

**Central Electricity Regulatory Commission**  
**Core -3 7<sup>th</sup> Floor, Scope Complex, Lodhi Road, New Delhi – 110 003**  
**Phone No: 24363174 Fax: 24360010**

-  
Ref. L-7/140(155)/CERC-2008

17.7.2008

**PUBLIC NOTICE**

**Sub: Staff paper on Arranging Transmission for New Generating Stations, Captive Power Plants and Buyers of Electricity.**

To conceive a transparent, non-discriminatory and practical approach for coordinated and timely planning and development of inter-State transmission network in emerging scenario, the staff of the Commission has prepared a paper titled “**Arranging Transmission for New Generating Stations, Captive Power Plants and Buyers of Electricity**” which is enclosed herewith.

Comments of the stakeholders are invited on the Staff Paper latest by 14.8.2008.

It may be noted that Staff Paper does not necessarily represent the views of the Commission. The Commission would take a view on various issues after receiving the suggestions of the stakeholders.

Sd/-  
(ALOK KUMAR)  
Secretary

Staff Paper

# Arranging Transmission

for

# New Generating Stations, Captive Power Plants and Buyers of Electricity

July 2008



**Central Electricity Regulatory Commission**  
Core-3, SCOPE COMPLEX, 7, Lodhi Road, New Delhi-110003  
Tele : 24361145, FAX : 24360010

## INDEX

### Arranging Transmission for New Generating Stations, Captive Power Plants and Buyers of Electricity

<i>Description</i>	<i>Page</i>
Introduction	3
Statutory provisions	3
Emerging scenario	8
Recent developments	9
Extracts from the Paper on sharing of transmission charges	9
Extract from order dated 28.3.2008	12
Relevant extracts from the IEGC	13
Transmission issues in competitive bidding under Case 1	13
Difficulty faced by Powergrid	14
Difficulties for renewable sources	15
The way out	16
What happens if the new system is not ready in time	20
Developing transmission for Case-1 bidding	23
Transmission priority and scheduling	23
Transmission priority in case use of existing system has been permitted	23
Conclusion	23
<i>Annexure-I: Broad feature of the draft regulation for long term and medium term usage of inter-State transmission</i>	26
<i>Annexure -II: Proposal for developing and evaluating transmission for tariff based competitive bidding under Case-1</i>	32
<i>Annexure -III: Recent Status of Long-term applications for generating stations as intimated by POWERGRID</i>	35

# Arranging Transmission for New Generating Stations, Captive Power Plants and Buyers of Electricity

## Introduction

1. Traditionally in India, new generating stations were in public sector and the associated transmission systems were developed either under the aegis of vertically integrated State Electricity Boards (SEBs) or through Central Public Sector Undertakings (CPSUs) under the overall coordination of Central Electricity Authority (CEA). Although generation was opened up for private sector way back in 1992 but of late private players have become active and started entering the generation sector in a big way lining up massive investments.

2. Powergrid, the CTU, has indicated that they have approved 26 cases of associated transmission systems for new generating stations adding to about 22,986 MW for long-term usage under CERC Open Access Regulations, 2004. Another 27 applications aggregating to 11,187 MW generating capacity are under finalization and 48 cases amounting to 48,324 MW are under processing for creation of associated transmission systems. It is indeed a heartening development – a tangible outcome of the various reform and market development initiatives – that beckons us to quickly build the associated transmission systems for delivery of power to the intended destinations. Whatever be the commercial arrangements for sale of power, it is necessary to embrace all new generating stations in the transmission planning process so as to ensure timely evacuation of power matching with the generation addition program, through smooth coordination and practical commercial arrangements.

## Statutory provisions

3. While providing for electricity market development, the Electricity Act, 2003 lays emphasis on coordinated development of transmission system and clearly defines the role of various agencies including the Central and State Governments, Electricity Regulatory Commissions, CEA, generating companies, CTU and STUs. The CEA is responsible for preparing perspective transmission plans; the STUs and the CTUs have direct responsibility for creation of new transmission facilities apart from providing non-discriminatory open access for use of the existing systems. Relevant provisions of the Act are quoted below:

Section 38(2)

“ The functions of the Central Transmission Utility shall be-

- (a) to undertake transmission of electricity through inter-State transmission system;
- (b) *to discharge all functions of planning and co-ordination relating to inter-State transmission system with –*
  - (i) *State Transmission Utilities;*
  - (ii) *Central Government*
  - (iii) *State Governments;*
  - (iv) *Generating companies;*
  - (v) *Regional Power Committees;*
  - (vi) *Authority;*
  - (vii) *Licensees;*
  - (viii) *any other person notified by the Central Government in this behalf*
- (c) *to ensure development of an efficient, co-coordinated and economical system of inter-State transmission lines for smooth flow of electricity from generating stations to the load centers;*
- (d) *to provide non-discriminatory open access to its transmission system for use by –*
  - (i) *any licensee or generating company on payment of the transmission charges; or*
  - (ii) *any consumer as and when such open access is provided by the State Commission under sub-section (2) of section 42, on payment of the transmission charges; or*
  - (iii) *any consumer as and when such open access is provided by the State Commission under sub-section (2) of section 42, on payment of the transmission charges and a surcharge thereon, as may be specified by the Central Commission.....”*

Section 39(2)

*“The functions of the State Transmission Utility shall be –*

- (a) to undertake transmission of electricity through intra-State transmission system;*
- (b) to discharge all functions of planning and co-ordination relating to intra-State transmission system with –*
  - (i) Central Transmission Utility;*
  - (ii) State Governments;*
  - (iii) generating companies;*
  - (iv) Regional Power Committees;*
  - (v) Authority;*
  - (vi) licensees;*
  - (vii) any other person notified by the State Government in this behalf;*
- (c) to ensure development of an efficient, co-coordinated and economical system of intra-State transmission lines for smooth flow of electricity from a generating station to the load centers;*
- (d) to provide non-discriminatory open access to its transmission system for use by –*
  - (i) any licensee or generating company on payment of the transmission charges; or*
  - (ii) any consumer as and when such open access is provided by the State Commission under sub-section (2) of section 42, on payment of the transmission charges and a surcharge thereon, as may be specified by the State Commission.....”*

### Section 73

*“ Functions and duties of the Authority...*

*... (a) Advise the Central Government on the matters relating to the national electricity policy, formulate short-term and perspective plans for development of the electricity system and co-ordinate the activities of the planning agencies for the optimal utilization of resources to sub serve the interests of the national economy and to provide reliable and affordable electricity for all consumers;”*

### Section 10(3)

*“ Every generating company shall-*

- (a) *submit technical details regarding its generating stations to the Appropriate Commission and the Authority;*
- (b) *co-ordinate with the Central Transmission Utility or the State Transmission Utility, as the case may be, for transmission of the electricity generated by it.”*

4. Provisions under the National Electricity Policy issued on 12.2.2005

*“5.3.2 Keeping in view the massive increase planned in generation and also for development of power market, there is need for adequately augmenting transmission capacity. While planning new generation capacities, requirement of associated transmission capacity would need to be worked out simultaneously in order to avoid mismatch between generation capacity and transmission facilities. The policy emphasizes the following to meet the above objective:*

- *The Central Government would facilitate the continued development of the National Grid for providing adequate infrastructure for inter-state transmission of power and to ensure that underutilized generation capacity is facilitated to generate electricity for its transmission from surplus regions to deficit regions.*
- *The Central Transmission Utility (CTU) and State Transmission Utility (STU) have the key responsibility of network planning and development based on the National Electricity Plan in coordination with all concerned agencies as provided in the Act. The CTU is responsible for the national and regional transmission system planning and development. The STU is responsible for planning and development of the intra-state transmission system. The CTU would need to coordinate with the STUs for achievement of the shared objective of eliminating transmission constraints in cost effective manner.*
- *Network expansion should be planned and implemented keeping in view the anticipated transmission needs that would be incident on the system in the open access regime. Prior agreement with the beneficiaries would not be a pre-condition for network expansion. CTU/STU should undertake network expansion after identifying the requirements in consultation with stakeholders and taking up the execution after due regulatory approvals.*

- *Structured information dissemination and disclosure procedures should be developed by the CTU and STUs to ensure that all stakeholders are aware of the status of generation and transmission projects and plans. These should form a part of the overall planning procedures.*
- *The State Regulatory Commissions who have not yet notified the grid code under the Electricity Act 2003 should notify the same not later than September 2005.*

5.3.3

*Open access in transmission has been introduced to promote competition amongst the generating companies who can now sell to different distribution licensees across the country. This should lead to availability of cheaper power. The Act mandates non-discriminatory open access in transmission from the very beginning. When open access to distribution networks is introduced by the respective State Commissions for enabling bulk consumers to buy directly from competing generators, competition in the market would increase the availability of cheaper and reliable power supply. The Regulatory Commissions need to provide facilitative framework for non-discriminatory open access. This requires load dispatch facilities with state-of-the art communication and data acquisition capability on a real time basis. While this is the case currently at the regional load dispatch centers, appropriate State Commissions must ensure that matching facilities with technology upgrades are provided at the State level, where necessary and realized not later than June 2006*

.....  
 .....

5.3.5

*To facilitate orderly growth and development of the power sector and also for secure and reliable operation of the grid, adequate margins in transmission system should be created. The transmission capacity would be planned and built to cater to both the redundancy levels and margins keeping in view international standards and practices. A well-planned and strong transmission system will ensure not only optimal utilization of transmission capacities but also of generation facilities and would facilitate achieving ultimate objective of cost effective delivery of power. To facilitate cost effective transmission of power across the region, a national transmission tariff framework needs to be implemented by CERC. The tariff mechanism would be sensitive to distance, direction and related to quantum of flow. As far as possible, consistency needs to be maintained in transmission pricing*



*framework in inter-State and intra-State systems. Further it should be ensured that the present network deficiencies do not result in unreasonable transmission loss compensation requirements.*

5.3.6 *The necessary regulatory framework for providing non-discriminatory open access in transmission as mandated in the Electricity Act 2003 is essential for signaling efficient choice in locating generation capacity and for encouraging trading in electricity for optimum utilization of generation resources and consequently for reducing the cost of supply”.*

### Emerging scenario

5. In the traditional scenario, a generating station invariably had right from the beginning, a Power Purchase Agreement (PPA) or allocation of shares to one or more beneficiary States or its distribution utilities but now the generating stations are also coming up in anticipation of finding customers in due course of time. This is particularly true for Independent Power Producers (IPPs), who have tied up a domestic or imported fuel source or acquired a site for hydro generation. These stations intend to sell their generation in anyone or more of the following ways:

- (i) Under long-term or medium term contract through tariff based competitive bidding (Case 1) to one or more distribution utilities as and when it happens.
- (ii) On negotiated bilateral contracts for period of less than one year.
- (iii) Through power exchanges
- (iv) Sale to the grid under real time UI mechanism
- (v) May also include wheeling to own industry for captive use.

6. In addition to the conventional IPPs, scores of captive power plants, cogeneration plants, wind generation farms and small hydro stations are also striving for access to the electricity market, seeking and expecting the creation of requisite transmission facilities.

## Recent developments

7. As part of the Open Access Regulations, 2004 the Commission had devised a category of “Long-term transmission Customer” to cater to the need of creating new transmission facilities. The large number of applications being received by the CTU for ‘long-term open access’, the need for open access facility for periods between ‘short term’ and ‘long term’, and the qualitative difference between ‘long-term’ and ‘short-term’ transmission service call for a new approach for long term and medium term usage. Accordingly, the Open Access Regulations for inter-State Transmission, 2008 issued by CERC cater only to short-term transactions, (bilateral as well as collective). It was stated in the explanatory note therewith that the need of long-term and medium term transmission usage would be dealt separately and in the meanwhile, existing regulations would apply so that there is no discontinuity. Hence this Staff Paper.

8. The CERC order dated 28.3.2008 read with order-dated 2.7.2007 in petition no. 85/2007 and Discussion Paper on ‘Approach for Sharing of Charges and Losses in Inter-State Transmission’ published in February 2007 provides the basic approach regarding inter-state transmission issues in the emerging scenario. Relevant extracts of the Discussion Paper (updated) and the order dated 28.3.2008 in the context of building new associated transmission schemes are quoted below:

### Extracts from the Paper on sharing of transmission charges

#### *“5.0 SHARING OF TRANSMISSION CHARGES FOR FUTURE ADDITIONS/AUGMENTATION*

*5.1 India already has fairly well developed regional grids, which by-and-large cater to the requirements of the existing generating capacity and load. When a new generating station (or extension) is planned, the required transmission system augmentation is also planned simultaneously. It can generally be said that the necessity*

*of this transmission system augmentation (commonly referred to as the “associated transmission system” – ATS in short) has primarily arisen because of the proposed generation addition. It would, therefore, be logical to stipulate that the identified beneficiaries/customers of the new generating capacity should pay for the above i.e., the associated transmission augmentation as well.*

- 5.2 *This is in fact not a new approach: it has been followed at the inter-State level, and has generally been accepted by all concerned. However, the practice followed so far has been to pool the charges of the new transmission system with those of the previously existing regional system, and to apportion the total charges between the beneficiaries in proportion to MW allocations arrived at after pooling the new generating capacity with the previously existing capacity. This again has been satisfactory in the past because all such generation has been CPSU-owned, and all States of a region have had allocations in all such stations. The position would now change, with entry of privately-owned generating stations in which only a few States or parties may have contracted shares, as also with establishment of mega generating stations having beneficiaries across the regional boundaries.*
- 5.3 *The Commission hereby proposes to stipulate that the pooling described in the previous paragraph shall not be mandatory or automatic with effect from 1.4.2008 in respect of new power plants, i.e. those plants no generating unit of which is declared under commercial operation up to 31.3.2008. The ATS of a new power plant may still be pooled with the existing regional ISTS, if all regional beneficiaries agree in writing to such pooling, and in this case transmission of power from the new power plant shall get the priority at par with that given to the existing Central generating stations, over the entire augmented system. If such pooling is not agreed to by any of the concerned parties, the new ATS shall be treated separately, in spite of the fact that the new system is to operate with the remaining system in an integrated mode. In this case, transmission charges for the associated transmission system of the new power plant shall be paid only by the identified customers of that power plant. Also, the liabilities for paying transmission charges for the remaining transmission system shall not change on account of this augmentation of generating capacity and transmission system.*
- 5.4 *Further, in the latter case, if the associated transmission system has been constructed to also cater to any future generation addition or for system strengthening not directly attributable to the associated power plant, the transmission charge payment liability of the power*

*plant's customers shall stand appropriately reduced. The remaining portion of the augmentation's transmission charge shall be either pooled with the previously existing regional system, or assigned for deferred recovery, depending upon the circumstances. There could be pragmatic variants as well, e.g., a hybrid approach, in special cases, to meet the ultimate objective. A part of the new transmission system could be treated as ATS and its transmission charges paid by the identified beneficiaries of the new generating capacity, and the remaining part of the new transmission system could be pooled with the existing regional ISTS. We do have the required framework of coordinated planning for transmission development under the umbrella of CEA and statutory responsibilities of CTU and STUs, for working out and agreeing on such pragmatic variants.*

- 5.5 The total transmission charges payable to the owner(s) of the transmission augmentation shall be determined as per prevailing norms (according to relevant CERC regulations), except for the competitively bid part, if any. How these charges have to be shared by the beneficiaries/customers is discussed later on (in para 5.7). The above approach shall also apply to the inter-regional links being built/to be built as a part of associated transmission systems. It is expected that the foregoing stipulations would assure the parties setting up or proposing to set up new power plants that their customers would not be required to pay transmission charges more than what is reasonable. While the tendency for over-building in ATS of private power projects would be discouraged, it would be possible to build extra transmission capabilities in such ATS for catering to future requirements, on justifiable considerations of ROW and overall transmission optimization, without distorting the economic viability of the new power projects.*
- 5.6 The stipulations in para 5.3 and 5.4 above are expected to induce "optimal development of the transmission network to promote efficient utilization of generation and transmission assets in the country", are a necessary step towards sensitizing the transmission charges to distance and direction, as mandated in the Tariff Policy, and would directly address the concerns of beneficiaries enumerated in para 2.4 and 2.5.*
- 5.7 In case the ATS of a new power plant is to be commercially pooled with the existing regional ISTS, its transmission charges would automatically get shared by the regional beneficiaries as per section 4.0. In case the new ATS is not to be so pooled, the sharing of transmission charges by the beneficiaries of the new power plant shall be decided on case-to-case basis for the present. As a general guideline, the transmission charge sharing may be in direct*

*proportion to the plant capacity allocation in case receiving points of all beneficiaries are at comparable distances. If different beneficiaries require new lines of widely differing lengths, it may be more appropriate to adopt MW-mile concept. After gaining some experience, the Commission may stipulate more specific guidelines, in due course.*

5.8 *The following is stated in National Electricity policy dated 12.2.2006 and reiterated in section 7.1(4) of the Tariff Policy dated 6.1.2006:*

*“Prior agreement with the beneficiaries would not be a pre-condition for network expansion.”*

*We presume that the intent of this provision is to enable timely and optimal augmentation of transmission system, even if some of the so-called beneficiaries have no interest in it and are objecting to it for some reason. The intent cannot be to thrust unreasonable liabilities on unwilling beneficiaries. The approach proposed in para 5.3 and 5.4 would ensure that there is no heart burning during operationalisation of the above quoted policy provision.*

5.9 *Any transmission augmentation clearly identified for strengthening the regional system (distinct from ATS) shall be pooled with the existing regional system for payment of transmission charges.”*

### Extract from order dated 28.3.2008

*“13.....We consider it important that the parties who have to pay for a transmission system when it comes up know about it upfront, i.e., before the system is taken up for construction, and have some say in the matter. In case a party is being unreasonable and is found to be blocking a beneficial/necessary transmission system, the matter could be brought before the Commission.”*

9. Coordinated and optimum development of transmission system requires input from the generation side as well as load side. The Discoms have to regularly update their STU about their load growth, new load Centres (like SEZs, new townships, industrial hubs etc.) and their procurement plans so that State grid expansion can be planned. The STU in turn, has to coordinate with the CTU for the import of additional power and, in case of exporting States, for creating touch points with ISTS for export of additional power.

## Relevant extracts from the IEGC

“3.4 .....

- (c) *In addition to the major inter-State transmission system, the CTU shall plan, from time to time, system strengthening schemes, need of which may arise to overcome the constraints in power transfer and to improve the overall performance of the grid. The inter-State transmission proposals including system strengthening scheme identified on the basis of the planning studies would be discussed, reviewed and finalized in the meetings of Regional Standing Committees for Transmission Planning constituted by CEA, in consultation with the beneficiaries, RPC, CEA and the RLDC.*
- (e) *All constituents and agencies will supply to the CTU, the desired planning data from time to time to enable to formulate and finalise its plan.*
- (k) *The Inter-State Transmission System and associated intra-State transmission system are complementary and inter-dependent and planning of the one affects the other's planning and performance. Therefore, the associated intra-State transmission system shall also be discussed and reviewed before implementation during the discussion for finalizing ISTS proposal indicated at 3.4(c) above. “*

## Transmission issues in competitive bidding under Case 1

10. Recently, a number of distribution utilities have floated tender enquiries for procurement of power under Case-I of Competitive Bidding guidelines with the condition that the power shall be delivered by the generator at their doorstep. There are difficulties in this approach, because (a) the prospective generator can only coordinate at his end and (b) the real time metering of the power injected by the generator can be done only at the point of entry into the grid. Beyond the point of injection into the mesh of the transmission wires, the electric power from various sources gets mixed and flows according to laws of physics and not according to financial contracts. At the doorstep of the Discom one can only have a 'drawal schedule' according to the declaration of availability by the contracted generator at his bus bars. The only measurement that can be done in real time at the door step of a distribution company is net total drawal of energy *vis-à-vis* its

net schedule aggregating the `drawal schedules' from all its contracted sources. When power is received by a Discom/State from the grid, it is not possible to measure or control actual drawal with reference to a particular source. Further, the contracted generator cannot be held accountable for transmission outages that may occur occasionally in the grid.

### Difficulty faced by Powergrid

11. It has been brought to our notice by Powergrid that in many instances the developers of large generating stations have approached for creation of transmission facilities at too late a stage when adequate time is not available to identify system strengthening requirement and for its timely implementation. Powergrid feels that they should be given 3-4 years time in normal cases and one year extra for the NE region.

12. Presently, a generator wanting to arrange transmission is required to give information about the beneficiaries along with their allocations for the purpose of transmission planning. However, it has been experienced that the generating companies are finding it difficult to indicate the beneficiaries upfront on two accounts; firstly due to requirement for the distribution companies to procure power on the competitive basis and therefore neither the buyer/beneficiaries are able to offer commitment nor generating companies are able to tie up such commitments at the time of preparation of projects; and secondly because a number of generators are interested in setting up merchant power capacity, at least in part of the plant capacity. In the absence of such information, the generators are finding it difficult to approach Powergrid with formal application and at the same time it becomes difficult for Powergrid to process such applications without identifying the beneficiaries. This is leading to delays in applying/processing of request. Therefore, there is a need to evolve a pragmatic approach, which gives adequate comfort to the applicant in achieving various milestones for implementation of generation projects as well as ensures timely execution of

activities to be undertaken for implementation of the required transmission scheme.

13. Powergrid has also pointed out the private developers are under-stating their requirement for power evacuation with a view to reducing their liability of sharing transmission charges. After getting grid connectivity and access to the market in this manner, they may apply for additional evacuation of power under short-term open access regulations where the transmission charges are quite nominal. We cannot allow them to game for exploiting the differential between normal transmission tariffs and short-term transmission tariffs to their advantage at the cost of optimum and planned development of transmission.

#### Difficulties for renewable sources

14. Renewable sources like wind farms, cogeneration plants and small hydro power plants are facing problems in arranging transmission due to reluctance of the host Discom to allow them to sell power to better paying customers outside their territory. In some States it is being insisted that host Discom would have the first right of refusal when it comes to sale of power by a captive facility. The message is often conveyed through delayed responses, unending procedural formalities and high wheeling charges. Some STUs are demanding transmission charges as well as upfront cash for transmission augmentation on their side i.e. upstream of the designated pooling point. It will be appropriate that CERC sets an example by giving preferential treatment to renewable sources (wind, small hydro and cogeneration plants) for arranging inter-State transmission. It is proposed for consideration that the small renewable energy plants, output of which could be accommodated on the existing inter-State transmission system, should be exempted from all inter-State open access charges, e.g. transmission/wheeling charge, scheduling fee, etc. Only a reactive energy charge may be applied by the host utility, as per the reactive charge scheme specified in Indian Electricity Grid



Code (IEGC), but there should be no other charge, e.g. standby charge, grid connection charge, etc.

### The way out

15. In the light of the foregoing discussion, there is a need to develop and formalize a practical procedure for the development of requisite transmission systems through the appropriate agencies created under the Electricity Act, 2003. The planning and development of transmission system for a typical inter-state generating station (ISGS) would require close coordination among the generator, CTU, STU and procurer. The elements forming part of the inter-state system, including inter- regional, would have to be developed by the CTU. Intra-state elements down stream of the CTU-STU interface would have to be developed by the STUs in accordance with the respective state grid plan.

An inter-state generating station (ISGS) would have to be typically connected to Inter-State Transmission (CTU) system. Depending on size and location of the generating Station, this could be achieved either by extending the Inter-State Transmission System up to the switchyard of the ISGS or by connecting the generating station to the CTU pooling point through a dedicated transmission line. Section 2(16) of the Act provides for a ‘Dedicated Transmission Line’ for connecting the generating station, *inter alia*, to a transmission line (which will be inter-State transmission system in the present context). Under the provisions of the Act, Dedicated Transmission Line is not a Transmission Line as no license is required for the former. The requirement of building a dedicated transmission line would have to be decided by the CTU in a transparent and non- discriminatory manner and irrespective of the ownership of the inter–State generating station. It is therefore proposed that in cases where it is required to connect the ISGS to more than one CTU points or where the quantum of power to be injected in to the CTU system is equal to or more than 1000 MW, the CTU shall be responsible for

developing transmission lines up to the ISGS switchyard irrespective of ownership. It would also be pertinent to mention that respective CTU and the STU portions could be developed by them directly or through a joint venture or through competitive bidding route in accordance with the National Electricity Policy and Tariff Policy. The transmission service charges shall be determined and shared in accordance with applicable regulations/ orders of the appropriate commission.

As is the provision in the existing CERC regulations, it stands to reason that the CTU should continue to be the nodal agency to be approached by a prospective ISGS for coordinating the development of associated transmission for long term usage.

Basic steps for the development of transmission system for a typical ISGS, are listed below:

### **Stage I: Finalization of power plant end**

Coordination by the ISGS with the CTU after finalization of location and size of the generation;

- Identification of actual beneficiaries or target beneficiaries broadly (at least the Region of such target beneficiary) as the case may be;
- System Studies by the CTU to firm up evacuation voltage, type of transmission (AC or DC), transmission elements till the nearest grid point (dedicated elements, if any).

Interconnection agreement or MOU with CTU for connecting the generating station or the dedicated portion with the CTU point may be signed at this stage.

### **Stage II: Finalization of complete transmission scheme**

- Detailed input by the generator regarding commissioning schedule, requirement of region-wise, State-wise, quantum of delivery (MW) based on

actual contracts and/or target beneficiaries.

- Determination of ISTS elements by the CTU in coordination with CEA and the STUs involved and its further segregation into Part-1 and Part-2, if required, in the Regional Standing Committee for Transmission Planning constituted by CEA.
  - **Part-1:** Portion of the Inter-State Transmission System the charges for which are to be borne by the firm up beneficiaries of the Generating station and balance by the generator, either in MW or in MW-mile ratio.
  - **Part-2:** Portion of the Inter-State Transmission System which is to be treated as system strengthening scheme and transmission charges for which are to be pooled with the Regional Transmission System.
- Decision regarding which party would construct and own which part of the transmission scheme.
- The dedicated transmission line (in accordance with criteria given above), if any, from the generating station up to the CTU point, to be developed and built by the generator.
- The down stream portion from the CTU-STU interface point of the procurer's State to the procurer's drawal points, to be taken care of by the STU or the procurer. Normally it should be built as integral part of the State grid expansion plan.

### **Stage III: Decisions and signing of agreements**

- BPTAs for Part-1 between the CTU/ transmission owner on one hand, and identified beneficiaries and generator (for the balance capacity) on the other hand.

- Approval of Part-2 by the Regional beneficiaries in the meeting of the Regional Standing Committee for Transmission Planning constituted by CEA .

16. Once the BPTAs have been signed, CTU/transmission licensee and STUs would go ahead and build the respective transmission portions. Charges as approved/ adopted by the appropriate commission for the transmission system once commissioned would have to be paid for by the signatory beneficiaries/generator irrespective of how and when the beneficiary or the generator would be able to utilize the corridors he got built for himself. To the extent there is surplus transfer capacity, it would be available to others for short-term open access and could also be utilized for medium term access explained subsequently in this Paper.

17. The dispensation suggested above in para 15 and 16 can be universally applied to all types of generating stations (thermal, hydro, nuclear) and all types of generators such CPSUs, UMPPs, IPPs selected under Case-2 bidding, IPPs selected under Case-1, Hydro IPPs selected through State allocation of hydro sites, merchant power plants, captive power plants etc. The only variant is that in case the beneficiaries are yet to be identified, the generating company would have to pay the transmission charges till such time beneficiaries are identified and start paying transmission charges in proportion to the power contracted by them.

18. Generating companies making large investments in generating stations would not like the transmission system to become a bottleneck in evacuation of the stations' output. They would want an assurance in the matter on a sustained basis. Even if the size and location of a generating station and its beneficiaries are such that the incremental power flows could prima facie be accommodated on the existing system, it has still to be checked by the concerned STU/CTU that normal redundancy margins are not encroached upon in the process. This must be done

sufficiently in advance, so that if the studies show any inadequacy in the system, time is available for carrying out the required augmentation. In case, this is not done in good time, the generating company may be required to restrict its generation, and it cannot claim a priority for use of the transmission system under “open access” or any other provision, particularly if the generating company itself has been negligent in the matter.

### What happens if the new transmission system is not ready in time

19. Once the identified transmission system or augmentation for a generating station has been fully commissioned, transmission of power from that generating station to its specified beneficiaries shall get the priority at par with transmission of power from the existing Central generating stations. However, it is possible that a generating station gets partly/fully commissioned before its associated inter-state transmission system is fully commissioned, due to any of the following:

- i) Commissioning of the generating station ahead of schedule
- ii) Delay in commissioning of the associated ISTS
- iii) Delay in identification of beneficiaries, causing a delay in construction of some parts of the associated ISTS
- iv) The generating company wanting to piggy-back for full or part capacity on the existing transmission system and not coordinating fully with the concerned STU/CTU

In the situation of overall power shortage, it would not be desirable to disallow the commissioned generating capacity from coming into the grid in case its injection can be accommodated on the then existing transmission system, may be with some reduction in transmission redundancy. Once such use of the existing transmission system is contemplated, it must be paid for, either by the concerned generating company or by its identified beneficiaries. The actual use of transmission system

may vary from time to time, but since the generating company would be banking/leaning on it, applicable Inter-State transmission charges should be paid on a regular basis whether a BPTA for developing the new transmission has been signed or not.

20. For the reasons explained above, it is proposed that transmission charges for the inter-State transmission system used or to be used in the manner indicated in previous para shall be borne by the concerned generating company or by its identified beneficiaries w.e.f. the date of completion of interconnection facility for the generating capacity in MW for which a designated Inter-State transmission System has not been provided/commissioned by that time. In other words, if 'x' MW of generating capacity has been commissioned, but the associated Inter-State Transmission System is ready for 'y' MW, the generator shall have to pay transmission charges for the pooled regional system for ('x'-'y') MW Determination of transmission charges to be paid on the above account shall be done on monthly basis for a specified period as per CERC regulations. Payment of transmission charges as above would entitle the generating company or its identified beneficiaries to any or a combination of the following:

- i) A lien over the inter-State transmission system to the extent its transmission charges are being shared, provided the power supply to identified beneficiaries can be accommodated on the existing system without lowering of transmission redundancies below normal.
- ii) A priority over 'short term open access' transactions, for scheduling of power as per medium-term (for 3 months or longer duration) contracts.
- iii) Short term open access for bilateral transactions or through the PX for sale to other destinations by paying applicable charges for open access, additionally.

- iv) Coordination of scheduling and energy accounting by an RLDC, if so agreed between the RLDC and the concerned SLDC.

In addition, the generating Station, being connected to the Inter State Transmission System would be part of the regional energy accounting system and liable to settle UI accounts.

21. Fee and charges for RLDCs and ULDC schemes shall similarly be payable by the generating company or by identified beneficiaries in proportion to the installed capacity commissioned but not included in apportioning of fee and charges payable by beneficiaries.

22. It is clarified that the generating company or the identified beneficiaries shall not have any automatic claim in the manner and the above facilities would be provided subject to availability of transmission margins, at the sole discretion of the CTU/concerned RLDC. In case a transmission constraint is foreseen or arises, and restriction/curtailment of a transaction would relieve it, the RLDC may ask the generating company to back down its generation, and the generating company shall forthwith comply with it.

23. The above provisions would apply for merchant plants as well, since the associated Inter-State Transmission System might have been built only partially. They would also apply for a generating station, which may have contracted for supplying only a part of its capacity to the host State through intra-State transmission system and may be intending to wheel rest of the capacity through inter-State transmission system. These proposals would also be applicable to such captive power plants, which want to wheel power outside the state in which they are located.

## Developing transmission for Case-1 bidding

24. A number of State Utilities have procured power through *Case-I* (as referred to in Competitive Bidding Guidelines). In view of the experience gained in such procurements, it is suggested that a standard procedure regarding development of transmission for such procured power should be followed. The outline of such a proposed standard procedure is attached as *Annexure-II* to this Paper.

## Transmission priority and scheduling

25. Once the identified long-term beneficiaries of a new inter-State generating station start paying/sharing the applicable transmission charges as well as the applicable fee and charges for RLDC and ULDC schemes, the daily scheduling of the generating station would be undertaken at par with the existing inter-State generating stations i.e. with transmission priority at par, without payment of any further charges, scheduling on day-ahead basis for any quantum of power up to entitlements, and flexibility to revise the availability declaration and requisition, similar to those applicable for the existing inter-State generating stations.

## Transmission priority in case use of existing system has been permitted

26. The treatment for the case covered in para 20(i) would also be similar to the one described under para 25. In case of para 20(ii), the treatment would again be similar, except that the transmission priority would be lower than the first case. In case of para 20(iii), the treatment would be as per open access regulations.

## Conclusion

27. The participation of the private sector in generation needs to be facilitated to redeem the nation from perpetual power crisis. There is an urgent need to bring all



new and proposed generating stations under the umbrella of coordinated transmission planning through a practical procedure as summed up below:

- (i) It would be incumbent upon every generating company to coordinate sufficiently in advance with the concerned CTU and STU for planning and timely construction of the required transmission system augmentation.
- (ii) Different portions of the required augmentation can be built by different parties- CTU, STU, the generator, a transmission licensee- as mutually agreed among the concerned parties, but fitting in the overall transmission plan.
- (iii) As and when the required transmission elements are brought in to commercial operation, regular payment of transmission charges would start as per BPTAs in accordance with the regulations regarding sharing of transmission charges.
- (iv) For any part of a generating station's commissioned capacity for which the required transmission augmentation as per normal redundancy criterion has not been built (due to any reason) by the time of commissioning of such capacity, the generator would compulsorily share the monthly charges for the concerned regional transmission systems *pro-rata* to such part, till commissioning of the associated Inter-State Transmission System.
- (v) In accordance with the above discussion, broad features of the draft regulation for arranging long term and medium term inter-State transmission usage are attached with this Paper at *Annexure –I*.
- (vi) Proposal for arranging and evaluating transmission for tariff based competitive bidding under Case-1 is attached with this Paper at *Annexure-II*.

- (vii) The Commission may direct the CTU to prepare and submit for approval a *detailed procedure including revised application forms, model transmission agreements etc. for Arranging Transmission for New Generating Stations, Captive Power plants and Buyers of Electricity* in line with the approach recommended in this Paper from para 15 to para 26.

**Broad feature of the draft regulation for long term and medium term  
usage of inter-State transmission**

**Long-term usage**

1. It would be obligatory for the owner of a new inter-State generating station to apply to the CTU for long-term transmission arrangement under the relevant regulations in the prescribed format giving requisite details and a correct assessment of quantum of power in MW proposed to be injected into inter-State transmission system, along with its time frame.
2. The generating company should make application well in advance at least 3 to 4 years before the likely date when the transmission system is required to be energized.
3. The Central Transmission Utility shall be the nodal agency for processing of the application, integrated transmission planning and development of the ISTS.
4. The CTU shall process the application in a time bound manner as suggested below:  
Stage I: For deciding connectivity of the generating station to the nearest grid point, dedicated portion and a tentative associated ISTS for target delivery points.  
Stage-II: For detailed integrated planning, firming up of the associated ISTS, its division into pooled and non-pooled portions, if required, sharing formula (MW or MW-Mile basis) for non-pooled portion, and a decision regarding which party would construct and own which part of the transmission scheme.
5. CERC shall prescribe application fee to be charged by the CTU for processing of application for Stage-I and II. Processing time for Stage-I and Stage-II shall be up to 60 days and 120 days respectively.

6. Implementation shall be taken up by the CTU/ transmission licensee/STU for the respective portions in Stage III after signing of BPTA or MOU.
7. BPTA to be signed by the CTU/transmission licensee with the beneficiaries identified at that time. The generators to sign the BPTA for the remaining capacity for which beneficiaries have not been firmed up. However, in such a case also generators would have to provide target beneficiaries for at least the target region of drawal. The development of ISTS may be taken up in suitable phases or the interconnection point may be altered for which necessary coordination shall have to be done well in time by the generator and the identified beneficiaries.
8. With respect to pooled portion of ISTS, the agreement will have to be reached separately in the Regional Standing Committee of CEA for transmission planning. In case of any undue delay, the CTU shall immediately bring the matter to the notice of the Commission through a letter addressed to the Secretary, CERC giving full details till that time, progress so far, scheduled programme and reasons for hold up. CERC may take up the matter *suo motu* and the decision of CERC would be binding.
9. At least two and half years clear time would be required from the signing of BPTA to the commissioning of the associated ISTS. In special cases, such as hilly terrain, difficult NE region, very long inter-regional links, lines passing over the environmental sensitive areas etc., longer period may be required.
10. The parties signing BPTA would be expected to provide reasonable payment security mechanism to the CTU/transmission licensee.
11. An associated ISTS once commissioned would have to be paid for over the designated period of long-term contract unless exit has been obtained. The period of long-term contract shall be mutually agreed upon.
12. The tariff for the associated ISTS shall be determined as per terms and conditions of tariff for inter-State transmission of the CERC from time to time unless the same has been adopted through tariff based competitive bidding for transmission facilities.

13. Once the associated ISTS has been fully built, the transmission of power from the new inter-State generating station to the specified beneficiaries shall get a treatment at par with the existing ISGS. The new generating station would be required to follow the scheduling and dispatch procedure specified in the IEGC for the ISGS.
14. If associated ISTS is not ready in time or is not adequate, due to whatever reasons, the generating station may be allowed connectivity with the ISTS provided its injection of power can be accommodated on the existing and/or partially built new ATS without unacceptable compromise on security margin. The nodal agency for this purpose shall also be the CTU. The CTU shall also decide and review up to for how much medium term period such transmission access can be allowed. However, this would be subject to payment of proportionate transmission charges for the pooled regional system w.e.f the date of completion of interconnection facility.
15. It is proposed that transmission charges for the inter-State transmission system used or to be used in the manner indicated in previous para shall be shared by the concerned generating company in proportion to the generating capacity in MW for which a designated associated ISTS has not been provided/commissioned. Reapportioning of transmission charges on the above account shall be done on monthly basis for a specified period. Payment of transmission charges as above would entitle the generating company to any or a combination of the following:
  - i) A lien over the inter-State transmission system to the extent its transmission charges are being shared, provided the power supply to identified beneficiaries can be accommodated on the existing system without lowering of transmission redundancies below normal.
  - ii) A priority over `short term open access' transactions, for scheduling of power as per medium-term (for 3 months or longer duration) contracts, in case lien as per sub para (i) is not feasible.

- iii) Short term open access by paying applicable charges for open access, additionally.
- iv) Coordination of scheduling and energy accounting by an RLDC, if so agreed between the RLDC and the concerned SLDC.

In addition, the generating Station, being connected to the Inter State Transmission System would be part of the regional energy accounting system and liable to settle UI accounts.

- 16. Fee and charges for RLDCs and ULDC schemes shall similarly be payable by the generating company in proportion to the installed capacity commissioned but not included in apportioning of fee and charges payable by beneficiaries.
- 17. If new ATS is not ready in time or is not adequate, the generating company shall not have any automatic claim for use of existing transmission system. The use of existing system in the manner described above would be permitted subject to availability of transmission margins, at the sole discretion of the CTU/concerned RLDC. In case a transmission constraint is foreseen or arises, and restriction/curtailment of a transaction would relieve it, the RLDC may ask the generating company to back down its generation, and the generating company shall forthwith comply with it.
- 18. Once the identified long-term beneficiaries of a new inter-State generating station start paying/sharing the applicable transmission charges as well as the applicable fee and charges for RLDC and ULDC schemes, the daily scheduling of the generating station for *long-term users* would be undertaken at par with the existing inter-State generating stations i.e. with transmission priority at par, without payment of any further charges, scheduling on day-ahead basis for any quantum of power up to entitlements,

and flexibility to revise the availability declaration and requisition, similar to those applicable for the existing inter-State generating stations.

19. **Medium-term usage** (on existing transmission system):

- The duration for medium term access shall be from 3 months to 3 years (which may be extended further in suitable installments), to be applied at least three (3) full months in advance of the date from which such usage is to start.
- The nodal agency for medium term access shall be the CTU.
- While granting medium term access, the normal n-1 or n-2 security margin shall not be generally compromised.
- The new generator whose designated associated ISTS is not ready shall be eligible for applying for medium term open access. In addition, captive generating plants and renewable sources like wind, small hydro, baggasse based cogeneration plants etc., shall also be entitled to apply for medium term usage.
- The medium term users shall have to pay full pro rata transmission service charges including RLDC and ULDC charges and fee.
- Medium term usage shall be from specific point of injection to specific point of drawl both having special energy metering for UI accounting.
- The medium term customers shall also be eligible to seek open access for bilateral/PX on payment of relevant open access charges.
- The priority of medium term users shall be below the long-term beneficiaries and above the open access customers.
- The scheduling and dispatch procedure, special energy metering and settlement of deviation from schedules for the *medium term users* of transmission shall be as per the normal practice, except that requisitions submitted to RLDCs at 1500 hours for the next day may be treated as final and no changes would be normally permitted.

However, in case of forced outage at the injecting generating station one change for reducing the schedule and second for restoring the schedule incase of revival on the same day may be permitted.

20. Appropriate exit option clauses would be specified for long-term and medium-term users.



Proposal for developing and evaluating transmission for tariff based competitive bidding under Case-1

1. Case 1 requires comparison of the bids inclusive of the transmission charges. Such meaningful comparison is possible only when all the procurers are located in the same State or within the same region and all such procurers have a common point for off taking power.
2. If a trading licensee desires to participate in the Case-I bidding, he will have to identify physical location of the generating Station from where power will be sourced.
3. (i) The delivery point(s) shall be the CTU sub-station/pooling point near the generating Station ( if the latter is located outside the procurer's State) or sub-station of the STU of the State if the generating station is located in the procurer's State.  
Note: Delivery point is construed as the point at which the seller shall deliver the electricity. The price quoted by the bidder shall include the transmission charges and transmission losses up to the delivery point.  
  
(ii) Metering shall be done at the delivery point(s). Standby meters shall be at the generating station switchyard.
4. (i) Developing transmission up to the delivery point shall be the responsibility of the selected bidder. Its cost shall be built into quoted tariff.  
  
(ii) It will be the responsibility of the selected bidder to coordinate with the STU/CTU under section 10 for the purpose of development of necessary transmission system beyond the delivery points for evacuation of the power

up to the doorstep of the procurers. The STU/CTU shall be responsible for developing transmission scheme for evacuation of power from the delivery point up to the CTU interface of the procurer(s). However, if generating station of the seller is located in the procurer's State, the STU concerned shall only be responsible for developing such transmission system. The selected bidder shall enter into agreements with CTU/STU and shall be liable to pay transmission charges to the CTU/STU. The seller shall recover such transmission charges from the procurers.

Alternatively, the procurer may approach CTU for making available transmission corridor. This would bring down the risk perception of seller and may lead to better tariffs.

(iii) Developing transmission system downstream of their CTU interface shall be the responsibility of the respective procurer(s).

5. Sharing of Transmission Charges:

- To be borne by the seller for 4(i)
- To be borne by the procurer(s) for 4(ii)
- To be borne by the procurer(s) for their respective downstream System as indicated at 4(iii)

6. Transmission losses from the delivery point onwards shall be absorbed by the procurers.

7. Transmission charges and losses for bid evaluation:

(i) The seller shall quote tariff inclusive of transmission charges and losses up to the delivery point.

- (ii) Based on the input to be furnished by the CTU and NLDC/RLDC's, CERC shall publish and update annually Region-wise transmission charges and Regional transmission losses in percentage for the purpose of bid evaluation under case 1. Similarly, for the purpose of bid evaluation, each SERC shall publish transmission charges and percentage losses for STU system
  
- (iii) The published figures of transmission charges and percentage transmission losses for STU system in which seller's generating station is located and that of the regional systems involved shall be used by the procurer(s) for bid evaluation in accordance with methodology given in the bid documents.

**Recent Status of Long-term applications for developing ISTS for  
generating stations as intimated by POWERGRID**

**Summary**

Approved	22,986 MW
Finalized and under issuance	11,187 MW
Under processing	48,324 MW

Details of approved schemes:

Sl. No.	Applicant	Capacity (MW)
<b><u>Eastern Region</u></b>		
1	JINDAL	75
2	Jojobera (Tata Power Company)	220
3	Maithon Power Ltd.	1000
4	KVK Neelanchal	560
5	Farakka-III (NTPC)	500
6	Chitrapur (PTC)	480
	Sub Total	<b>2835</b>
<b><u>Northern Region</u></b>		
7	BASPA (HPSEB)	300
8	Allain (AD Hydro Power Ltd)	192
9.	Discoms of Delhi from DVC	230
10	Karcham Wangtoo (PTC)	704
	Sub Total	<b>1426</b>
<b><u>Southern Region</u></b>		
11	Krishnapatnam (PFC)	4000
12	Nagarjuna Power Corporation Ltd.	1015
	Sub Total	<b>5015</b>
<b><u>Western Region</u></b>		
13	BESCL	170
14	Torrent	1095
15	Lanco-I (PTC )	300
16	Jindal Power Ltd.	500

17	Korba-III	500
18	Sasan (Reliance Power)	4000
19	Mundra (TATA Power)	4000
20	MPPTC DVC(WR)	400
21	Adani	200
22	Mahan (Essar Power Ltd)	1100
23	Lanco-II (PTC)	300
24	Dheeru (PTC)	600
25.	MPAKVNL	25
26	EMCO	520
	Sub Total	<b>13710</b>
	<b>Total</b>	<b>22986</b>

**Details of finalized schemes and under issuance:**

Sl. No.	Applicant	Capacity (MW)
<b><u>Eastern Region</u></b>		
1	Gati Infrastructure	118
2	Jharkhand Ultra Mega	4000
3	Teesta-III	1200
4	Teesta – II	480
5	Panan	300
6	Teesta-I	300
7	Rongyong	60
8	Dickchu	96
9	BOP(Chungtang)	99
10	BhimkyongI	90
11	Lachung-Tangchi	40
12	Teesta-VI	500
13	Jorethang	96
14	Rangit-IV	120
15	Tashiding	80
16	Tingting	90
17	Rongnichu	96
18	Rolep	80
19	Bhasmey	51
20	Sada Mangdev	71
	Sub Total	<b>7967</b>

<b>North Eastern Region</b>		
21	Pallatana	740
	Sub Total	<b>740</b>
<b>Northern Region</b>		
22	LOHARI NAGPALA (NTPC)	600
23	DVC (DTL)	230
24	Malana-II (PTC)	100
25	Budhil (PTC)	70
	Sub Total	<b>1000</b>
<b>Western Region</b>		
26	Hazira (Essar Power Ltd)	1400
27	South East Central Railways	80
	Sub Total	<b>1480</b>
	<b>Total</b>	<b>11187</b>

**Details of schemes under processing:**

Sl. No.	Applicant	Capacity (MW)
<b>Eastern Region</b>		
1	Navbharat Power Pvt. Ltd.	1200
2	Monnet Ispat	500
3	Visa Power(ER)	500
4	Adhunik Thermal	470
5	Avantika	20
6	Latehar (Corporate Power Ltd.)	594
7	Jharsuguda (Sterlite)	2400
8	Haldia (CSEC)	400
9	Haldia (NDPL)	150
10	Essar(Jharkhand)	1200
11	Electrosteel	1200
12	Jindal	1320
13	GMR	1050
14	Lanco Banbandh	2640
15	NBSEDCL	2000
	Sub Total	<b>15644</b>

<b>Northern Region</b>		
16	Tapovan Vishnugarh (NTPC)	520
17	Bailangana (PTC)	22.5
18	Jhajjar (Reliance Industries Ltd.)	1300
19	Sorang Power Ltd	100
20	NDPL for DVC Power	50
	Sub Total	<b>1992.50</b>
<b>Southern Region</b>		
21	Krishnapatnam (A.P. Power Dev. Company Ltd.)	1600
22	Samalkot (Gautami Power Pvt. Ltd.)	540
23	Krishnapatnam (Simhapuri Energy Pvt. Ltd.)	491
24	Manubala (Meenakshi Energy Pvt. Ltd.)	491
25	Athena Kakinada Power Private	2400
26	East Coast Energy Private Limited	2640
	Sub Total	<b>8162</b>
<b>Western Region</b>		
27	Visa power	1100
28	Patni	405
29	JSW Energy Ltd.	1200
30	BALCO	1200
31	Jaiprakash Associates(WR)	920
32	AES, Chattisgarh	1200
33	Aryan Coal St-II	500
34	Today's Home	700
35	Athena Chettisgarh	1320
36	Aryan Coal Benefications	250
37	Korba Power	600
38	GMR Energy	1000
39	Jhabua (PTC)	660
40	Maruti CCPLC	270
41	Reliance Industries	1050
42	Maharashtra Energy (RPL)	4000
43	Prakash Thermal	1050
44	PIL Power Ltd	1400
45	Prakash Mega	1400
46	Spectrum Coal & Power	100
47	Sarda Energy	1200

48	Finolex Infrastructure	1000
	Sub Total	<b>22525</b>
	<b>Total</b>	<b>48324</b>