

Statement of Reasons

For

Rates, Charges and Terms and Conditions

For

usage of Intervening Transmission Facilities

September, 2010

CENTRAL ELECTRICITY REGULATORY COMMISSION

NEW DELHI

L-1/10/2009-CERC
CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Coram: Dr. Pramod Deo, Chairperson
Shri S Jayaraman, Member
Shri V.S.Verma, Member

Date: 14.9.2010

In the matter of

Central Electricity Regulatory Commission (Rates, Charges and Terms and Conditions for use of Intervening Transmission Facilities) Regulations, 2010

STATEMENT OF REASONS

1.0 Background

1.1 Section 35 of the Electricity Act, 2003 provides for usage of intervening transmission facilities.

“35. Intervening transmission facilities.- The Appropriate Commission may, on an application by any licensee, by order require any other licensee owning or operating intervening transmission facilities to provide the use of such facilities to the extent of surplus capacity available with such licensee:

Provided that any dispute regarding the extent of surplus capacity available with the licensee, shall be adjudicated upon by the Appropriate Commission.”

Section 36 provides for charges for using intervening transmission facilities.

“36. Charges for intervening transmission facilities.- (1) Every licensee shall, on an order made under section 35, provide his intervening transmission facilities at rates, charges and terms and conditions as may be mutually agreed upon:

Provided that the Appropriate Commission may specify rates, charges and terms and conditions if these cannot be mutually agreed upon by the licensees.

(2) The rates, charges and terms and conditions referred to in sub-section (1) shall be fair and reasonable, and may be allocated in proportion to the use of such facilities.

Explanation.- For the purposes of section 35 and 36, the expression "intervening transmission facilities" means the electric lines owned or operated by a licensee where such electric lines can be utilised for transmitting electricity for and on behalf of another licensee at his request and on payment of a tariff or charge."

- 1.2 The Central Commission is the appropriate Commission for inter-State transmission system and as per section 2 (36) of the Electricity Act, 2003, "inter-State transmission system" includes 'the conveyance of electricity across the territory of an intervening State as well as conveyance within the State which is incidental to such inter-State transmission of electricity'.
- 1.3 Section 36 confers jurisdiction on the Appropriate Commission to specify rates, charges and terms and conditions on the event these cannot be mutually agreed upon by the licensees.
- 1.4 Section 36 requires the framing of regulations to provide for rates and charges and terms and conditions for use of intervening transmission facilities. It also requires that the rates, charges and terms and conditions should be fair and reasonable, and may be allocated in proportion to the use of such facilities.
- 1.5 The Central Electricity Regulatory Commission is competent to make these Regulations under Section 36 of the Electricity Act of 2003 by virtue of the powers vested on it vide Section 178(2)(i) of the said Act.

"178. Powers of the Central Commission to make regulations.- (1) The Central Commission may by notification make regulations consistent with this Act and the rules generally to carry out the provisions of this Act.

(2) In particular and without prejudice to the generality of the power contained in sub-section (1), such regulations may provide for all or any of the following matters, namely:-

...

(i) rates, charges and terms and conditions in respect of intervening transmission facilities under proviso to section 36;"

- 1.6 In due discharge of the statutory obligations, the Commission made the draft regulation on the rates, charges and terms and conditions for usage of intervening transmission facilities under Section 36 read with Section 178(2)(i) and published it under Section 178(3) of the Act for inviting suggestions/comments vide No.L-1/10//2009-CERC dated 14.10.2009 along with explanatory memorandum. The Commission has received suggestions and comments from the 8 stakeholders/interested persons, as listed below:

- (a) Power Grid Corporation of India Ltd.
- (b) Gujarat Urja Vikas Nigam Ltd.

- (c) Administration of Dadra & Nagar Havelli, Electricity Department, Silvassa
- (b) M.P.Power Trading Co. Ltd.
- (e) Maharashtra State Electricity Distribution Co. Ltd.
- (f) U.T. Administration of Daman & Diu.
- (g) Transmission Corporation of Andhra Pradesh
- (h) Maharashtra State Electricity Transmission Co. Ltd.

1.7 Subsequently, the Commission held a public hearing on 28.01.2010. List of participants are enclosed at **Annexure-I**.

1.8 Based on the comments, objections and suggestions received from the stakeholders, the Central Electricity Regulatory Commission (Rates, Charges and Terms and Conditions for use of Intervening Transmission Facilities) Regulations, 2010 have been finalised and approved by the Commission for notification. The various provisions of the final regulation are discussed in the subsequent paragraphs

2. Consideration of the views of the stakeholders and analysis and findings of the Commission on important issues

The Commission considered the comments of the stakeholders on the draft regulations, views of the participants in the public hearing as well as their written submissions received during and after the public hearing. The regulations have been finalized after detailed analysis and due consideration of the various issues raised. The analysis of the important issues and findings of the Commission thereon are discussed in the subsequent paragraphs.

3. Preliminary Objections to the Regulations and Findings of the Commission:

3.1. Definitions and Interpretation :

Comment:

- Some stakeholders (like MSETCL, MSEDCL, A.P. TRANSCO etc.) have observed that the definition of the word "Licensee" should not be limited to transmission licensee only.
- The MW -mile method should be clarified to explain the methodology for determination of the contract path.

Commission's Analysis:

- The Commission has considered the views of the stakeholders and would like to clarify that the licensee owning the intervening transmission facilities could be either transmission licensee or distribution licensee and

that the licensee seeking to use the intervening transmission facilities could be a distribution licensee or a trading licensee. Suitable amendment has been made in the draft regulation in this regard.

- The Commission has also defined the contract path in the final regulation as a transmission path that can be designated to form a single continuous electrical path between the parties to an agreement. Because of the laws of physics, it is unlikely that the actual power flow will follow that contract path. Therefore the contract path has to be mutually agreed.

3.2. Scope and Applicability

Comment:

The following major observations have been made by the stakeholders (like GUVNL, Administration of DD & DNH, MSEDCL etc.):

- (i) The proposed Regulations will disturb the existing practices being followed in different regions for charges for intervening facilities.
- (ii) Whether, in States where SERCs have determined Open Access charges or charges for intervening transmission facilities, the charges as determined by SERCs will prevail or the charges as proposed by CERC will be applicable”.
- (iii) CERC Regulations on Open Access provide for short-term Open Access charges for use of inter-State transmission system. It also provides that *“intra-State entities shall pay the transmission charges for use of State network. Further, in case the State Commission has not determined the transmission charges, the charges for use of respective State network shall be payable at the rate of Rs.80/MWh.”* It needs to be clarified as to whether the proposed charges for use of intervening facilities under Section 36 are in addition to the charges specified by CERC in the Regulations of Open Access.
- (iv) These Regulations should apply to generating companies as well as Power Exchanges.

Commission's Analysis:

- (i) The Commission appreciates the underlying concern regarding the treatment of existing practices. The Commission would like to clarify that the agreements entered into prior to the notification of these regulations either through mutual consent of the contracting parties or on the orders passed by the Appropriate Commission, for use of any intervening transmission facilities shall continue to have effect notwithstanding inconsistency, if any, with these Regulations. Suitable provision has been incorporated in the final Regulations.

The Commission has taken note of the concern on applicability of the charges under these Regulations and would like to clarify that as per the Electricity Act, 2003, any intervening transmission facility which is incidental to inter-State transmission is covered under the definition of inter-State transmission and is under the jurisdiction of CERC. As such, the charges under these Regulations will be applicable for usage of any such intervening transmission facility which is incidental to inter-State transmission, where the rates and charges have not already been mutually agreed to or, where the rates and charges have not already been determined by the SERC or the CERC.

- (ii) On the issue of applicability of CERC Open Access regulations, the Commission would like to clarify that:
- Regulations on short-term Open Access are applicable for - (i) generating companies, Power Exchanges, and (ii) licensees.
 - Regulations under Section 36 are applicable for only the licensees.
 - Further, the rates and charges referred to in the Open Access Regulations are for use of the State transmission system as a whole and not an identified contract path. These Regulations would only apply when a contract path can be identified between the buyer and the seller. Further, the transmission charges for the identified transmission system would be as determined by these regulations only if they have not been determined by the SERC or CERC. However, the sharing of transmission charges would have to be in accordance with these Regulations.
- (iii) On the concern raised regarding applicability of these regulations to generating companies as well as Power Exchanges, the Commission would like to clarify that as per the provision of Section 36 of the Electricity Act, 2003, these Regulations shall apply only for the licensees.

3.3. Rates and Charges

The following major observations have been made by the stakeholders:

Unit of Charges:

Comment:

Some Stakeholders suggested that for long and medium term use of intervening system, charges should be in terms of Rs./MW/Month

and for short-term use, the rate should be in Rs./MWh to bring uniformity with Open access transmission charges and charges in Rs./MW/Day make short-term Open Access for part of the day high.

Commission's Analysis:

The Commission has considered accepted this suggestion and feels that in order to address the concern regarding transactions for part of the day, the long and medium term use of intervening system, charges should be in terms of Rs./MW/Year and for short-term use, the rate should be in Rs./MWh.

Treatment of Revenue:

Comment:

PGCIL suggested that owner of intervening system should exclude revenue collected through this arrangement from ARR only before the respective SERCs.

Commission's Analysis:

The Commission would like to clarify that the Annual Revenue Requirement (ARR) is the total revenue required for the STU and is irrespective of who pays for the same.

Transmission Charges and Transmission losses:

3.4. The Line Loading Limits:

The Commission has also reviewed the line loading limits used in the draft regulation for calculation of transmission charges and transmission losses.

The line loading limits are governed by many factors such as Voltage regulation, stability and current carrying capacity (thermal capacity) limit. The Surge Impedance loading (SIL) gives a general idea of the loading capability of the line w.r.t. stability. It is usual to load the short lines above SIL and long lines lower than SIL. The St Clair curve gives line loading limit for various voltage levels of transmission lines as a function of line length in terms of SIL of uncompensated line. This curve is based on assumption of voltage regulation of 5% and phase angle difference of 30% between the two ends of the line.

Based on this curve, line loading limit of transmission line at different voltage level has been calculated for the maximum line lengths normally used by CTU for construction of transmission line. The thermal capacities of these lines have been calculated based on value of Ampacity given in Annex-III of CEA's

Transmission Planning Criteria manual. Ambient temperature of 40 deg C has been used to calculate thermal capacity for different types of conductors used at different voltage levels, assuming a conductor temperature of 75 degrees C.

As per CEA Transmission planning criteria for lines whose permissible line loading as determined from the curve is higher than the thermal loading limits, permissible loading shall be restricted to thermal loading limit. Therefore for calculation of transmission charges for intervening transmission system, thermal capacity limits have been taken as loading limits. Therefore, the line loading capacities of the line for respective voltage levels have been taken as follows in the final regulations:

Table-I

S.No.	VOLTAGE (kV)	Line Length (km)	Ampacity at 40 degrees C ambient with 75 degrees C conductor temperature	Power Factor	Line Loading Limit(Thermal Capacity)	Line loading as per Saint Clair Curve (MW)	Line loading capacity considered (MW)
1.	400	400	684	0.95	450.1814	550	450
2.	220	100	684	0.95	247.5998	330	250
3.	132	70	413	0.95	89.70063	150	90
4.	66	40	250	0.95	27.1491		27

For the above purposes Twin Moose conductor type for 400 KV and 220 KV transmission lines have been used and for 132 KV and 66 KV, Panther and Dog conductor types respectively have been used.

3.5. Consideration of norms for 66 kV transmission line:

The Commission considered to include the norms for 66 kV transmission line as well. The capital cost of a 66 kV Double Circuit line and 66kV single Circuit line has been taken Rs. 30 lakh per kilometer and Rs. 18 lakh per kilometer respectively. This is the estimated current cost for such lines. This cost has been discounted to get the corresponding values of capital cost in financial year 2006-07. This is based on the principle followed for estimation of capital cost of transmission lines at other voltage levels. The discount factor is used from the CERC notification dated 31st March 2010 on Guidelines for Determination of Tariff by Bidding Process for Procurement of Power by Distribution Licensees. From these assumptions, the capital cost derived for the 66 kV Double Circuit line and 66kV single Circuit line is Rs. 23 lakh per kilometer and 14 lakh per kilometer respectively. As in other cases, 10% of capital cost has been added towards sub station cost, based on experience, to arrive at total capital cost for the 66 kV transmission systems. Line loading capacity and transmission losses for 66 kV lines have also been considered. Based on these and other financial parameters levelled tariff for 66 kV line has been incorporated in the final regulations.

3.6. Sharing of Transmission Charges

The Commission has also considered the issue of the sharing of transmission charges in cases where the Annual Revenue Requirement (ARR) on the contract path in question has already been determined by CERC or SERCs. It has been decided that sharing of the transmission charges in such cases will be in the ratio of the average power flow in MW of the transaction determined on post-facto basis, to the peak capacity of the power flow in MW in the line as per the line loading capacity prescribed in **Table-I**.

3.7. Based on the above observations, the Commission has decided the rates and charges as under:

Table-II

Sr. No.	Type of Transmission System	Line Capacity	Capital Cost	Rates and Charges for Long -term Access and Medium term Open Access	Rates and Charges (for Short-term Open Access)
		MW	(Rs. Crore)	Rs/MW/year	Rs./MWh
1	400 kV (D/C)	900	40.15	97,584	11.14
2	400 kV (S/C)	450	22.00	109,006	12.44
3	220 kV (D/C)	500	27.50	118,198	13.49
4	220 kV (D/C)	250	16.50	145,318	16.59
5	132 kV (D/C)	180	14.30	182,525	20.84
6	132 kV (S/C)	90	13.20	325,209	37.12
7	66 kV (D/C)	54	12.65	540,339	61.68
8	66 kV (S/C)	27	7.70	682,244	77.88

D/C Double Circuit

S/C Single Circuit

3.8. Transmission Losses

Comment:

MSETCL suggested that the normative transmission losses should be indicated.

Commission's Analysis:

To bring in greater clarity and certainty of charges for use of intervening transmission facilities, the Commission has considered and accepted this suggestion. As losses are dependent on the length of the contract path, the losses per 50 Km have been given. For calculation of losses, the per unit value of conductor resistance is taken as per Annex-V of Manual on

Transmission Planning Criteria of CEA. These values are then converted into Ohm value using the concerned Base Voltage and Base MVA. Value of current is taken as per thermal loading limits. Hence this value indicates losses during peak loading. Accordingly, the following normative transmission losses for line length of every 50 Km of distance used including the detailed calculations are as given below :

Table-III

S.No.	Type of Transmission system	Line Losses %
1.	400 kV	0.5%
2.	220 kV	1.0%
3.	132 kV	4.3%
4.	66 kV	8.0%

3.9. Reactive energy charge:

Comment:

Some Stakeholders suggested that Reactive energy charge should also be levied.

Commission's Analysis:

The Commission considered the suggestion and opined that the reactive energy charges shall be applicable to the transactions through intervening transmission facilities as per IEGC, since these are already mentioned in the IEGC. Reactive energy charges are node-based (i.e. charges are dependent on injection / drawal of reactive power based on voltage of the node) and have no relation to the length of contract path used. Therefore drawal of injection of reactive power at a node shall be applicable as stipulated in the IEGC.

3.10. Other Comments:

Availability Norm:

Comment:

PGCIL suggested that the availability norm should be specified and treatment in case of congestion may be provided in these regulations.

Commission's Analysis:

The Commission has considered the comment and would like to clarify that the proposed Regulations are meant to cover only the small transactions. It is not considered necessary to stipulate any such detailed procedure of recovery of cost based on availability and for that matter treatment in case of congestion. Section 36 provides for resolution of disputes, if any, by the Appropriate Commission. It is expected that the two parties would agree on terms and conditions including availability and treatment of congestion etc. failing which they would approach the Commission for resolution of the disputes.

The norms of Availability would be governed by the respective Regulatory Commission. In case no availability norms have been prescribed by the SERC, the norms of CERC for inter-State transmission of power would apply. The treatment of congestion on the contract path for inter-State transmission of power would be in accordance with the CERC (Measures to relieve congestion in real time operation) Regulations, 2009 and for State transmission system in accordance with the SERC Regulations on the matter. In case the SERC has not framed any congestion Regulations, then the CERC congestion Regulations would apply.

**Sd/-
(V.S. VERMA)
Member**

**Sd/-
(S. JAYARAMAN)
Member**

**Sd/-
(DR. PRAMOD DEO)
Chairperson**

**LIST OF PARTICIPANTS IN ORAL HEARING ON CERC DRAFT
(PRESCRIBING RATES, CHARGES AND TERMS AND CONDITIONS FOR
USAGE OF INTERVENING TRANSMISSION FACILITIES)
REGULATIONS, 2009 HELD ON 28.01.2010**

S.No.	Name of the Organization
1	Neyveli Lignite Corporation Limited
2	Rajasthan Rajya Vidyut Prasaran Nigam Limited (RVPN)
3	Haryana Vidyut Prasaran Nigam Limited
4	Assam Electricity Distribution Company Limited
5	Northern Regional Despatch Center
6	National Hydroelectric Power Corporation Limited
7	Uttar Pradesh Power Corporation Ltd.
8	Tehri hydro development corporation ltd. (thdc)
9	The Punjab State Electricity Board (PSEB)
10	Delhi Transco Limited
11	Power Grid Corporation of India Limited
12	Tamil Nadu Electricity Board
13	Mumbai Grahak Panchayat
14	Gujarat Urja Vikas Nigam Limited, Vadodara.
15	Indian Energy Exchange (IEX)
16	National Thermal Power Corporation Ltd.
17	National Load Despatch Centre (NLDC)
18	Bharat Heavy Electricals Ltd.
19	Transmission Corporation of Andhra Pradesh Limited (APTRANSCO)
20	Dadra & Nagar Haveli Planning & Development Authority
21	Comptroller and Auditor General of India
22	Reliance Energy Trading (RETL)
23	Shree Cement Ltd