

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

**Coram:
Dr. Pramod Deo, Chairperson,
Shri. S. Jayaraman, Member
Shri V.S. Verma, Member
Shri M. Deena Dayalan, Member**

In the matter of

The Central Electricity Regulatory Commission (Standards of Performance of inter-State transmission licensees) Regulations, 2012.

Statement of Reasons

1.0 Introduction

- 1.1 The Commission, by virtue of its powers under sub-section (1) of Section 57 read with sub-section (2) (p) of Section 178 of the Electricity Act, 2003 (the Act) for making Regulations on Standards of Performance of inter-State transmission licensees had published the draft Central Electricity Regulatory Commission (Standards of Performance of inter-State transmission licensees) Regulations, 2010, (herein after known as “Standards of Performance Regulations”) and had invited suggestions and comments from the public on the draft regulations through public notice dated 28.9.2010. The date for inviting public was extended till 29.10.2010 vide public notice dated 21.10.2010.
- 1.2 Stakeholders numbering 11 such as Kerala State Electricity Regulatory Commission, State Utilities, SRPC, POSOCO, PGCIL, and NTPC, Citizen Consumer and Civic Action Group etc submitted their written submissions/ **oral** submissions. The list of stakeholders who submitted their comments is enclosed as **Annexure**. The Commission heard the stakeholders in an open hearing on 11.11.2010.
- 1.3 The regulations have been finalized after detailed analysis and due consideration of the various issues raised by the stakeholders. These are discussed in the succeeding paragraphs. It is observed that, generally, users of the inter-State transmission system have requested for higher transmission system availability and lesser time for restoration

of transmission system elements after outage whereas the transmission licensees have requested for relaxed transmission system availability and restoration time. Our approach is to take a balanced view, taking into account the ground realities.

2.0 Applicability of provisions of Section 57 of the Electricity Act 2003

2.1 Powergrid Corporation of India Ltd. (Powergrid) has submitted that Section 178 (2) (p) of the Electricity Act, 2003 (herein after “the Act”) refers to a licensee or a class of licensees that are covered under the provisions of Section 57 of the Act. Section 57 of the Act is itself covered under Part VI of the Act which deals with the provisions with respect to Distribution of Electricity. Therefore, it appears that the aforesaid provisions are not applicable to inter-State Transmission Licensee.

On pursual of Post VI under the heading "Distribution of Electricity", it is observed that the post has been divided into several sub-headings such as provisions with respect to distribution licensees, provisions with respect to electricity traders, provisions with respect to supply generator and consumer protection, Standard of Performance. Thus the post is not confirmed to distribution of electricity only.

It is also observed that Section 57 to Section 60 of the Act come under a separate and distinct sub-head “*Consumer protection: Standards of performance*”, which also covers “Market Domination” under Section 60 pertaining not only to a licensee but also to a generator. In our view, Section 57 of the Act pertains to Standards of Performance of any licensee, whether transmission or distribution or trading licensee. Sub-section (1) of Section 57 provides as under:

The Appropriate Commission may, after consultation with the licensees and persons likely to be affected, specify standards of performance of a licensee or a class of licensees.

Since, transmission of electricity, as per the Act, is a licensed activity; the transmission licensees shall be subject to the standards of performance. Section 57 of the Act is, therefore, applicable to the transmission licensees as well.

2.2 Powergrid has submitted that as per the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009, the norms for operation along with compensation in terms of recovery of fixed charge on monthly basis is dependent upon

the availability achieved i.e., time taken for system restoration. Additional provision(s), if any, to recover compensation from the Transmission Licensee may be analogous to 'double compensation'. Power grid has requested the Commission to reconsider these regulations' applicability to the transmission licensees.

It is clarified that Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 have incentive as well as disincentives for the transmission system availability as a whole. However, the Standards of Performance Regulations are meant for minimum transmission element-wise availability and maximum restoration time for outage of a single transmission element and compensation by the inter-State transmission licensee to the affected user for the loss suffered on account of the outage.

- 2.3 NTPC Ltd. (NTPC) has welcomed the Standards of Performance Regulations and has submitted that this is a timely step since a number of transmission systems are being taken up for development through the tariff based competitive bidding route. POSOCO has submitted that this is a much needed regulation in the present context. POSOCO has also submitted that the efficient performance of the Transmission licensees shall maximize the benefits to the users. The performance standards of transmission licensees should be framed in the context of its impact on human safety, equipment safety and safety of the power system.

It is observed that the Central Electricity Authority (Grid Standards) Regulations, 2010 already specify safety procedures to be followed, which are mandatory for a transmission licensee. Further, this was also mentioned in the Preamble to these Regulations. Hence, there is no need to include these standards in the Standards of Performance Regulations.

- 2.4 POSOCO has further submitted that along with availability, the following parameters could also be considered to evaluate operation of the protective system as defined in the CBIP Publication No. 276 namely 'Manual on Reliable Fault clearance and back up protection of EHV and UHV transmission networks', September 2005:

- (a) *Index D of dependability defined as $D = N_c / (N_c + N_f)$ where N_c is the number of correct operations during the given time interval, N_f is the number of failures to operate at internal power system faults.*
- (b) *Index S of security is defined as $S = N_c / (N_c + N_u)$ where N_u is the number of unwanted operations .*

- (c) *Index R of reliability defined as $R = N_c/(N_c+N_i)$ where N_i is the number of incorrect operations and is the sum of N_f and N_u .*
- (d) *From a, b and c we get $(1/S) + (1/D) = (1/R) + 1$*
- (e) *In working out the above, it is suggested that ‘protective system’ should cover the entire system right from CT/PT, protective relays, circuit breakers, compressed air system, dc supply etc. as any ‘mis-operation’ or non-operation leads to the safety of the system being compromised.*
- (f) *In case of (a) above, any failure to operate the ‘primary’ protective system leads to multiple tripping either due to stuck breaker condition or tripping of the lines from remote ends on Zone-2. Thus a single phase to ground fault not cleared by the primary protection can lead to at least three to five elements going out. Thus we could have (No. of elements that have been lost/No. of elements that should ideally have gone out) as an index which should ideally be 1 but would be higher on account of non-operation of primary protective system.*
- (g) *As per CEA (Grid Standards) Regulations, RLDCs might submit the category wise disturbance details to the Central Commission annually.*

We feel that at this initial stage, no benchmark indices based on CBIP Manual can be specified, but once transmission licensees start submitting periodic data and we have sufficient data, benchmark indices could be fixed. At this stage we intend that the inter-State Transmission Licensees submit data to NLDC/ RLDCs (POSOCO) and POSOCO in turn compute the indices and submit the same to the Commission and the respective RPC along with the data used for calculation of the same. Accordingly, a new Item No. IV on “Data to be furnished by the inter-State Transmission Licensees to POSOCO” has been inserted in the Schedule of the Standard of Performance Regulations. Further, with respect to the disturbance details mentioned by POSOCO, the category-wise grid disturbance details are already covered in the Central Electricity Authority (Grid Standards) Regulations, 2010 and need not be covered here, as these Regulations are primarily for compensation to be paid to the affected person.

2.5 POSOCO has submitted that the draft Model Transmission Agreement for Public Private Partnership (PPP) in Power Sector issued by Planning Commission (dated 24th September 2009) provides for Reliability as a Key Performance Indicator. It is suggested that a limit on total number of unplanned outages attributable to the transmission licensee may be

specified. POSOCO has submitted that the dependability and security of the grid needs to be addressed by way of measurement of number of tripping of the transmission elements.

We feel that higher number of unplanned outages would lead to higher down time of the transmission elements which would be reflected in the availability of the individual transmission elements. However, Standards of Performance Regulations could be reviewed based on the experience. We may, at this stage, ask for the number of trippings of each element to be recorded and for five or more trippings of an element in a month to be put on the website by the inter-State Transmission Licensees and reported to the Commission by POSOCO. Accordingly, a new Item No. IV has been inserted in the Schedule of the Standard of Performance Regulations. POSOCO has submitted that all the system parameters like bus voltages, frequency, active and reactive power flows, transformer tap position, circuit breaker and isolator status and master relay status should be available to the Load Despatch Centre for proper monitoring and control. Standards of performance of transmission licensee to ensure data availability at Load Despatch Centre may be specified.

We feel that it would be difficult to determine the compensation on account of the same. This standard has, however, been taken care of in Central Electricity Authority (Grid Standards) Regulations, 2010, which any transmission licensee has to follow. We feel that no new provision in the Standards of Performance Regulations is required for the same. Accordingly, the comment is not accepted.

- 2.6 Southern Regional Power Committee (SRPC) has submitted that the availability figures of the applicable elements (being certified by RPC) and to be furnished by the ISTS licensee should be the certified figures by Member Secretary, RPC.
- 2.7 Gujarat Urja Vikas Nigam Ltd. (GUVNL) submitted that there should be Designated Nodal Agency for certification of non-adherence of the Standards of Performance stipulated in their Regulations, by defaulting inter-State Transmission licensees. Once the non-adherence of the Standards of Performance is certified by the Nodal Agency, the affected party shall be entitled to claim directly the compensation. While framing methodology and procedure and determining compensation, the Commission should not consider the non-availability of transmission line/ system, but may consider the cheaper

generation bottlenecked owing to non - availability of transmission services and costlier power purchased on short-term basis through alternate arrangements. Therefore, the payment of compensation shall not be only limited to transmission charges but should also cover the additional burden which affected party has to bear due to power purchased on short-term.

We agree to the suggestion of both SRPC and GUVNL that there needs to be a Designated Nodal Agency for certification of the certification of the transmission element-wise monthly availability figures of the inter-State Transmission licensees. We also agree to the suggestion of SRPC that the RPC, being a neutral body, would be the best Agency to do the job. Therefore, sub-clause (iv) of Clause (a) has been provided in Regulation 5 as under:

“The element-wise monthly availability figures shall be certified by the Member Secretary of the Regional Power Committee.”

The Standards of Performance Regulations do not provide for the claim of compensation by the affected party directly from the Nodal Agency, as the affected party has to file petition before the Central Commission; accordingly, claim of the compensation from the licensee by the affected party, as suggested by GUVNL cannot be accepted. Further, it appears that GUVNL is trying to suggest standard compensation to be paid in case of non-adherence of the Standards of Performance stipulated in Standards of Performance Regulations. At this stage, we do not wish to standardize the compensation. The compensation will have to be decided based on loss suffered, which shall be decided by the Commission. Regarding the suggestion of GUVNL to link the compensation to be paid for the difference in the cost of power, for bottling up of cheaper generation, we do not agree with the suggestion, since the cost of power is about 10 times more than the transmission charge, which, if paid by the transmission licensee, could drive the transmission licensee out of business.

- 2.8 Sterlite Transmission Projects Pvt. Ltd. (STPPL) has submitted that Central Transmission Utility (CTU) and Powergrid need to be separately addressed to and hence, the name “CTU” to be replaced by “Powergrid” at appropriate locations.

It is understood that STPPL is referring to the Explanatory Memorandum issued along with the draft Central Electricity Regulatory Commission (Standards of Performance of

inter-State transmission licensees) Regulations, 2010, which states that data have been sought and received from the CTU. It is stated that the data have been taken from POWERGRID, which has been presently designated as the CTU by the Govt. of India. In any case, since the comment does not pertain to the Regulations, no change is required.

- 2.9 STPPL suggested that STPPL should have been nominated as a member of Task Force for finalisation of the Draft Regulation. Tamil Nadu Generation and Distribution Company Ltd. (TANGEDCO, formerly Tamil Nadu Electricity Board) submitted that there was no representation from the State Transmission Utilities (STUs) in the Task Force formed by the Central Commission for the formulation of Standards of performance for the inter-State Transmission Licensees and that the STUs practices and the duration taken by them for attending to various breakdowns have not been considered or called by the Commission in the formulation of the draft Standards of Performance Regulations.

In reply to this, it is stated that a private transmission licensee, viz. M/s Powerlinks Transmission Ltd., was a member and two private inter-State transmission licensees, i.e. Adani Power Ltd. (APL) and Reliance Power Transmission Ltd. (RPTL) were invited as special invitees in the “Working Group for formulating draft Standards of Performance for Transmission Licensees”, to take care of the views of private transmission licensees. APL took part in the deliberations, whereas RPTL did not. Since, these standards are for inter-State transmission licensees, accordingly STUs were not invited as members or special invitees in the Working Group. However, comments on the draft Regulations can be given by any person, including STUs and if, found in order would be incorporated in the final regulations.

- 2.10 TANGEDCO has submitted that there is no necessity to replace the assets immediately after completion of 25 years or to keep a spare to replace the asset at the end of 25 years of the service of the equipment. There are cases where ICTs have served 50 years or more.

We are of the view that the draft regulations did not propose any timeline for the replacement or to keep a spare of any equipment, including ICTs. Therefore the comment is not relevant.

- 2.11 TANGEDCO has submitted that the availability is calculated on a regional basis and the time taken to attend to a fault in a single element does not affect the availability of the regional system to a great extent, as the elements in the regional system is much more today than when the incentive system was introduced. The limit of availability for awarding incentives should be increased.

It is presumed that TANGEDCO is proposing an increase of Normative Annual Transmission System Availability Factor (NATAF) calculated as per the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009. Since comments were invited only for the subject Regulations, this comment is not relevant.

- 2.12 TANGEDCO has submitted that the prudent practice should be followed in maintaining spares inventory thus relieving the beneficiaries from payment of higher transmission charges. The minimum performance level of all the equipment should be increased keeping pace with the technological developments.

We are of the view that the proposed draft regulations do not specify the number of spare equipment to be maintained; hence the suggestion is not being considered.

- 2.13 STPPL has suggested that for the next few years, the transmission licensees need to be provided with performance indices which are softer than the performance of CTU. STPPL and Reliance Power Transmission Ltd have submitted to exclude Tariff based bidding Transmission Projects from the purview of new Regulations (which have additional financial implications). Alternatively such Transmission Projects may be granted an increase in their Transmission Tariff.

We are of the view that the Electricity Act 2003 under Section 57, already provides for Standards of performance of licensees to be adhered . Therefore the bidders should have factored in the requirement in their bids. However, the licensees cannot now take a plea of additional burden on them. Moreover, in order to ensure a level playing field, the Standards of Performance Regulations have to be the same for the transmission projects on cost-plus tariff as well as Tariff-based competitive bidding. It is clarified that for the transmission projects with cost-plus tariff, the compensation paid to the affected person

by the inter-State Transmission Licensees shall not be allowed as a pass-through in the awarded tariff. Therefore the Standards of Performance of inter-State Transmission Licensees shall affect all inter-State Transmission Licensees equally, whether in the cost-plus regime or in the competitive bidding regime. Accordingly, the following proviso has been inserted after the first proviso in Regulation 7:

Provided further that the amount of compensation awarded shall not be allowed to the transmission licensees to be passed through to the users while determining the tariff on cost plus basis.

3.0 Regulation 3 (1) (b)

3.1 PTC has submitted that the definition of “affected parties” should include trading licensees and power exchanges. Powergrid has submitted that the definition of the **User** as the “affected person” need to be aligned with the definition of a User (Designated ISTS Customer – DIC) as per the CERC (Sharing of inter-State Transmission charges and losses) Regulations, 2010”. SRPC has submitted that the definition of “affected parties” should be modified as below:

“affected person” means all designated ISTS customers which are the users of any segments/elements of the ISTS and shall include all generators, State Transmission Utilities, SEBs or load serving entities directly connected to the ISTS including bulk consumers and any other entity/ person.

With respect to the suggestion of M/s PTC, we feel that trading licensees and power exchanges are facilitating parties. We are not inclined to include them as user. With respect to the definition of “affected person”, we agree with the suggestion of POWERGRID that the definition of “user” needs to be aligned with the definition of “DIC” as given in the CERC (Sharing of inter-State Transmission charges and losses) Regulations, 2010. Accordingly, the definition of “affected person” is modified as under :

“affected person” means a user of the inter-State transmission system and is affected due to non-adherence to these Standards of Performance by the inter-State transmission licensee;

A new definition “user” has been incorporated as below, in accordance with the definition of DIC:

“User” means a user of any segments/ elements of the ISTS and shall include all generators, State Transmission Utilities, SEBs or load serving entities directly connected to the ISTS including Bulk Consumer and any other entity/ person;

4.0 Regulation 5

4.1 NTPC has submitted that the following additional measures may also be considered:

The number of trippings as a measure of performance may be included in draft Regulations to provide a thrust on transmission licensees to minimize the number of outages too. A reasonable and practical value of standard can be stipulated based on the analysis of historical data in line with the methodology followed for the proposed standards.

Impact of outage - Loss of load or generation i.e. Outage in MW associated with Transmission non-availability. A performance norm for the same can be devised based on the grid size, power number etc. and reviewed from time to time based on the state of the grid. Also the Availability norm for critical systems should be higher than that for non-critical systems.

POSOCO has already pointed out for having Standards for number of trippings. We have stated in Para 2.4 and Para 2.5 that the Standards of Performance Regulations could be reviewed based on the experience gained with the submitted data and information on number of trippings. As far as the other suggestion is concerned, it appears that NTPC wants the compensation to be linked to the power bottle-necked due to transmission outage. We have already discussed this in Para 2.7 and therefore are not inclined to accept this suggestion.

Regulation 5 (a):

4.2 Transmission Corporation of Andhra Pradesh Ltd. (APTRANSCO) has submitted that in the APTRANSCO network with 10 nos. 400 kV sub-stations and 3,103 circuit kilometre (ckm) of transmission lines, the average availability for the last 6 and half years for the sub-stations and transmission lines are 99.89% and 99.38% respectively. The availability figures for elements of AC systems in the draft regulation should be increased to 95% from 90% and for HVDC system to be increased to 90% from 85%. Kerala State Electricity Regulatory Commission (KSERC) has submitted that the availability should be increased to 95% as the availability calculation excludes tower collapse, shut-down for maintenance or construction of elements of another scheme, switching of a transmission line as per the direction of RLDC, force majeure conditions, outages caused by grid disturbance not attributable to the transformer licensee. Tripura State Electricity Corporation Ltd. (TSECL) submitted that the availability needs to be enhanced for

protecting the interest of beneficiary as well as consumer. Reliance has submitted that the performance should be considered either on a six monthly basis or on annual basis as provided in Transmission System Agreement (TSA). This would allow the transmission licensee to improve performance in case of abnormal situations. 4.3 From the above it is seen that APTRANSCO, KSERC and TSECL have requested for the enhancement of the element-wise availability figures for the purpose of compensation to be paid to the affected person. We are of the view that APTRANSCO has taken the entire transmission system for the purpose of calculation of availability and taken the performance over 6 ½ years. The Standards of Performance Regulations provide for calculation of availability on a monthly basis, and for each transmission element separately and is therefore more rigorous. Therefore we do not feel the necessity for increasing the percentage availability, at present. Reliance, on the other hand, has suggested for calculation of availability on a six monthly or annual basis, so as to make the standard less rigorous. Since we have relaxed the annual transmission availability from 98% for the regional AC system to 90% on an element-wise and monthly basis, which also excludes abnormal situations like tower collapse, we feel that there is no need for a change.

Regulation 5 (a) (1):

- 4.4 Powergrid has submitted that transmission system is basically a mesh of transmission elements and outage of one element in the system generally does not affect the delivery of power at any demand point. Measure of performance therefore, may be based on the deliverability of the system, basically collective performance of all the transmission elements of a transmission licensee connected in the regional grid. Therefore, instead of calculating element-wise availability, availability of respective licensee's transmission systems in the Regional grid may be more appropriate and the calculations of availability may please be normated on annual basis instead of monthly, which will also be consistent with the Tariff Regulations 2009 which are on annual basis. For calculation of availability, force majeure outages are to be excluded.

In our view, since the availability is on element-wise basis, the norms of percentage availability here have been relaxed as compared to those mentioned in the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009.

Further, the compensation for outage of a transmission element would be allowed by the Commission only if a person is affected say, due to reduction of power flow on account of lowering of the Total Transfer Capability (TTC), by the RLDCs/ NLDC. Further, the provision of deemed availability is also there, in accordance with the Tariff Regulations, as mentioned at Regulation 5 (a) (2).

Regulation 5 (a) (2):

4.5 Powergrid has submitted that this para may be modified as below:

Treatment of outages of elements shall be as per the guideline provided in the Central Electricity Regulatory Commission (Terms and conditions of tariff) Regulations, 2009.

Furthermore, force majeure outages should be those as certified by respective RPCs. SRPC has submitted that this Regulation could be deleted keeping in view Regulation 5 (a) (1), of Appendix-IV, Procedure for calculation of Transmission Availability Factor for a month contained in Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009. Para 5 of Appendix-IV outlines the outages which shall be deemed to be available and Para 6 of Appendix-IV outlines the outages for the contingencies which shall be excluded from the total time of element under consideration.

We retain this Regulation for the sake of clarity. Regulation 5(a) (2) is therefore reworded as given below.

The deemed availability of the transmission elements under outage shall be as provided for in the CERC (Terms and Conditions of Tariff) Regulations, 2009 , as amended from time to time and any subsequent enactment thereof.

Regulation 5 (a) (3):

4.6 The Regulation 5 (a) (3) in the proposed draft is reproduced below:

“The element-wise monthly availability figures (not counting tower collapse) shall not be below the availability figures as given below:

| | <i>Elements</i> | <i>Availability (% of time)</i> |
|------------|-------------------------------|-------------------------------------|
| <i>(a)</i> | <i>AC Transmission line</i> | <i>90</i> |
| <i>(b)</i> | <i>Sub-station bay*</i> | <i>90</i> |
| <i>(c)</i> | <i>Static VAR Compensator</i> | <i>90</i> |
| <i>(d)</i> | <i>Series Compensator</i> | <i>90</i> |

| | | |
|-----|--|----|
| (e) | HVDC (Back-to-back Stations and bi-pole links) | 85 |
|-----|--|----|

*Sub-station bay includes Current Transformer (CT), CVT, Circuit Breaker (CB), isolator, Lightning Arrester (LA)”

SRPC has sought clarification on whether the availability of sub-station bay is a single figure or availability of CT, CVT, Circuit Breaker (CB), Isolator, Lightning Arrester (LA) to be computed separately.

It is clarified that availability of sub-station bay is a single figure, which includes Inter-Connecting Transformer (ICT), Current Transformer (CT), Capacitive Voltage Transformer (CVT), Circuit Breaker (CB), isolator, Lightning Arrester (LA), etc., as explained above.

4.7 KSERC has submitted that availability should be increased to 95% as the availability calculation excludes tower collapse, shut-down for maintenance or construction of elements of another scheme, switching of a transmission line as per the direction of RLDC, force majeure conditions, outages caused by grid disturbance not attributable to the transformer licensee. SRPC submitted that ICT/ Transformer and Reactors are not mentioned in the Table. Tripura State Electricity Corporation Ltd. (TSECL) has submitted that the availability needs to be enhanced for protecting the interest of beneficiary as well as consumers. KSERC has submitted that the availability of ICT is not mentioned in the element – wise monthly availability figures. POSOCO has submitted that wherever line reactors have been provided, the availability of the same needs to be monitored at par with the AC Transmission line (i.e. % of time available shall not be below 90%).

4.8 STTPL has submitted that the availability should be as furnished below:

| Types of failures | Availability (in %age of time) | |
|--|-----------------------------------|------------|
| | Proposed by Commission | Suggestion |
| AC Transmission line | 90 | 80 |
| Sub-station bay* | 90 | 75 |
| Static VAR Compensator | 90 | 70 |
| Series Compensator | 90 | 70 |
| HVDC (Back-to-back Stations and bi-pole links) | 85 | 75 |

*Sub-station bay includes CT, CVT, Circuit Breaker (CB), isolator, Lightning Arrester (LA)

RPTL has submitted that failure of certain large oil filled equipment will take a long time to be put back into operation, where MTBF (Mean Time Between Failure) and MTTR (Mean Time To Restoration) are both high. Failures due to such equipment, as in the case of tower failure, may be excluded from the calculation of availability.

We are in agreement with the suggestion of SRPC, Kerala SERC and POSOCO that the availability of ICT/reactor needs to be provided and monitored. In fact the availability of the individual bay may not be required to be monitored as the same would be considered along with the main equipment with which it is associated. Therefore, we feel that ‘bay’ needs to be deleted and ICT and reactor need to be added. However, we accept the suggestion of RPTL that since such large oil filled equipment like ICT and reactor, take a long time to restore, such outage should be excluded from the calculation of availability. However, it may be made clear that outage due to preventive maintenance of the transmission elements is not excluded while calculating the availability of transmission elements.

With respect to the submissions regarding increasing transmission availability, the same has already been discussed at Para 4.2 and need not be repeated here. Accordingly, Regulation 5 (a) (3) is modified as below:

“The element-wise monthly availability figures (not counting tower collapse for the purpose of calculation of availability of A.C transmission line and HVDC bi-pole links and not counting failure of Inter-connecting transformer and reactor for the purpose of calculation of availability of Inter-connecting transformer and reactor respectively) shall not be below the availability figures as given below:

| | <i>Transmission Elements</i> | <i>Availability (% of time)</i> |
|--------------|---|-------------------------------------|
| <i>(i)</i> | <i>AC Transmission line</i> | <i>90</i> |
| <i>(ii)</i> | <i>ICTs</i> | <i>90</i> |
| <i>(iii)</i> | <i>Reactors</i> | <i>90</i> |
| <i>(iv)</i> | <i>Static VAR Compensator</i> | <i>90</i> |
| <i>(v)</i> | <i>Series Compensator</i> | <i>90</i> |
| <i>(vi)</i> | <i>HVDC (Back-to-back Stations and bi-pole links)</i> | <i>85</i> |

Regulation 5 (b):

4.9 SRPC has enquired whether the norms were specific to this Regulation and whether the same norms could be adopted for computation of Transmission System Availability Factor for Month (TAFM) in line with Appendix-IV, procedure for calculation of TAFM of CERC (Terms and Conditions of Tariff) Regulations, 2009. It is felt desirable to have harmonization of restoration time across different Regulations. POSOCO has submitted that the restoration time for failure of a line reactor may be treated in the same manner as in the case of a faulty transformer.

It is clarified with reference to the comment of SRPC that the percentage availability provided in the Standards of Performance Regulations are different from the TAFM calculated in the CERC (Terms and Conditions of Tariff) Regulations, 2009, as both are for different purposes. The Standards of Performance Regulations norms are for payment of compensation to the affected person, whereas the norms in the CERC (Terms and Conditions of Tariff) Regulations, 2009 are part of the Availability Based Transmission Tariff with incentive and penalty for maintaining availability with respect to NATAF. It may be mentioned that the transmission system is normally designed for n-1 contingency conditions; therefore with the tripping of an element, the user is not likely to be affected. With respect to the suggestion of POSOCO that the restoration time for failure of a line reactor be treated in the same manner as in the case of a faulty transformer, it is stated that the restoration time for an ICT mentioned in the Standards of Performance Regulations are based on the time taken by Powergrid in restoration of the same. We are of the view that since the reactor also has a winding and is also oil-filled equipment; we are inclined to agree with the suggestion of POSOCO to take the same restoration time as that of an ICT, for the time being. The norms in the Standards of Performance Regulations, however, would be fine tuned in the days to come based on the experience gained and availability of further data collected and corroborated with the ground realities. The same is therefore being added in this Regulation.

4.10 APTRANSCO has submitted that APTRANSCO restores collapsed towers in hilly terrain in 42 days and in plain terrain in 22 days. Hence the restoration time for insulator failure be reduced to 1 day from 2 days, tower collapse in plain terrain from 30 days to 22 days and in river bed/ hilly terrain from 50 days to 45 days. The restoration time of faulty transformer by spare transformer needs to be reduced from 120 days to 90 days. Tripura

State Electricity Corporation Ltd. has submitted that restoration time for transmission lines and ICTs are on higher side. Considering the certified transmission availability for May 2010 to be 99.37%, the restoration time of the transmission elements mentioned in the regulation should be reviewed so that the interest of the beneficiary as well as consumer is protected. TNEB has submitted that in the interest of achieving efficiency, minimum restoration in any region should be considered as benchmark rather than giving a higher outage period. For example the time taken in Southern Region for attending to various defects is less when compared to the time limit proposed in the draft Regulations. This will only encourage inefficiency and relaxation. PTC has submitted that the restoration time should be fixed keeping in view the international best practices and each type of failure should be categorized terrain wise i.e. plain terrain, river bed terrain and hilly terrain.

STPPL has submitted that Restoration Time of a (i) Failed switchable Line/Bus Reactor (ii) Sub-station Bay to be provided. STTPL has requested for higher restoration time for various types of failure.

As explained earlier, the proposed time lines for restoration have been proposed based on data collected from Powergrid. We may fine tune the same based on experience. However, we agree to the suggestion of APTRANSCO on the restoration time for insulator failure to be reduced to 1 day from 2 days in plain terrain. Restoration time has already been categorized terrain-wise, as suggested by PTC. PTC has also suggested that the restoration time should be fixed, keeping in view the international best practices. We feel that the methods of restoration may be different across the countries. For example, restoration of towers may be done using helicopters on a regular basis in developed countries. The Standards of Performance Regulations may be brought in line with international standards, once the inter-State Transmission Licensees adopt such practices in the country.

- 4.11 PTC has submitted that the centralized spare centre be continued to cater the maintenance requirements within a radius of 200-300 km.

It is stated that the Standards of Performance Regulations do not provide for specification for spares for maintenance of transmission elements and this can be optimized by the

inter-State transmission licensee depending on experience. Therefore, we feel that no change is required in the Regulations on this account.

- 4.12 RPTL has submitted that there is no incentive for the transmission licensee for using ERS in case of a tower failure as he is getting lower time than in case where ERS is not used. It is not clear whether the days indicated for restoration are applicable for each failed tower or for an event of multiple tower failures. In all cases of “Types of failures” mentioned in the Regulation, only the reason associated with the failures is getting captured but not the magnitude. For example, disc flashover, insulator string failure etc. have not been mentioned.
- 4.13 Powergrid on Regulation 5 (b) Sl. No. 1 has submitted that the time line specified for performance standards seem to be pertaining to most favourable scenarios and uncomplicated cases. However, if tower is also damaged (not collapsed) alongwith insulator failure, addition time period of at least three (3) days may be required for restoration. Powergrid on Regulation 5 (b) Sl. No. 2 has submitted that due to cyclonic storm the number of collapsed towers may vary. Hence the restoration duration may be modified as given below:

“Upto 3 towers damaged – 12 days (if the site condition is feasible to carry out restoration work through ERS)

More than 3 towers – 20 Days due to above cited reasons. (if the site condition is feasible to carry out restoration work through ERS)”

Powergrid on Regulation 5 (b) Sl. No. 3 has submitted the followings:

“Even in ‘Plain Terrain’, if foundation is also damaged and is to be recast, an additional 30 days is required which means a minimum of 60 days will be required for restoration of the line.

For ‘River bed’, about six (6) months, water level in river is very high and is difficult to work. If foundation is not damaged/ new foundation need not to cast/ rerouting of line not required, at least 90 days is required for dismantling of debris, fabrication of new towers, erection of new tower and restringing of conductors and earth-wire, after receding of water level. In case rerouting/ casting of pile foundation is required, it require about 12 months as detailed below:

(i) Initial preparation- 2 weeks

- (ii) *Soil investigation of the tower location - 4 weeks after placement of award for soil investigation.*
- (iii) *Pile foundation design- 4 weeks*
- (iv) *Preparation of BOQ and NIT for Pile foundation (Open tender) - 4 weeks*
- (v) *Bid opening - 6 weeks*
- (vi) *Placement of award - 4 weeks*
- (vii) *Mobilization time - 4 weeks*
- (viii) *Casting of foundation in river bed - 16 weeks*
- (ix) *Erection of new tower - 4 weeks*
- (x) *Stringing on new towers - 4 weeks*

All above activities are to be done in series and cannot be performed parallelly to save time.

For 'Hilly terrain', if the number of collapsed towers is more than 3 then a time line of at least 70 days may be considered. Further, if the foundation also gets damaged due to landslide or some other reasons, then additional timeline of at least 30 days is required for recasting of new foundation.

Further, Powergrid has pointed out that the restoration time depends on the following factors:

- (i) *Site conditions*
- (ii) *Right of way realated issues*
- (iii) *No. of Towers collapse*
- (iv) *Distance of ERS store from restoration site*
- (v) *No. of lines affected simultaneously”*

It is clarified that this standard is only for compensation payable to the affected person. The ISTS licensee would have an incentive to use the ERS to improve its transmission availability in order to recover its full fixed charges and incentive, as the case may be. The restoration time given in the Regulations is for an incident of tower collapse, whether it is a failure of single tower or multiple towers. The restoration time specified is the same, irrespective of whether a single insulator fails or a string of insulators. This is based on data provided by Powergrid and includes all type of failures. If required, more gangs could be employed for multiple tower failure and failure of an insulator string. However, this Regulation could be refined at a later stage, if required, depending on the experience. The data requirement for various type of insulator failure/ tower collapse, for the purpose of further refinement of Regulations, is therefore being sought through Item No. V on “Data to be compiled by the inter-State Transmission Licensees” of the Schedule of the Regulations. If there is a combination of insulator failure and tower damage (not collapse), as pointed out by Powergrid, or any other failure not mentioned in these Regulations, the inter-State transmission licensee can always invoke the Regulation

10 “Power to remove difficulties”. Based on the above, the finalized Regulation 5 (b) (1) is as detailed below:

“The restoration times for different types of failures of a transmission line and failure of Inter-Connecting Transformer (ICT) and reactors shall not exceed the following:

| Sl. No. | Types of failures | Restoration Time (Days) |
|----------------|---|--------------------------------|
| 1. | <i>Insulator failure</i> | |
| | <i>Plain Terrain</i> | <i>1</i> |
| | <i>Hilly Terrain</i> | <i>2</i> |
| 2. | <i>Tower after collapse by Emergency Restoration System (ERS)</i> | <i>12</i> |
| 3. | <i>Tower after collapse</i> | |
| | <i>Plain Terrain</i> | <i>30</i> |
| | <i>River Bed</i> | <i>50</i> |
| | <i>Hilly Terrain</i> | <i>50</i> |
| 4. | <i>Snapping of phase conductor</i> | |
| | <i>Plain Terrain</i> | <i>2</i> |
| | <i>Hilly Terrain</i> | <i>3</i> |
| 5. | <i>Failure of earth wire</i> | |
| | <i>Plain Terrain</i> | <i>2</i> |
| | <i>Hilly Terrain</i> | <i>3</i> |
| 6. | <i>Failure of Inter Connecting Transformers (ICTs)</i> | |
| | <i>Restoration of the failed ICT</i> | <i>120</i> |
| 7. | <i>Failure of Reactors</i> | |
| | <i>Restoration of the failed reactor</i> | <i>120</i> |

5.0 Submissions made by stakeholders on Regulation 6 and Regulation 7

5.1 STTPL and RPTL have submitted that there is already a provision in the TSA for penalty to be paid by the TSP when the system availability is less than specified. There should not be any additional penalty over the above. Hence, the clause may be deleted.

5.2 NTPC has submitted that the following may be added after Clause 7, para 2:

The charges payable under this Clause shall be over and above any reduction in transmission charges of / other charges payable by the licensees under any other CERC Regulations.

NTPC has further submitted that in Clause 7, the following may also be provided:

Provided that, while determining compensation, the Commission shall give due consideration to the nature of outages w.r.t. quantum of disruption, time of occurrence, i.e. peak demand period or off-peak periods etc.

5.3 Powergrid submitted that the compensation should be payable only if there is a demonstrable loss to the Designated ISTS Customer (the User). SRPC has submitted that this Regulation may be modified as compensation can be decided on a case to case basis by the Commission because of the following reasons:

- (a) If a licensee fails to meet the Standards, the loss may be more than the transmission charges payable by the affected party.*
- (b) Non availability of certain elements would affect the TAFM which would in turn affect the transmission charges (inclusive of incentive).*

5.4 APTRANSCO has submitted that the compensation should be enhanced to 1.5 times of the transmission charges instead of limiting to transmission charges.

5.5 KSERC has requested for clarification that the compensation claim by each beneficiary is limited to the transmission charges payable to the particular equipment/ line or total transmission charges.

The view of the STTPL and RPTL both inter-State transmission licensees, who got the transmission licence for the execution and maintenance of transmission assets through competitive bidding route, is that there is already a penalty for non-achievement of transmission system availability in their Transmission System Agreement (TSA) and this acts as an additional penalty. However, in our view, the penalty and incentive scheme for under achievement and over achievement, as given in the TSA, is for their transmission system as a whole. The compensation for loss suffered by an affected person is mandated in the Act, which will be enforceable only when a person is affected, which may be a rare case, since most of the transmission system is designed for n-1 contingency, i.e. failure of one transmission element may not affect the power flow to the person and if both circuits of a transmission element trip, the compensation would be limited to the transmission charges payable for that transmission element. Therefore, we are not inclined to agree with the views expressed by STTPL and RPTL.

On the above submissions of the parties, it is clarified that the amount of compensation to be paid by the transmission licensee to the affected person shall be limited to the transmission charge of the particular element to the extent to which it has affected the supply of electricity to the affected person. Accordingly, the first proviso of Regulation 7 has been modified as below:

Provide that the compensation to be paid by the inter-State transmission licensee to the affected party shall be limited to the transmission charges of the particular element to the extent to which it has affected the supply of electricity to the affected person.

Further, we have already stated earlier that TAFM is a penalty and incentive mechanism and both TAFM and the compensation under these regulations shall apply. At this initial stage, we do not wish to link the compensation to the payment of transmission charges for the particular transmission element. A rational view would be taken by the Commission, seeing to the nature of the transmission system configuration and the extent to which the person is affected. Citizen Consumer and Civic Action Group (CAG) has requested that the time period for claiming compensation may be increased from 60 days to 90 days. We agree to the suggestion and the regulation has been modified accordingly.

6.0 Regulation 8 (2) and Regulation 8 (3)

6.1 Powergrid has submitted that because of the voluminous works involved, the data should be submitted on a yearly basis instead of monthly basis. We are of the view that since the availability (TAFM) is calculated on a monthly basis, in accordance with the CERC (Terms and Conditions of Tariff) Regulations, 2009, there shall not be any additional work for submission of the certified availability figure. We are also not inclined to change the periodicity of submission of information to the Commission from six month to one year. Therefore, no change in the Regulations is required.

6.2 Citizen Consumer and Civic Action Group has requested that the frequency of updation of information on the web-site of the transmission Licensees may also be brought out in the Regulations. It is already provided in Regulation 8 (3) that the updation on the website has to be on a monthly basis. Therefore no change is required.

7.0 Regulation 9 (1)

7.1 Citizen Consumer and Civic Action Group has submitted that the methodology may be prescribed for “Power to Relax” provision of the Standards of Performance Regulations.

This provision has been made for unforeseen circumstances, as the Standards of Performance Regulations are prescribed for the first time. Therefore, in our view, no

methodology can be fixed, at least at this stage. Therefore, we are not inclined to agree with this suggestion of Citizen Consumer and Civic Action Group.

8.0 Schedule

8.1 POSOCO submitted that Monthly Outage Details of Line Reactor/ Bus reactors may also be included. We accept this suggestion and accordingly the formats in Schedule have been modified.

9.0 Others

9.1 Powergrid has submitted that the certification of availability and settlement of payments thereof shall continue to be governed by the extant mechanism and that the provisions contained in the proposed Regulations shall not alter the same.

9.2 We have already mentioned in Regulation 5 that the method of calculating transmission availability shall be in accordance with the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009, as amended from time to time and any subsequent enactment thereof.

9.3 Citizen Consumer and Civic Action Group has suggested for an additional clause for making the information available with the Principal Information Officer (PIO) of the organization.

9.4 We are of the view that since the information shall be available on the website of the inter-State transmission licensee, which is accessible to all, there is no explicit need for the availability of information with the PIO of the inter-State transmission licensees.

| | | | |
|-----------------------------|-----------------------|-------------------------|---------------------------------|
| sd/- | sd/- | sd/- | sd/- |
| (M.DEENA DAYALAN) MEMBER | (V.S.VERMA) MEMBER | (S.JAYARAMAN) MEMBER | (Dr. PRAMOD DEO) CHAIRPERSON |

The following stakeholders have submitted written submissions on the draft Central Electricity Regulatory Commission (Standards of Performance of inter-State transmission licensees) Regulations, 2010:

1. Kerala State Electricity Regulatory Commission (KSERC)
2. NTPC Ltd. (NTPC)
3. PTC India Ltd.
4. Power System Operation Corporation Ltd. (POSOCO)
5. Reliance Power Transmission Company Ltd. (RPTL)
6. Southern Regional Power Committee (SRPC)
7. Transmission Corporation of Andhra Pradesh Ltd. (APTRANSCO)
8. Power Grid Corporation of India Ltd. (Powergrid)
9. Tamil Nadu Generation and Distribution Company Ltd. (TANGEDCO, formerly Tamil Nadu Electricity Board)
10. Tripura State Power Transmission Corporation Ltd. (TSPTCL)

Oral Submissions made by the Stakeholders during Public Hearing on 11.11.2010

1. Citizen Consumer and Civic Action Group (CAG)
2. Power System Operation Corporation Ltd. (POSOCO)