective bidders was criteria for bid evaluation. The bid evaluation was to be done based on NPV of the tariff coming out of the capital cost and financial package submitted by the bidders. The tariff calculations were to be carried out broadly based on terms and conditions of tariff notified by the Commission for the period 2004-09, which is essentially a cost of service regulation. However, prospective bidders had many queries on this issue. They had questions about interpretation of certain provisions and treatment of moratorium period, treatment of notional loan (equity exceeding 30% of capital cost), calculations of advance against depreciation etc. Since during operation period, the tariff was also to be determined based on the terms & conditions of tariff notified by CERC from time to time, the bidders were apprehensive about changes in the tariff regulations which are reviewed at the end of each control period of five years. They perceived it as regulatory uncertainty. It was realized that this was biggest issue affecting the bidding process. It was felt that even if detailed clarifications are issued, some gaps, real or perceived, may still remain. This method of bid evaluation had potential not only to vitiate competitiveness but also to give rise to many disputes and ultimately derailing the entire process of private sector participation in the transmission sector. Therefore, it was decided to migrate to tariff based bidding even if it meant extra efforts on revising bid documents and taking the entire process a few months back.

B. Procedure for tariff based bidding

When decision to switch over to tariff based bidding was taken, the Central Government had notified the guidelines for competitive bidding for transmission but the necessary framework for their implementation was not in place. Therefore, CERC decided to issue following guidelines to CTU to conduct tariff based competitive bidding for projects B and C of WRSSS-II:

(i) Annual transmission charges were to be quoted in the Indian Rupees only. No compensation for foreign exchange rate variation was allowed.
(ii) The bidders were to quote transmission charges in two components. One component was to be non-escalable and another component escalable, linked to domestic inflation rate. The escalable component was required to be quoted for the first year only.
(iii) The escalable component was not to exceed 15% of the non-escalable component quoted by the bidders for the first year.
(iv) Non-escalable component was to be quoted by the bidders for each year of licence period (25 years) minus estimated construction period, say 22 years.
(v) The maximum year-to-year variations allowed in the non-escalable component was 5%.
(vi) Full annual transmission charges (escalable and non-escalable) will be payable at Availability of 98%. The charges actually payable, inclusive of incentive/disincentive, will be proportionate to the availability actually achieved in case it differs from 98%.
(vii) POWERGRID was advised to specify the ceiling (say 10% of the estimated capital cost) for the buy-out price payable at the end of licence period. The bidders were free to quote their buy-out price within the above ceiling.
(viii) The evaluation criterion was NPV of the tariff quoted plus the discounted buyout price quoted by the bidder.
(ix) The discounting rate for calculating the NPV of the quoted rate and buyout price was specified as 9.25% per annum. The escalation rate for the purpose of bid evaluation was specified as 4.55%, which was average inflation for the last 3 years.
(x) For the purpose of actual payment of transmission charges, the inflation index will be based on weighted average of WPI (with 45% weight) and CPI (with 55% weight).
(xi) Any change in law impacting tariff with respect to the law applicable on the date, which was 7 days before the last date for price bid submission, will be adjusted separately. In case of any dispute regarding the impact of any change in law, the decision of CERC shall apply.

C. Enhancing competition through clarity of process, scope and obligations

The biggest factor, which contributes to success of any bidding process, is clarity of the process, scope of the work and obligations of parties involved. Time line of the process, qualifying requirements, documents to be submitted along with bids and the bid evaluation criteria have to be clearly specified. The scope of work and consequences of default by parties involved also need to be clearly stipulated.
It is always preferable to include at least draft agreements which the selected bidder is expected to sign. If risks and obligations have been clearly identified in the bid documents, more bidders may be willing to participate in the bidding process. Reduced uncertainty coupled with enhanced competition leads to better price discovery. This was the underlying theme of the decision making process in the CERC while dealing with the issues raised by the prospective bidders. Change over from cost based bidding to tariff based bidding is best example of the approach adopted by CERC to enhance clarity or as a corollary to reduce risk perception of the prospective bidders. Few examples as to how the bidding process was fine tuned to enhance competition are enumerated below:

a. **Regulatory initiatives**: Since the bidding process was being carried out by CTU under regulatory oversight of the CERC, the prospective bidders were looking towards CERC for understanding regulatory perspective and for seeking clarifications. In addition to advising CTU on clarifications to be issued, CERC assumed pro-active role and its officers participated in pre-bid conference to allay any apprehensions in the minds of prospective bidders and to sort out issues which required regulatory intervention. In spite of written clarifications issued by CTU in consultation with the CERC, some concerns still remained and efforts were made to address them in the informal discussions with prospective bidders.

b. **Bankability of the Agreements**: One of the concerns of the prospective bidders was bankability of Transmission Service Provider Agreement (TSPA) & Payment Security Mechanism to be provided by Beneficiary(s) for these Projects. The prospective bidders were concerned that the TSPA circulated by POWERGRID did not envisage substantive cure for default by beneficiaries. They were of the opinion that lenders were unlikely to lend money to them based on such TSPA. The prospective bidders desired that the TSPA should be a tripartite agreement with POWERGRID as a signatory assuming obligation to buyout the project in case of default by beneficiaries. It was recognized in CERC that unless this issue is resolved to the satisfaction of the prospective bidders and lenders, it will affect competitiveness of the bidding process. It was suggested that POWERGRID can sign a separate Buy-out agreement with IPTC to address default by beneficiaries during the licence term and TSPA should be signed by the IPTC and beneficiaries. The prospective bidders were satisfied with this arrangement and POWERGRID also realized that in case they are required to buyout the assets, their tariff shall be determined by CERC on cost-plus basis. Since, both TSPA and Buy-out agreements were to be approved by CERC, there was no scope for regulatory uncertainty.

c. **Calculation of availability**: The RfS document provided for availability to be certified by Member Secretary, Western Regional Power Committee in accordance with the terms and conditions of tariff notified by CERC from time to time. This was perceived as risk by the prospective bidders because if method of calculation of availability gets amended in future, it may impact payment of incentives/disincentives. To remove this risk, the procedure for calculation of availability was frozen and made part of the draft TSPA.

d. **Choice of Tower & Foundation Design**: In the bid document, it was stipulated that selected bidder would be given a specific time frame to develop and test towers, failing which they will have to use the proven tower designs of POWERGRID against payment of a fee. However, prospective bidders were not comfortable with this provision. Therefore, it was decided that to bring clarity, the prospective bidders should be given upfront option to adopt POWERGRID’s tower design so that they do not waste time in designing towers. Fees for using POWERGRID’s tower and foundation design were also declared in the form of clarifications so that bidders could factor the same into the tariff quoted by them.

e. **Procurement of Emergency Restoration System (ERS)**: POWERGRID has procured few ERs over last few years which are useful for temporary restoration of the transmission system in case of failures due to natural disasters. Such restoration helps in improving reliability of the system. At the same time, it helps the transmission utility to maintain availability of the system, which impacts recovery of full fixed charges and incentives. In this context, some prospective bidders wanted to know as to whether they were expected to procure ERS for these projects, so that all the bids are on same footing. It was realized that natural disasters requiring ERS do not occur frequently and if bidders have to necessarily make provision for them, it would lead to increase in tariff. POWERGRID was therefore advised to clarify that subject to their availability, POWERGRID will make available ERS to IPTCs, if need arises. POWERGRID was also advised to upfront specify charges for such usage so that bidders can include these charges into their offers based on probability of natural disasters. This advice was agreed to by POWERGRID.

f. **Development expenses**: In the bid document, it was mentioned that the selected bidder will be required to pay development expenses to POWERGRID. Further, the selected bidder was also to pay to POWERGRID for supervision during licence period i.e. during construction phase and operation phase. In order to allow the bidders to build cost of development expenses into their bids, POWERGRID was advised to specify ‘Development Expenses’ upfront. Since, Implementation Agreement for the construction phase was to be signed with POWERGRID with latter taking role of supervision of construction, it was decided that POWERGRID should estimate such expenses and indicate them upfront. However, the Electricity Act, 2003 does not envisage supervision of inter-State transmission system by CTU unlike erstwhile law namely the Indian Electricity Act.
1910 as amended in 1998. Therefore, it was decided that there is no reason for POWERGRID to charge any fees for supervision after the Commercial operation of the projects.

g. Commercial treatment of mismatch in completion of substations and transmission lines and progressive commissioning of lines: Project B consists of 6 transmission lines and project C consists of 3 transmission lines, whereas substations are in the scope of work to be carried out by POWERGRID. The prospective bidders were apprehensive that the developer may not get tariff, if substations do not get completed matching with transmission lines. Further, it is natural to expect that these lines will not get commissioned together. Therefore, prospective bidders were concerned that tariff may not be payable unless all the lines in the scope of the project get completed. The first aspect was taken care of in the Implementation Agreement which provides for payment of liquidated damages by POWERGRID or selected developer, if any of these parties is responsible for delay in commissioning of assets of the other party. To obviate second difficulty, it was decided that each bidder shall be asked to quote tariff for each line so that which ever line gets commissioned, tariff payment for the same may be started.

It may be seen that all efforts were made to obviate uncertainties perceived by the prospective bidders so that competitiveness of the bidding process gets enhanced.

III. SUCCESS OF THE BIDDING PROCESS

The first indication of the success of the bidding process was that 8 companies /consortia submitted their bids for project B where as corresponding number for project C was 9. Of these, 3 consortia were having at least one foreign company as member. During first stage of bid evaluation namely checking responsiveness of techno-commercial proposals, bid of one consortium, which had submitted bids for both the projects, was found non-responsive. Thus, effectively 7 and 8 bidders competed in the bidding process for project B and C respectively. Compared to this, there was only one qualified bidder in the previous attempt to have competitive bidding for transmission in the year 2003. On that occasion, cost based competitive bidding was carried out for Bina-Nagda-Dehgam 400 kV D/C line which culminated in rejection of licence application submitted by the sole responsive bidder on the advice of CTU as the cost quoted by the bidder was considered high [2].

However, more than the level of competitiveness, it is the tariff coming out of the bidding process which is indication of real success of the bidding process. In the case of bidding for the WRSSS-II projects B and C, Reliance Energy Transmission Ltd (RETL), now rechristened as Reliance Power Transmission Ltd (RPTL), emerged as successful bidder for both the projects B & C. To assess competitiveness of the tariff quoted by bidders, two benchmark tariffs have been compared with the tariff quoted by three lowest bidders. The first benchmark (benchmark-1) is the estimated tariff based on capital cost in accordance with the terms and conditions of the tariff notified by the Commission for the period 2004-09 under Section 62 of the Electricity Act, 2003. Certain assumptions have been made while arriving at this benchmark tariff, first and foremost being the capital cost for these projects, which is taken as the cost approved by Ministry of Power, Government of India at 4th quarter 2005 price level with debt: equity ratio of 70:30. In this approval, cost of projects B and C (transmission lines only, to be executed though 100% private investment) is Rupees 10,485 Million and Rupees 5,913 Million respectively. Other assumptions being loan repayment in 10 annul installments, interest payment @9%, annual escalation for O&M expenses @4% and discounting for NPV calculation @9.25%. Another benchmark (benchmark-2) has been developed based on the media reports [3] that EPC contracts for projects B and C have been awarded by RPTL to EPC Division of REL for Rupees 12000 Million, though breakup for individual projects is not available. Based on this EPC award cost, we estimate that the completed cost for the two projects taken together, including interest during construction (IDC) and overheads, would be of the order of Rupees 14000 Million. Using other assumptions applied in case of benchmark-1, tariff stream on the basis of EPC award cost has also been worked out. Comparison of the total tariff for projects B and C with benchmark-1 tariff and benchmark-2 tariff is depicted in the Fig 1.

![Fig 1: Comparison of the tariff quoted by the selected bidder with the benchmarks](image)

A more meaningful Comparison is possible when NPV of the tariff quoted by the lowest three bidders is seen against the NPV of the aforesaid benchmark tariffs. This comparison is shown in the table1.
It is seen that NPV of the tariff quoted by two lowest bidders is less than that of the benchmark-1 for project B. In case of project C, tariff quoted by three lowest bidders is lower than benchmark-1. NPV of the tariff quoted by the selected bidder is about 21% and 31% lower than that for benchmark tariff-1 for projects B and C respectively. In comparison, when viewed against benchmark-2, only NPV of selected bidder is lower (by about 8%). It is worthwhile to note that the cost of non-recourse financing for specific project in case of private entrepreneurs is likely to be more than public sector enterprises like POWERGRID and also that the former may have to incur higher cost on insurance unlike latter which has created self-insurance reserve on account of large number of transmission elements. Another significant difference is that in case of cost-plus tariff determined based on terms & conditions of tariff notified by CERC for the period 2004-09, income tax is payable separately in addition to the tariff, whereas in case of the tariff quoted by the bidders, income tax has been included. When viewed in this background, the tariff of the selected bidder appears attractive and beneficial to the ultimate consumer. This is a true indicator of the success of the bidding process.

IV. PRESENT STATUS

Subsequent to selection of the bidder, an issue had arisen that obligation to buy-out by POWERGRID, brings these projects in the category of Public Private Partnership and requires approval from the Public Private Partnership Appraisal Committee (PPPAC). Therefore, it was decided that if selected bidder agrees, the nature of the projects may be changed from BOOT to BOO. In stead of buy-out by POWERGRID, in case of default in payment, an alternative payment security mechanism was suggested, wherein Regional Load Despatch Centre will be authorized to divert part of the allocated power of the defaulting beneficiary and proceeds from such sale may be used to offset payment default by that beneficiary to the transmission licensees. This was agreed to by the selected bidder. Recently, the two SPVs formed by the selected bidder for executing projects B and C have filed application for grant of licence. These two companies have already signed IA with POWERGRID and TSPA is under discussion with the beneficiaries.

V. CONCLUSION

Simpler technical and financial bids are more likely to be perceived as fair by the public and other bidders [4]. In this context, the decision of the CERC to change the complex and somewhat ambiguous method of evaluating the bids based on the tariff calculated from the cost and financing data submitted by the bidders to a simpler and unambiguous method based on the tariff quoted by the bidders seems to have contributed significantly in the success of the bidding process. Certainty and predictability plays an important role in the success of the bidding process [5]. Ambiguity and uncertainties in the bidding process and provisions of the agreements, which are part and parcel of bid documents, greatly contributes to the risk perception of the bidders. If uncertainties are too many or perceived to have significant consequences, some of the conservative bidders may even decide not to participate in the bidding process. Others may assume consequences of uncertainties and ambiguities to have maximum possible cost impact and accordingly may end up quoting much higher tariff. The first Indian experience of tariff based bidding for transmission clearly demonstrates that clarity about process, scope and obligations play important role in the success of the process. This success also demonstrates attractiveness of the competitive bidding route for infusing private investment in transmission sector.

REFERENCES


Table 1

COMPARISON OF TARIFF QUOTED BY THREE LOWEST BIDDERS WITH BENCHMARKS

(Rupees Billion)

<table>
<thead>
<tr>
<th>Project</th>
<th>NPV of the annual tariff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Selected Bidder (L1)</td>
</tr>
<tr>
<td>B</td>
<td>10.84</td>
</tr>
<tr>
<td>C</td>
<td>5.64</td>
</tr>
<tr>
<td>B+C</td>
<td>16.48</td>
</tr>
</tbody>
</table>

* NPV of the estimated tariff of a licensee based on administrative approval of the cost by Ministry of Power, Government of India
** NPV of the estimated tariff based on EPC contract awarded by the selected bidder