



**NATIONAL ELECTRIC POWER REGULATORY AUTHORITY  
(INTERCONNECTION FOR RENEWABLE GENERATION  
FACILITIES) REGULATION, 2015**

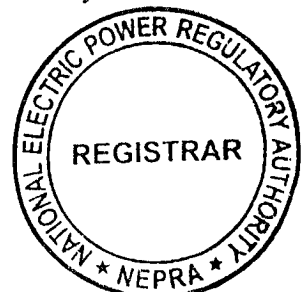
**NOTIFICATION**

Islamabad, the <sup>22<sup>nd</sup></sup>~~17<sup>th</sup>~~ December 2015

1966.  
S.R.O. 1966/2015.— In exercise of the powers conferred by section 47 read with section 7 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (XL of 1997) the National Electric Power Regulatory Authority, in order to facilitate interconnection of renewable energy based projects with the electrical networks of the distribution companies or the transmission companies as applicable, is pleased to make the following regulations, namely:-

**PRELIMINARY**

1. **Short title and commencement** :- (1) These regulations may be called the National Electric Power Regulatory Authority (Interconnection for Renewable Generation Facilities) Regulation, 2015.
  - (2) These regulations shall come into force immediately.
  - (3) These regulations shall apply only to the new projects whose Simulation Studies have not already been approved by a distribution company or any company holding a transmission license.
2. **Definitions** :- (1) In these regulations, unless there is anything repugnant in the subject or context,—
  - (a) “Host DISCO” means the distribution company in whose service territory the Renewable Generation Facility is located;



- (b) "Interconnection Facilities" means the plant and equipment, including the electrical lines or circuits, transformers, switchgears, safety and protective devices or meters used for interconnection services;
- (c) "Renewable Generation Facility" means generation facility based on renewable resources including wind, solar, small hydro and bagasse;
- (d) "Simulation Studies" include load flow, short circuit and transient stability studies essential for inducting generation facilities in the electrical network, for identifying technical constraints including transmission losses and other operation and maintenance limitations.

(2) Words and expressions used but not defined in these regulations shall have the same meaning as under the Act and rules and regulations framed there under.

### INTERCONNECTION FACILITIES

**3. Interconnection Facilities.**-(1) Subject to the conditions provided in these regulations, a Renewable Generation Facility may be,

- (a) connected to the network through existing as well as planned transmission/distribution lines; or/and
- (b) connected to the network through direct interconnection with the grid-substation,

Provided that a renewable generation facility may choose either of the options or a combination thereof as identified through the simulation studies.

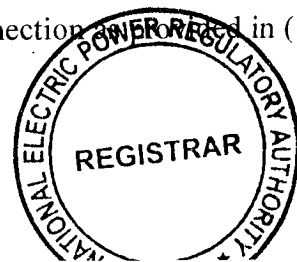
Provided further that the responsibility for financing, constructing and operating the interconnection facilities may be assigned in accordance with NEPRA (Sale of Electric Power by Renewable Companies) Guidelines, 2015.

(2) In case a renewable generation facility opts for interconnection as provided in (1) (a), the following conditions and criteria shall be followed:

- (a) Reliability of power supply shall be maintained according to N-1 contingency criteria;
- (b) interconnection at 11KV and 132 KV shall be in the manner as provided in the Schedule I set out as annexure,

Provided that, for reliability consideration, an in-and-out arrangement will be implemented for the above voltage levels.

(3) In case a renewable generation facility opts for interconnection as provided in (1) (b), the following conditions and criteria shall be followed:



- (a) Reliability of power supply shall be maintained according to N-1 contingency criteria;
- (b) The voltage level and length of interconnection transmission lines shall be in accordance with Schedule II as set out as annexure.

Provided further that Host DISCO may consider interconnection of those generation facilities that consent to take responsibility for losses in excess of limits as provided in these regulations and costs to be incurred for longer transmission lines.

**4. Obligation of the Host DISCO.-** For harnessing maximum potential of renewable energy, Host DISCO shall:

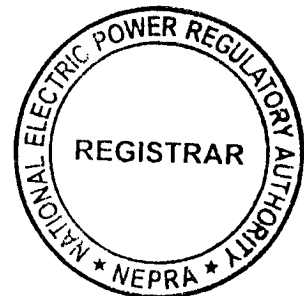
- (a) assign priority for developing its network where a number of generation projects have been identified by the relevant agencies and they do not qualify to individually connect to the network;
- (b) encourage development of local distribution networks for supply of power from scattered generation facilities.

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*Syed Safer Hussain*

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Registrar

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**Schedule I**

[See regulation 3 (2) (b)]

**PART I**

**Interconnection at 11 KV**

- (a)  $0.5 \text{ MW} < \text{Power to be Transported} \leq 12.5 \text{ MW}$
- (b) The length of interconnection transmission lines shall be limited as follows:
  - (i) For generation facility located in urban areas, the energy loss at connection point shall not exceed 2.5% when the generation facility is operating at full load.
  - (ii) For generation facility located in rural areas, the energy loss at the connection point shall not exceed 3.5% when the generation facility is operating at full load.

**PART II**

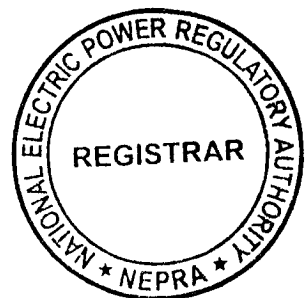
**Interconnection at 132 KV**

- (a)  $12.5 \text{ MW} < \text{Power to be Transported} \leq 84 \text{ MW}$ .
- (b) The length of interconnection transmission lines shall be limited to energy loss which shall not exceed 1% when the generation facility is operating at full load.

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## Schedule II

[See regulation 3(3) (b)]

(a) Voltage levels shall be selected on the basis of following capacity levels of generation facility:

Connection Voltage Level (kV)	Approximate Generator Size (MW)
11	1-15
66	>15-40
132	>40-150

*Connections at 66 kV level will be allowed considering the overall policy of host DISCO for dismantling and/or upgrading the respective grid. Where interconnection at 66 kV is ruled out, 132 kV will be considered. For interconnection voltages above 132 kV, Grid Code shall be followed.*

(b) The length of interconnection transmission lines shall be limited as follows:

(i) For 11 kV, for generation facility located in urban areas the energy loss at the receiving- end shall not be more than 2.5% when the generation facility is operating at its maximum capacity whereas the voltage drop at the receiving-end shall not be more than 3%. For generation facility located in rural areas these limits shall be 3.5% and 5% respectively.

(ii) For higher voltage levels the company holding transmission license or Host DISCO, as applicable, shall decide about the interconnection consistent with their practices for maintaining the required levels of transmission losses and voltage drop. However, the energy loss shall not exceed the following:

- 1% for 132 KV;
- for 220 KV and above the procedure in Grid Code shall be followed.

(iii) Exception to a reasonable degree to (i) and (ii) above may be had if the interconnection of generation facility would result in overall benefits to the network such as improvement in voltage profile.

