

The background of the slide features a blue-tinted image of several business professionals in a meeting. In the foreground, there are silhouettes of three people: a woman on the left, a man in the center, and a woman on the right. In the background, a man in a suit is standing and talking to another person. The overall scene is a professional business environment.

Integration of new Generators and Transmission elements With ISTS

**A presentation by NERLDC
24th. CCM – 09.03.2015**

Applicability (Start-up Power drawal)

CERC approved Procedure vide dated 12.08.2014 shall be followed by all Regional Load Despatch Centres (RLDCs), Regional Power Committees (RPCs) and Generating stations including Inter-state Generating Stations (ISGS) under Seller category.

Start up Power

Construction Power: Power required for carrying out construction/erection works of plant and equipment of a new Generating Station including services such as desalination of sea water, etc.

Start-Up Power: Power required for running the Auxiliary equipment for commissioning activities of a new Generating Station.

Pre-conditions : Availing Start-up power 1/2

Generator has valid Connectivity granted by CTU as per CERC (Grant of Connectivity, Long-term Access and Medium-term Open Access and related matters) Regulations, 2009 (hereinafter referred to as Connectivity Regulations)

Generator has signed Connection Agreement as per Con-6 of the Connectivity Regulations It has established Connectivity with the ISTS

Generator has commissioned all the switchyard equipments including Bus / Line reactor if any as per the grant of Connectivity (Con-3),

Pre-conditions : Availing Start-up power 2/2

Generator has established Data and Voice communication with the concerned RLDC as per clause 4,6,2 of IEGC

Generator has put in place necessary system protection in place as specified by concerned Regional Power Committee (RPC).

Generator shall coordinate Generation Transformer (GT) / Station Transformer (ST) tap positions as per the direction of concerned Regional Load Despatch Centre (RLDC),

Procedure to apply for Start-up power

The Generating Station shall submit a request for availing Start-up power to the concerned RLDC at least one month prior to the expected date of availing Start-up power

i.e 16 months before the expected date of first synchronisation of the unit.

Documents to be furnished 1/2

A copy of connectivity approval granted by CTU.

Connection Agreement signed with CTU and other ISTS licensees as the case may be.

Single line diagram of the Generating Station (A3 size copy).

Unit details like Unit size, MCR, Auxiliaries & their rating etc.

Formats : **Detailed procedure- LTA,MTOA**
Connectivity formats CERC Order 19012015
NERLDC Formats

Documents to be furnished 2/2

Details of arrangement for drawing start-up Power.

Details of electrical scheme for drawal of construction power clearly establishing the isolation between the schemes for construction power and start up power.

Schedule of activities and their requirement of power in terms of quantity and period etc.

Details of electrical scheme for drawal of start-up power by various phases of the Generating station.

Inspection report of the Electrical Inspectorate of Central Electricity Authority (CEA).

Undertaking by Generator 1/2

Drawal of power is only for the purpose of start-up power and not for the construction activity.

There is no violation of any of the agreements made with the Distribution Licensee or any other agency.

The Generating Station shall indemnify, defend and save the SLDCs/RLDCs.

The Generating Station shall abide by IEGC and all prevailing Regulations and the directions of RLDC from time to time.

The Generating Station shall reschedule the start up activities as directed by RLDC.

Undertaking by Generator 2/2

The Generating Station shall pay the charges for Deviation within due date and comply with Deviation Settlement Regulations, 2014.

The Generating Station shall send Special Energy Meter (SEM) data to RLDC as per the provisions of IEGC for energy accounting.

The Generating Station shall pay all incidental charges such as Transmission charges, RLDC fee & Charges, etc. as applicable, within the due date.

The Generator shall open a Revolving and irrevocable Letter of Credit issued by a Scheduled Bank equivalent to 2 months transmission charges prior to drawal of Start-up power.

Updating of information by Generator

The quantum of power to be availed on a weekly basis. The schedule is to be updated on a weekly basis, considering the deviations in the tentative schedule.

Monthly Energy data of Construction power availed from the local licensee for the past 6 months period and monthly readings for the period subsequent to availing start-up power.

Monthly details of start-up activities carried out during the month. The Generating Station shall also indicate whether all activities are as per commissioning schedule or not.

Procedure to be followed by RLDC

The concerned RLDC shall convey the period, quantum and duration of the Start-up power with a copy to RPC and SLDC, if required.

RLDC may permit drawal of Start-up power for one or more units at a time within a generating station keeping grid security in view.

RLDC will issue suitable directions to the Generating Station on real time basis for limiting / stopping the drawal of start-up power in case of Network constraint on grounds of threat to system security or frequency or Voltage falling below the limits specified in IEGC. Such direction shall be complied by the Generating Station promptly.

Maximum period of start-up drawal

The generator is entitled to draw start-up Power under Deviation Settlement Mechanism upto the maximum period of 21 months (Fifteen months prior to expected date of synchronization and six months after synchronization) from the date of commencement of drawal of start-up power from the grid.

In case start-up power is required beyond the specified period, the generator shall approach C.E.R.C at least two months in advance of the date up to which permission has been granted.



Commercial Operation of Generating Station

COD of Thermal Generating Station

Date of commercial operation in case of a generating unit or block of the thermal generating station shall mean the date declared by the generating company after demonstrating the maximum continuous rating (MCR) or the installed capacity (IC) through a successful trial run after notice to the beneficiaries, if any, and in case of the generating station as a whole, the date of commercial operation of the last generating unit or block of the generating station:

Provided that

where the beneficiaries have been tied up for purchasing power from the generating station, the trial run shall commence after seven days notice by the generating company to the beneficiaries and scheduling shall commence from 0000 hr after completion of the trial run

COD of Thermal Generating Station

The generating company shall certify to the effect that the generating station meets the key provisions of the technical standards of Central Electricity Authority (Technical Standards for Construction of Electrical plants and electric lines) Regulations, 2010 and Grid Code:

The certificate shall be signed by CMD/CEO/MD of the company subsequent to its approval by the Board of Directors in the format enclosed at Appendix VI.

COD of Hydro Generating Station

Date of commercial operation in relation to a generating unit of hydro generating station including pumped storage hydro generating station shall mean the date declared by the generating company from 0000 hour after the scheduling process in accordance with the Grid code is fully implemented, and in relation to the generating station as a whole, the date declared by the generating company after demonstrating peaking capability corresponding to installed capacity of the generating station through a successful trial run

Trial Operation

Trial Run and Trial Operation

Trial Run in relation to generating station or unit thereof shall mean the successful running of the generating station or unit thereof at maximum continuous rating or installed capacity for continuous period of 72 hours in case of unit of a thermal generating station or unit thereof and 12 hours in case of a unit of a hydro generating station or unit thereof

Provided that where the beneficiaries have been tied up for purchasing power from the generating station, the trial run shall commence after seven days notice by the generating company to the beneficiaries.

COD of Generating Station

Don't forget formats if not submitted during application for drawal of start-up Power :

**Detailed procedure- LTA,MTOA
Connectivity formats CERC order 19012015
NERLDC Formats**



Charging of new Transmission elements

New Transmission Elements Charging

- Procedure for interconnection of a new transmission element and issuance of successful trial operation certificate
 - Circulated by POSOCO on 26th May 2014
 - Specifies formats and timelines for submission of data to RLDC
 - **Intimation for first time charging**
 - **At least 10 days in advance**
 - Submission of Annexure A1 to A6
 - **Request for start of trial operation**
 - **3 days in advance**
 - Submission of Annexure B1-B5
 - Request for issuance of successful trial operation certificate
 - After submission of Annexure C1-C5

New Transmission Elements Charging

Annexure	Subject	Remarks
Annexure A1	Intimation regarding anticipated charging of the line along with other documents	As per Format I
Annexure A2	List of elements to be charged and Element Rating details	As per Format I A
Annexure A3	Single line diagram of the concerned sub stations, along with status of completion of each dia/bus/breakers	
Annexure A4	List of SCADA points to be made available (as per standard requirement, RLDC would need all MW and MVAR data, voltage and frequency of all the buses, all the breaker and isolator positions, OLTC tap positions, Main-1/Main-2 protection operated signals)	
Annexure A5	Type and Location of Energy meters as per relevant CEA regulations	
Annexure A6	Connection Agreement, wherever applicable along with all annexures	

New Transmission Elements Charging

Annexure	Subject	Remarks
Annexure B1	Request for charging of the new transmission element along with the summary of the undertakings being submitted	As per Format III
Annexure B2	Undertaking in respect of Protective systems	As per Format III A
Annexure B3	Undertaking in respect of Telemetry and communication	As per Format III B
Annexure B4	Undertaking in respect of Energy metering	As per Format III C
Annexure B5	Undertaking in respect of Statutory clearances	As per Format III D

Annexure	Subject	Remarks
Annexure C1	Request for issuance of successful trial operation certificate	As per Format V
Annexure C2	Values of the concerned line flows and related voltages just before and after charging of the element	
Annexure C3	Special Energy meter (SEM) Reading for the trial	
Annexure C4	Output of Disturbance Recorders / Event Loggers	

New Transmission Elements Charging

- For timely completion of transmission lines
 - Timelines mentioned in the procedure are important
 - Formats to be completely filled from both the ends
 - Telemetry needs to be ensured before application
- Certification of successful trial run
 - Complete Data as per procedure to be submitted to concerned RLDC/NLDC
- **Sample meter data to be send to RLDC before first time line charging**
 - **To identify meter healthiness and compatibility with RLDC software**



Experience in NER
during 2014-15

First time charging clearance of new transmission elements/bays

- a. **Bays of 400 kV Balipara – Biswanath Chariali D/C line at Balipara** (2 nos) was charged at 2320 Hrs and 2327 Hrs on 25.09.14 respectively.
- b. **400 kV Bongaigaon - Balipara Quad D/C lines III & IV** was charged at **2353 Hrs on 04.11.14** and **1055 Hrs on 05.11.14** respectively along with 63 MVAR Line Reactors of 400 kV Bongaigaon - Balipara Quad D/C lines at Bongaigaon & Balipara (4 nos).
- c. **400 kV Bongaigaon – New Siliguri D/C lines III & IV** was charged at **1619 Hrs on 12.11.14** and **0014 Hrs on 11.11.14** respectively along with 63 MVAR Line Reactors of 400 kV Bongaigaon – New Siliguri Quad D/C lines at New Siliguri (2 nos).

First time charging clearance of new transmission elements/bays

- d. **400 kV Bongaigaon – Azara S/C** line was charged at **1708 Hrs** on **14.01.15** along with 63 MVAR Line Reactor of 400 kV Bongaigaon – Azara S/C line at Bongaigaon.
- e. **400 kV Bongaigaon – Byrnihat S/C** line was first time charged at 2155 Hrs on 27.01.15 along with 63 MVAR Line Reactor of 400 kV Bongaigaon – Byrnihat S/C line at Bongaigaon.
- f. **50 MVAR Line Reactor of 400 kV Silchar – Byrnihat** line at **Byrnihat** was first time charged at 2302 Hrs on 17.02.15
- g. Sectional Charging of **400 kV Silchar – Imphal D/C** lines (Charged at 132 kV)
- h. **132 KV Khandong-Haflong** line (LILO at Umrangsoo S/S of AEGCL) on 02.03.2015.

First time charging clearance of new transmission elements/bays

Metering issues :

- i. 400 kV Bongaigaon – Binaguri III & IV (Line : ENICL & Bay : POWERGRID) – Bongaigaon end SEM in line III was erratic and readings were not received for two weeks due to DCD software error.**
- ii. 400 kV Bongaigaon – Balipara III & IV (POWERGRID) – No SEM reading from either ends for a substantial period.**
- iii. 400 kV Silchar – Azara (Line : NETC & Bay : POWERGRID & AEGCL) – Initially CT was shorted resulting in zero reading at both ends for one week.**

First time charging clearance of new transmission elements/bays

132 KV Khandong-Haflong line (LILO at Umrangsoo S/S of AEGCL)

Metering issue (No SEM installed)

Telemetry issue

Connection Agreement

Intimation in last moment – timeline not followed

Violation of CERC Regulations.

Grant of start-up power of new generating unit **Bongaigaon Thermal Power Plant (BgTTP)**

Issues

- i) Telemetering
- ii) Special Energy Meter Data

NTPC started drawing power from 02.11.14. No SEM reading received for about 2 weeks from NTPC end. Erroneous reading at Bongaigaon end (first two weeks).

First time Synchronisation of new unit **Stage II of AGTTP**

Issues at the time of & after synchronisation of new unit

- i) Telemetering
- ii) Special Energy Meter Data
- iii) Connection Agreement
- iv) Machine Data
- v) SLD

AGTTP infirm injection : Unit started generating on 17.02.15. Initially GT meter was with reverse polarity (for one day)

Action points by Utilities :

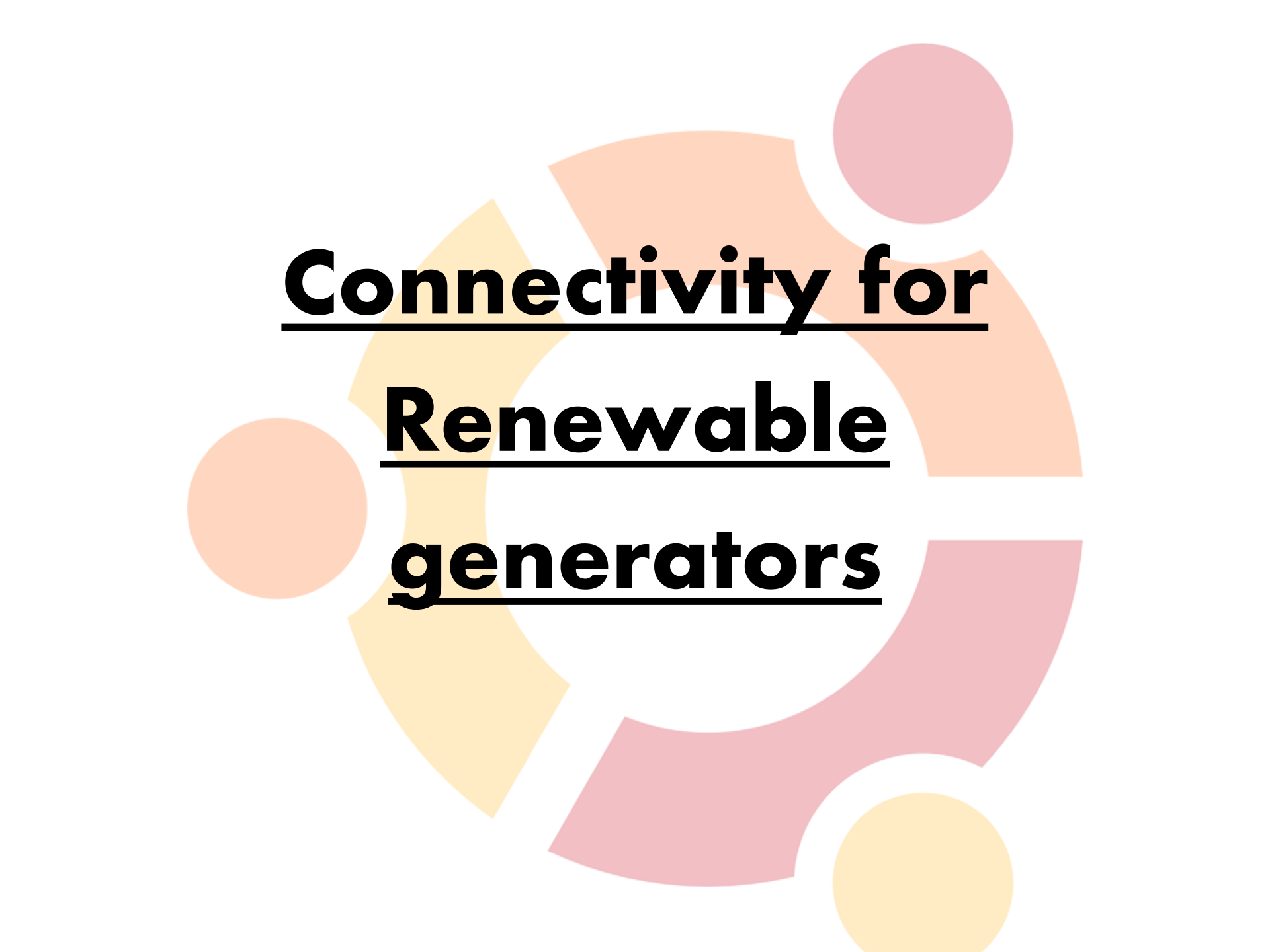
1. Nodal officer is to be identified by each power utility for co-ordination

2. Information of new elements to be commissioned within next two months to be furnished to OCC Meeting of NERPC & to NERLDC

3. Issues related to Telemeteing & SEM to be resolved before first time charging / synchronisation of element/generator (Preferably one week)

4. All formats to be submitted.

5. CERC provisions to be followed along with timeline.



Connectivity for
Renewable
generators

Renewable Generators - connectivity

Central Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State Transmission and related matters) (Third Amendment) Regulations, 2013 Dated: 26th of March 2013

Definition of applicant :

Any renewable energy generating station of 5 MW capacity and above but less than 50 MW capacity developed by a generating company in its existing generating station and seeking connectivity to the existing connection point with inter-State Transmission System through the electrical system of the generating station

Renewable Generators - connectivity

application shall be considered by CTU only if the **existing generating station agrees to act as the "Principal Generator"** on behalf of the renewable energy generating station(s) seeking connectivity through the electrical system of the generating station and formalizes a written agreement/arrangement among them **to undertake all operational and commercial responsibilities for the renewable energy generating station(s) in following the provisions of the Indian Electricity Grid Code and all other regulations of the Commission, such as grid security, scheduling and dispatch, collection and payment/adjustment of Transmission charges, UI charges, congestion and other charges etc.,** and submit a copy of the agreement to the CTU, alongwith the application for connectivity, with copy to the respective RLDC in whose control area it is located

SOR- 3rd. Amendment dtd. 26.3.13 –

Renewable Generators

RLDC Charges :

scheduling, metering and energy accounting of Renewable energy generating station with principal Generator shall be done by RLDC and such Renewable energy generating station shall pay applicable RLDC fees and charges.

Control Area :

Renewable energy generating station developed by a generating company in its generating station & interconnected to existing generating station shall have its own metering and telemetry to control its generation & maintaining its interchange schedule . Each such Renewable energy generating station shall be considered as a separate control area in already identified control area.

SOR- 3rd. Amendment dtd. 26.3.13 – Renewable Generators

Metering and Accounting :

CTU shall install special energy meters on all inter connections between the Renewable energy generating station and principal generator. **The principal generator shall take weekly meter readings and transmit them to the RLDC by Tuesday noon.** The RLDC shall compute actual net injection / drawal of principal and interconnected Generators separately, 15 minute-wise, based on the above meter readings. The above data along with the processed data of meters shall be forwarded by the RLDC to the RPC secretariat on a weekly basis for the seven day period ending on the previous Sunday midnight, to enable the latter to prepare and issue the unscheduled interchange (UI) account.

SOR- 3rd. Amendment dtd. 26.3.13 – Renewable Generators

Metering and Accounting – metering point :

For the renewable generators the boundary line for metering shall be the HV side of first-setup transformer. The metering at this boundary of renewable generator shall be considered for the computation of net injection of principal generating station at its metering point. Any loss in the electrical system of the generating station due to integration of renewable energy sources shall be borne by the principal generator.

SOR- 3rd. Amendment dtd. 26.3.13 – Renewable Generators

Transmission Losses:

As per the Central Electricity Regulatory Commission (Sharing of Inter State Transmission Charges and Losses) Regulations, 2010 (and order 3/SM/2015 dated 02.03.15), no transmission losses for the use of ISTS network shall be attributed to **solar based generation.**

Transmission Charges:

As per the Central Electricity Regulatory Commission (Sharing of Inter State Transmission Charges and Losses) Regulations, 2010 (and order 3/SM/2015 dated 02.03.15), no transmission charges for the use of ISTS network shall be charged to **solar based generation.**



THANKYOU

