

**The Tripura Electricity Regulatory  
Commission (Smart Grid)  
Regulations, 2015**



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PART--I-- Orders and Notifications by the Government of Tripura,  
The High Court, Government Treasury etc.

**TRIPURA ELECTRICITY REGULATORY COMMISSION**

No.F.25/TERC/2009/

Dated, 26<sup>th</sup> November 2015

**NOTIFICATION OF  
SMART GRID REGULATIONS'2015**

In exercise of the powers conferred by clause (zp) of sub-section (2) of section 181 of the Electricity Act, 2003 (36 of 2003), and all others powers enabling it in this behalf, the Tripura Electricity Regulatory Commission hereby makes the following regulations namely the Tripura Electricity Regulatory Commission (Smart Grid) Regulations, 2015.

**CHAPTER-1****General****1. Short title, commencement and interpretation**

- 1.1. These Regulations shall be called the Tripura Electricity Regulatory Commission (Smart Grid) Regulations, 2015.
- 1.2. These Regulations shall be applicable to all Generating Companies, Transmission Licensees, Distribution Licensees and consumers in the State and connected to the state grid.
- 1.3. These Regulations shall come into on the date of their publication in the Tripura Gazette unless otherwise stated in these Regulations and shall be concurrent within the area of jurisdiction of the Tripura Electricity Regulatory Commission.

**2. Definitions**

2.1 Unless the context otherwise requires, for the purpose of these Regulations:-

- a) 'Act' means the Electricity Act, 2003 and amendments thereof;
  - b) 'Advanced metering infrastructure (AMI)' including smart meters means the infrastructure required to enable the Distribution Licensee to accurately collect, monitor and analyse real-time consumption data from consumers, communicate price signals to consumers and where permitted control load;
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- c) **'Aggregator'** is an entity registered with the Distribution Licensee to provide aggregation of one or more of the services like demand response services under the demand response mechanism, Distributed Generation, Energy Storage etc. within a control area;
- d) **'Commission'** means The Tripura Electricity Regulatory Commission in short called TERC;
- e) **'CEA'** means Central Electricity Authority;
- f) **'Cyber security'** means protecting information, equipment, devices, computer, computer resource, network, programmes, data, communication device and information stored therein from unauthorized or unintended access, use, disclosure, disruption, modification or destruction;
- g) **'Interoperability'** means the measure of ease of integration between two systems or software components to achieve a functional goal;
- h) **'Key performance indicator (KPI)'** is a type of performance measurement to evaluate its success, or to evaluate the outcome of a particular activity in which it is engaged;
- i) **'Licensed business'** means the functions and activities, which the licensee is required to undertake in terms of the licence granted by the Commission or being a deemed licensee under the Act;
- j) **'Licensee'** means a person who has been granted a license under section 14
- k) **'Microgrid'** is an intelligent electricity distribution system that interconnects loads, distributed energy resources and storage within clearly defined electrical boundaries to act as a single controllable entity with respect to the main grid. A microgrid uses information, communications and control technologies to operate the system's distributed supply and demand resources in a controlled and coordinated way either while connected to the main grid or while islanded. A micro grid can connect and disconnect from the grid to enable it to operate in both grid-connected or island-mode;
- l) **'Prosumer'** means any consumer generating electricity for his own use and/or for selling;
- m) **'SCADA'** means supervisory control and data acquisition;
- n) **'Smart grid'** means an electricity networks that can integrate the actions of all users connected to it using advanced metering, communication and information technology to deliver electricity efficiently, sustainably, reliably and securely;
- o) **'Standards of performance (SOP) regulations'** provide guidelines to maintain distribution system parameters within the permissible limits. These standards serve as

guidelines for licensees for providing an efficient, reliable, coordinated and economical system of electricity distribution;

p) 'TEGC' means Tripura Electricity Grid Code;

q) 'Wide area measurement systems (WAMS)' is advanced measurement technology, information tools, and operational infrastructure that facilitate the understanding and management of the increasingly complex behaviour exhibited by large power systems to enhance the system operator's "situational awareness" for safe and reliable grid operation;

2.2 The words and expressions used and not defined in these Regulations but defined in the Act, Rules and Regulations framed there under shall have the meaning assigned to them in the Act, Rules and Regulations

### **3. Applicability of regulations**

3.1. These Regulations shall be applicable to the Generating Companies and Licensees which are engaged in the business of generation, transmission, distribution, supply of electricity and to all categories of consumers.

3.2. The Generating Companies and Licensees shall ensure that aggregator and/or other third parties involved comply with these Regulations through appropriate conditions in the respective contracts.

3.3. These Regulations shall be applied in conjunction with existing Regulations, including TERC (Terms and Conditions for Determination of Tariff) Regulations, 2004, TERC (Standards of Performance) Regulations, 2004, TERC (Tripura Electricity Grid Code) Regulations, 2010 and TERC (Electricity Supply Code ) Regulations 2011, (First Amendment 2013 and 2<sup>nd</sup> Amendment 2014), and shall be used in conjunction and consistency with all relevant existing standards and standards under development by CEA, BIS and other designated authorities such as: Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations 2010, Central Electricity Regulatory (Grid Standards) Regulations 2010, Central Electricity Regulatory (Measures relating to Safety and Electric Supply) Regulations 2010, Central Electricity Regulatory (Installation and Operations of Meters) Regulations 2006, Central Electricity Regulatory (Technical Standards for Connectivity to the Grid) Regulations 2007, respective State Grid Code, other standards for equipment, smart metering and AMI, cyber security and interoperability etc.

## **CHAPTER II :**

### **4. Smart grid objectives**

(1) The objectives of these regulations are to enable integration of various smart grid technologies and measures to bring about economy, efficiency improvement in

generation, transmission and distribution licensee operations, manage the transmission and distribution networks effectively, enhance network security, integrate renewable and clean energy into the grid and micro grids.

- (2) The objectives also include enhancing network visibility and access, promoting optimal asset utilization, improving consumer service levels thereby allowing for participation in operations of transmission licensees, distribution licensees through greater technology adoption across the value chain in the electricity sector and particularly in the transmission and distribution segments.

#### **5. Guidelines on Smart Grid Process :**

5.1 The Commission may from time to time issue guidelines for the Generating Company , Transmission licensee , Distribution licensee in execution of the activities including but not limited to

- (a). Formulation of Smart Grid Programmes
- (b). Implementation of Smart Grid Programmes
- (c). Cost Effectiveness Assessment of Smart Grid Programmes
- (d). Monitoring and Reporting of Smart Grid Plans and Programmes
- (e). Essential requisites for Smart Grid Programmes
- (f). Customer engagement and participation
- (g). Customer data protection
- (h). Training and capacity building
- (i). Methodology for setting Smart Grid plans and funding levels
- (j). Database development framework and information system requirements.

### **CHAPTER III:**

#### **6. Constitution of a smart grid cell and appointment of nodal officer :**

- 6.1. Every Licensee is required to constitute a Smart Grid Cell within the organization within three month of notification of these regulations and responsible for coordinating activities related to defining and implementing the Smart Grid roadmap and pilots where they have been approved.
- 6.2. Upon its constitution, Licensee shall appoint a nodal officer responsible for heading the operations of such cell.
- 6.3. The Smart Grid Cell shall so constituted shall have the authority and requires to undertake the following functions:
- (a) Be responsible for baseline study , development of data , development of the overall Smart Grid program of the Licensee and the identification of specific plans;

- (b) Design and Develop, or require to be developed, detailed project reports in consonance with the requirements of the Smart Grid programs , roadmaps and in accordance with these Regulations and other Relevant regulations and codes;
  - (c) Monitor the program or project and file returns on the monthly progress of the project to the Commission and file Project Completion Report. The Project Completion Report shall comprehensively record the results and experiences of the implementation of Smart Grid programs or projects of the Licensee;
  - (d) Report to the Commission on the standards of performance achieved against the notified benchmarks;
  - (e) All other functions assigned by the Licensee's management and by the Commission from time to time.
  - (f) Seeking necessary approvals to Smart Grid Plans, Programmes, Projects
- 6.4. The Licensees shall combine activities related to energy efficiency, demand side management and Smart Grid implementation within the same cell;
- 6.5. It is clarified that the absence of a Smart Grid Cell shall not limit the implementation of the Smart Grid projects by the Licensee.

#### **CHAPTER IV:**

##### **Smart grid process**

##### **7. Baseline study and development of data**

- (1) Transmission licensee, distribution licensee shall undertake baseline study to identify the targets and final outcomes for Smart Grid project programmes. The transmission licensee, distribution licensee shall also build the necessary database.
- (2) Transmission licensee, distribution licensee shall undertake study to estimate potential for employment of specific efficiency technologies and applications, establish key performance indicators, and determine existing baseline technical conditions.
- (3) On the basis of the results of baseline study, the transmission licensee, distribution licensee shall develop smart grid programme for its area of supply.

##### **8. Formulation of Smart Grid Plan, Programmes, Projects**

- (1) The transmission licensee, distribution licensee shall submit an integrated Multi-Year Smart Grid Plan for their respective Licence areas along-with Multi-Year Tariff Petition or ARR Petition, for the approval of Commission.

- (2) All Smart Grid projects requiring investments of more than Rupees 10 Crores (or such sum as specified by the Commission) shall be submitted to the Commission for prior approval of investments:

Provided that investments of less than Rupees 10 Crores (or such sum as specified by the Commission) shall not require prior approval of the Commission if it is part of Multi-Year Smart Grid Plan of the utility approved by the Commission:

- (3) The proposal for Smart Grid Projects shall include

- (i) Detailed Project Report
- (ii) Customer engagement and participation plan as applicable
- (iii) Training and capacity building plan and
- (iv) any other information that may be stipulated by the Commission from time to time:

Provided that the detailed project report would include inter alia description of the project, objective and rationale for the project, technical feasibility study, projected financial implications, target stakeholders, detailed cost benefit analysis detailing all costs qualitative and quantitative in nature, assessment of the project, in line with the cost effectiveness guidelines issued by the Commission, proposed mechanism for recovery of costs, delivery strategy, implementation mechanism, implementation schedule, performance incentives if any, monitoring and evaluation plan, plan for increasing awareness among the stakeholders.

- (4) A list of indicative components of Smart Grid Projects is appended as **Schedule - X**.

#### **9. Approval of smart grid plan, programme, project document**

- (1) The Commission shall approve a Smart Grid Programme, Project if it is in line with the Objectives set out in Section 4 of the Regulations.
- (2) The Commission may take assistance and advice of such experts as it deems necessary for examining the proposal submitted by the transmission licensee, distribution licensee.
- (3) The Commission while according approval to the proposals, may identify costs, if any, relating to the programme, project, and decide the methodology, procedure, process for recovery of such costs.
- (4) The Commission may provide the incentive / dis-incentive mechanism for the transmission licensee, distribution licensee linked to the execution, implementation and performance during the life of the project. The Commission may also specify financial incentives/dis-incentives to participating consumers to encourage active and effective participation in the Smart Grid programs.
- (5) The Commission may modify the proposal as deemed fit in order to ensure its consistency with overall objectives.



## CHAPTER V :

### Smart grid project evaluation

#### **10. Smart grid programme, project completion report**

- (1) The transmission licensee, distribution licensee will prepare and submit a detailed Programme, Project Completion Report and submit the same to the Commission within one month of completion of such programme.
- (2) The Report shall cover the programme, project expenses, physical achievements, constraints and difficulties faced, and deviations, if any.
- (3) Transmission licensee, distribution licensee shall place the completion report in public domain through its website.

#### **11. Monitoring, evaluation, measurement and verification of execution and performance of the smart grid programme, project**

- (1) The Smart Grid programme, project shall be monitored and evaluated based on appropriate methodology including Key Performance Indicators as decided by the Commission using suitable measurement and verification protocols identified for each of the individual programmes, projects by the Commission.
- (2) Transmission licensee, distribution licensee shall also submit an evaluation report to the Commission, which inter alia will include outcomes, benefits, lessons learnt and way forward.

#### **12. Recovery of Costs**

12.1. Transmission licensee , Distribution licensee shall identify the net incremental costs ,if any , associated with planning , design and implementation of programmes .

12.2 Transmission licensee , Distribution licensee shall propose methodology for recovery of net incremental costs through tariff or any other mechanism .

12.3 In order to qualify for cost recovery , each program must be

- (i) Approved prior to implementation and
- (ii) Implementaed in accordance with the approved program plan .

## **CHAPTER VI:**

### **Safety and standards related to smart grid**

#### **13. System Standards**

Where available CEA or BIS standards shall be complied with for all system and network operational matters related to Smart Grid. Where CEA or BIS standards are not yet in place, relevant IEC/IEEE/ANSI Standards should be followed in that order.

#### **14. Network and Communication Standards**

Where standards related to interoperability and cyber security are in place by either CEA or BIS then they shall be adopted. Where these standards are not yet in place, relevant IEC/IEEE/ANSI Standards should be followed in that order.

#### **15. Product Standards**

Where available BIS standards shall be complied with for all equipment and technology related to Smart Grid. Where BIS standards are not yet in place, relevant IEC/IEEE/ANSI Standards should be followed in that order.

#### **16. Performance Standards**

16.1. In accordance with the requirements of the Act, the Commission has implemented TERC (Standards of Performance) Regulations, 2004. To the extent applicable, the SOP Regulations shall apply for assessing the performance of the Smart Grid projects and for incentivizing/penalizing performance of Licensees.

16.2. The Commission shall specify and require implementation of additional Standards of Performance to maximize the benefits and ensure compliance of the Smart Grid investments proposed;

16.3. All Standards of Performance to be met in the Smart Grid project implementation area shall be measurable through the measurement, visualization and analytics facilities that are required to be integral part of the Smart Grid project design;

16.4. The Commission, through Order, shall require specific reporting arrangements to be implemented and periodic reports to be furnished to the Commission on actual performance against the required standards.

#### **17. Customer Data Protection Standards**

17.1. Licensees and other implementers of the Smart Grid projects/programs shall ensure that protection of consumer privacy is accorded the highest levels of priority in the design of the Smart Grid projects and the corresponding investment plans.

17.2. Consumer data shall be protected through appropriate levels of encryption and access controls, and shall ordinarily not be shared with external agencies without explicit authorization of the Commission or unless required by statutory authorities or by courts of law. If deemed necessary for effective implementation, the Commission shall allow Licensees to disclose consumption data to third parties. The following conditions shall apply in such circumstances:

- a) Data shall be classified as:
  - (i) Personally Identifiable Information (PII), which consists of customer names, addresses, identification numbers, and other information that specifically identifies the person or entity to which it applies.
  - (ii) Customer-Specific Energy Usage Data (CEUD), which in most cases, does not identify an individual customer<sup>1</sup> but includes detailed information about the utility service provided to the customer.
- b) Data access by parties providing services shall only be permitted with explicit authorization of designated senior officers of the licensee who are duly authorized by the Board of Directors of the licensee to provide such data under required confidentiality, non-disclosure and non-unrelated use agreements. Such third parties shall be permitted access to all aggregated consumption data as well as CEUD data. No PII data shall be disclosed to third parties.
- c) The Commission, upon request of the licensee, shall also approve third party service providers to have direct access to consumers and their consumption data as part of a Smart Grid project or program approved by the Commission. The licensee shall permit such access through appropriate confidentiality arrangements with such third parties.
- d) It is explicitly clarified that neither the concerned licensee nor the third parties permitted data access would be permitted to sell or disseminate the consumer data to any other party or use for any other purpose other than the purpose specified for the Smart Grid project or program.
- e) Consumers shall have access to all of their own consumption data, which may be appropriately displayed on the meter display of the consumer and/or on authorized websites, with suitable levels of access control and security.

17.3. Disputes on consumer privacy and data protection shall be resolved through the Consumer Grievance Redressal Forum & Electricity Ombudsman.

17.4. The Commission may at its discretion specify rules for customer privacy and data protection that the licensee shall be obliged to follow.

**18. Testing and Certification**

The Commission shall require the licensee to provide certificate of compliance to specific standards from the designated nodal authority at the national level for the Smart Grid equipment installed

**CHAPTER VII:**

**Customer engagement and smart grid**

**19. Awareness and Capacity Building**

19.1. In the development phase of Smart Grid programs, there would be significant needs for customer/prosumer education and outreach. Licensees shall earmark 1% of the project cost for each Smart Grid project towards consumer awareness and capacity building.

19.2. As part of the detailed project reports, Licensees shall define a clear internal and external communication strategy that identifies the critical communication needs and linking the same to the key project components. The Commission may reject project proposals or may require revisions to the communication strategy if required.

**20. Customer Participation and Incentives**

20.1. Where the programme is to be rolled out over a geographical area, consumers shall be deemed part of the program. Depending on the nature of the specific Smart Grid project/program, individual consumers may be permitted by the Commissioner to "opt in" or "opt out" of the programs. Where relevant, the Commission shall specifically deal upon such aspects in its orders;

20.2. The Commission shall review and approve proposals for financial incentives/dis-incentives to participating consumers to encourage active and effective participation in the Smart Grid programs;

20.3. For each such incentive/dis-incentive program the Licensee shall demonstrate cost benefits firstly to the consumer in general and then the Distribution business. The project details including the projected incentive to be paid to the consumer and the calculation of the incentive mechanism shall be included within the DPR. The program design may include involvement of third parties or aggregators. In such cases, the program design shall also include incentive/disincentive structuring involving such third parties or aggregators as well.

20.4. Full details of the program shall be available on the Licensee's website and details of rebates, incentives and penalties listed as items on the participating consumer's electricity bill. More sophisticated programmes such as those related to dynamic tariff and demand response shall require consumers to have access to their data through consumer web-based portal or in-home display or other similar means accessible to the consumers.

- 20.5. The Commission shall review the incentive/dis-incentive programs based on consumer/prosumer and utility feedback and the overall response observed on the Smart Grid program.

**21. Consumer or Prosumer Dispute Redressal Process**

- 21.1. Disputes arising between Licensees and customers in relation to the Smart Grid program shall be resolved through the Consumer Grievance Redressal Forum & office of the Electricity Ombudsman, as relevant.
- 21.2. The Commission, from time to time, shall review and modify the relevant Regulations on Consumer Grievance Redressal to ensure effective implementation of the Smart Grid program.

**MISCELLANEOUS**

**22. Effect of Non-compliance**

Failure to comply with any requirement of these Regulations shall not invalidate any Proceeding merely by reason of such failure unless the Commission is of the view that such failure has resulted in miscarriage of justice.

**23. Provisions to remove difficulties**

- (1) The Commission may, at any time add, vary, alter, modify or amend any provisions of these regulations. If any difficulty arises in giving effect to the provisions of these Regulations, the Commission may, by general or specific order, make such provisions not inconsistent with the provisions of the Act, as may appear to be necessary for removing the difficulty.
- (2) The Commission may, from time to time, issue orders and directions in regard to the implementation of the regulations and procedures to be followed.

**24. Repeal and Savings**

- 24.1. Nothing in this Regulation shall be deemed to limit or otherwise affect the inherent power of the Commission to make such orders as may be necessary for ends of justice to meet or to prevent abuses of the process of the Commission.
- 24.2. Nothing in this Regulation shall bar the Commission from adopting in conformity with the provisions of the Act a procedure, which is at variance with any of the provisions of this Regulation, if the Commission, in view of the special circumstances of a matter

or class of matters and for reasons to be recorded in writing, deems it necessary or expedient for dealing with such a matter or class of matters.

- 24.3 Nothing in this Regulation shall, expressly or impliedly, bar the Commission dealing with any matter or exercising any power under the Act for which no Regulations have been framed, and the Commission may deal with such matters, powers and functions in a manner it thinks fit.

(By order of the Commission)

Secretary  
Tripura Electricity Regulatory  
Commission

**SCHEDULE-X**

**A LIST OF INDICATIVE COMPONENTS OF SMART GRID PROJECTS**

1. Automated Metering Infrastructure (AMI)
2. Demand Response
3. Micro-Grids
4. Distribution SCADA/Distribution Management
5. Distributed Generation
6. Peak load Management
7. Outage Management
8. Asset Management
9. Wide area measurement systems
10. Energy storage projects
11. Grid Integration of Renewables
12. Electric Vehicle including Grid to Vehicle(G2V) and Vehicle to Grid(V2G) Interactions
13. Smart Grid data collection and analysis
14. Tariff Mechanism including interruptible and dynamic tariffs, time of use, critical peak pricing, real time pricing etc.