JOINT ELECTRICITY REGULATORY COMMISSION
FOR MANIPUR AND MIZORAM
AIZAWL ::: MIZORAM

N O T I F I C A T I O N

Dated Aizawl, the 18th July, 2016

No.H.20013/12/16-JERC.- In exercise of the powers conferred under Section 181 of the Electricity Act, 2003 (36 of 2003), and all other powers enabling it in this behalf, the Joint Electricity Regulatory Commission for the states of Manipur and Mizoram hereby makes the following regulations with an objective to facilitate large-scale grid integration of solar and wind generating stations while maintaining grid stability and security as envisaged under the Grid Code, through forecasting, scheduling and commercial mechanism for deviation settlement of these generators, namely:

A1: SHORT TITLE, COMMENCEMENT AND EXTENT

1.1 These regulations may be called the Joint Electricity Regulatory Commission for Manipur and Mizoram (Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2016;

1.2 These Regulations shall extend to the entire states of Manipur and Mizoram;

1.3 These Regulations shall come into force from the date of their publication in the Official Gazettes of the Governments of Manipur and Mizoram.

A2: DEFINITIONS AND INTERPRETATION

2.1 In these Regulations, unless the context otherwise requires-

a) **'Absolute Error'** means the absolute value of the error in the actual generation of wind or solar generators with reference to the scheduled generation and the 'Available Capacity' (AvC), as calculated using the following formula for each 15 minute time block:

Error (%) = 100 X [Actual Generation– Scheduled Generation] / (AvC);

b) **'Act'** means the Electricity Act, 2003 (36 of 2003);

c) **'Actual Drawal'** in a time-block means electricity drawn by a buyer, as the case may be, measured by the interface meters;

d) **'Actual Injection'** in a time-block means electricity generated or supplied by the seller, as the case may be, measured by the Interface meters;

e) **'Available Capacity or AvC'** for wind or solar generators means the cumulative capacity rating of the wind turbines or solar inverters that are capable of generating power in a given time-block;

f) **'Beneficiary'** means a person purchasing electricity generated from a generating station;

g) **'Buyer'** means a person, including beneficiary, purchasing electricity through a transaction scheduled in accordance with the regulations applicable for short-term open access, medium-term open access and long-term access;

h) **'CERC'** means the Central Electricity Regulatory Commission referred to in subsection (1) of section 76 of the Act;

i) **'Deviation'** in a time-block for a seller means its total actual injection minus its total scheduled generation and for a buyer means its total actual drawal minus its total scheduled drawal;

j) **'Gaming'** in relation to these regulations, shall mean an intentional mis-declaration of available capacity or schedule by any seller in order to make an undue commercial gain through Charge for Deviations;

k) **'Grid Code'** means the Grid Code specified by Joint Electricity Regulatory Commission for the states of Manipur and Mizoram under clause (h) of sub-section (1) of Section 86 of the Act;

l) **'IEGC'** means the Grid Code specified by CERC under clause (h) of sub-section (1) of Section 79 of the Act;

m) **'Interface Meters'** means interface meters as defined by the Central Electricity Authority under the Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006, as amended from time to time;

n) **'Pool Account'** means state account for receipts and payments on account of deviation by buyers or sellers including wind and solar generators;

o) **'Pooling Station'** means the sub-station where pooling of generation of individual wind generators or solar generators is done for interfacing with the next higher voltage level:

Provided that where there is no separate pooling station for a wind / solar generator and the generating station is connected through common feeder and terminated at a sub-station of distribution company/STU/CTU, the sub-station of distribution company/STU/CTU shall be considered as the pooling station for such wind/solar generator, as the case may be;

p) **'Qualified Coordinating Agency or QCA'** means the agency coordinating on behalf of Wind/ Solar Generators connected to a pooling station. QCA may be one of the generators or any other mutually agreed agency for the following purposes:

i. Provide schedules with periodic revisions as per this regulation on behalf of all the Wind/Solar Generators connected to the pooling station(s);
ii. Responsible for metering, data collection/transmission, communication, coordination with DISCOMS, SLDC and other

agencies;

iii. Undertake commercial settlement of all charges on behalf of the generators, including payments to the State DSM pool accounts through the SLDC;

iv. Undertake de-pooling of payments received on behalf of the generators from the State DSM Pool account and settling them with the individual generators;

v. Undertake commercial settlement of any other charges on behalf of the generators as may be mandated from time to time;

QCA shall be treated as a State Entity.

q) **'Scheduled Generation'** at any time or for a time block or any period means schedule of generation in MW or MWh ex-bus given by the Load Despatch Centre;

r) **'Scheduled Drawal'** at any time or for a time block or any period time block means schedule of despatch in MW or MWh ex-bus given by the Load Despatch Centre;

s) **'Seller'** means a person, including a generating station, supplying electricity through a transaction scheduled in accordance with the regulations applicable for short-term open access, medium-term open access and long-term access;

t) **'State Commission'** means the Joint Electricity Regulatory Commission established under sub-section 1 of Section 83 of the Act;

u) **'State Entity'** means an entity which is in the SLDC control area and whose metering and energy accounting is done at the state level;

v) **'State Load Despatch Centre or SLDC'** means Load Despatch Centre of the State, established under sub-section (1) of Section 31 of the Act, responsible for coordinating scheduling of the state entities in accordance with the provisions of the State Grid Code;

w) **'Time-block'** means a time block of 15 minutes, for which specified electrical parameters and quantities are recorded by special energy meter, with first time block starting at 00.00 hrs;

2.2 Save as aforesaid and unless repugnant to the context or the subject-matter otherwise requires, words and expressions used in these regulations and not defined, but defined in the Act, or the Grid Code or any other regulations of this Commission shall have the meaning assigned to them respectively in the Act or the Grid Code or any other regulation;

A3: SCOPE OF REGULATIONS AND EXTENT OF APPLICATION

3.1 These Regulations shall apply to all wind and solar generators connected to the State grid, including those connected via pooling stations, and selling power within or outside the State.

A4: FORECASTING AND SCHEDULING CODE

4.1 This code provides methodology for day-ahead scheduling of wind and solar energy generators which are connected to the State grid and re-scheduling them on one and half hourly basis, and the methodology of handling deviations of such wind and solar energy generators. Appropriate meters shall be provided for energy accounting. Telemetry/communication system & Data Acquisition System shall also be provided for transfer of information to the SLDC.

4.2 Wind and Solar generators, represented via Qualified Coordinating Agencies (QCAs), shall mandatorily provide to the SLDC, in a format as prescribed by SLDC, the technical specifications at the beginning and whenever there is any change. The data relating to power system output & parameters and weather related data as applicable shall also be mandatorily provided by such generators to the SLDC in real time.

4.3 Forecasting shall be done by wind and solar generators connected to the State grid, or by QCAs on their behalf. The SLDC is also mandated to undertake forecasting of wind and solar power that is expected to be injected into the State grid, by engaging forecasting agency (ies), if required. The forecast by the SLDC shall be with the objective of ensuring secure grid operation by planning for the requisite balancing resources. The forecast by the QCA or wind and solar generator, as the case may be, shall be generator centric. The QCA or wind and solar generators will have the option of accepting the SLDC's forecast for preparing its schedule or provide the SLDC with a schedule based on their own forecast. The QCA shall coordinate the aggregation of schedules of all generators connected to a pooling station and communicate it to the SLDC.

4.4 The QCA or the wind and solar generator shall submit a day-ahead and week-ahead schedule for each pooling station or each generating station, as the case may be. Day-ahead schedule shall contain wind or solar energy generation schedule at intervals of 15 minutes (time-block) for the next day, starting from 00:00 hours of the day, and prepared for all 96 time-blocks. Week-ahead schedule shall contain the same information for the next seven days.

4.5 The schedule of wind and solar generators connected to the State grid (excluding collective transactions) may be revised by giving advance notice to the SLDC. Such revisions shall be effective from 4^{th} time block, the first being the time-block in which notice was given. There may be one revision for each time slot of one and half hours starting from 00:00 hours of a particular day subject to maximum of 16 revisions during the day.

4.6 The plan for data telemetry, formats of forecast submission and other details in this regard shall be provided in the detailed procedure to be prepared by SLDC and approved by the State Commission.

4.7 Any commercial impact on account of deviation from schedule based on the forecast shall be borne by the wind and solar generator, either directly or transacted via the representing QCA.

A5: COMMERCIAL AND DEVIATION SETTLEMENT

5.1 (a) The wind or solar generators connected to the State grid and selling power within the State shall be paid by the buyer as per actual generation.

(b) The wind or solar generators connected to the State grid and selling power outside the State shall be paid by the buyer as per scheduled generation.

5.2 The wind and solar generator or the QCA, as the case may be, shall have the option of accepting the SLDC's forecast for preparing its schedule or provide the SLDC with a schedule based on its own forecast, and such schedule shall be used as reference for deviation settlement.

5.3 The QCA shall undertake all commercial settlement on behalf of the generator(s) connected to the respective pooling station(s).

5.4 In the event of actual generation of a generating station or a pooling station, as the case may be, being less or more than the scheduled generation, the deviation charges for shortfall or excess generation shall be payable by the wind and solar generator or the QCA, as the case may be, to the State DSM Pool, as given in the table below:

Table – I: Deviation Charges in case of under or over-injection, for sale of power within the State

Sr. No.	Absolute Error in the 15-minute time block	Deviation Charges payable to State DSM Pool
1	< = 10%	None
2	>10% but <=20%	At Rs. 0.50 per unit for the shortfall or excess energy for absolute error beyond 10% and upto 20%
3	>20% but <=30%	At Rs. 0.50 per unit for the shortfall or excess energy beyond 10% and upto 20% + Rs. 1.0 per unit for balance energy beyond 20% and upto 30%

4	> 30%	At Rs. 0.50 per unit for the shortfall or excess energy beyond 10% and upto 20% + Rs. 1.0 per unit for shortfall or excess energy beyond 20% and upto 30% +Rs. 1.50 per unit for balance energy beyond 30%

Provided that the deviation charges payable for under or over injection by the wind or solar generator or the QCA, which has been commissioned prior to the date of effect of these regulations, shall be as under:

Table -II: Deviation Charges in case of under or over-injection, for wind or solar generators commissioned prior to the date of effect of these regulations, and selling power within the State

Sr. No.	Absolute Error in the 15-minute time block	Deviation Charges payable to State DSM Pool
1	< = 15%	None
2	>15% but <=25%	At Rs. 0.50 per unit for the shortfall or excess energy for absolute error beyond 15% and upto 25%
3	>25% but <=35%	At Rs. 0.50 per unit for the shortfall or excess energy beyond 15% and upto 25% + Rs. 1.0 per unit for balance energy beyond 25% and upto 35%
4	>35%	At Rs. 0.50 per unit for the shortfall or excess energy beyond 15% and upto 25% + Rs. 1.0 per unit for shortfall or excess energy beyond 25% and upto 35% + Rs. 1.50 per unit for balance energy beyond 35%

Provided that deviation charges for under or over injection by wind or solar generator connected to the State grid and selling power outside the State shall be payable or receivable as per the framework provided in **Appendix – I**. The accounting for this purpose shall be done by the SLDC

5.5 The QCA shall also de-pool the energy deviations as well as deviation charges to each generator using one of the following options:

(a) In proportion to actual generated units for each time-block for each generator;
(b) In proportion to available capacity of each generator.

5.6 The State shall maintain separate records and account of time-block wise schedules, actual generation and deviations for all generators, including wind and solar generators.

5.7 Once the accounting procedures as above are put in place, all renewable energy generators shall be treated together as a virtual pool within the State Pool. Deviations for and within this virtual pool could be settled first at the rates and methodology stipulated above for wind and solar generators.

5.8 Annual accounts as mentioned above shall be prepared by the SLDC. The illustration in this regard is at **Appendix - II** to these regulations. In case there is deficit in the overall pool at the end of the year, the SLDC may approach the National Funds such as PSDF or NCEF to cover such deficit.

A6: MISCELLANEOUS

Power to Remove Difficulties

6.1 If any difficulty arises in giving effect to any of the provisions of these Regulations, the Commission may, by a general or special order, not being inconsistent with the provisions of these Regulations or the Act, do or undertake to do things or direct the Licensee to do or undertake such things which appear to be necessary or expedient for the purpose of removing the difficulties

Power to Relax

6.2 The Commission may by general or special order, for reasons to be recorded in writing, and after giving an opportunity of hearing to the parties likely to be affected by grant of relaxation, may relax any of the provisions of these regulations on its own motion or on an application made before it by an interested person.

Power to Issue Directions

6.3 If any difficulty arises in giving effect to these regulations, the Commission may on its own motion or on an application filed by any affected party, issue such directions as may be considered necessary in furtherance of the objective and purpose of these regulations.

Interpretation

6.4 If a question arises relating to the interpretation of any provision of these Regulations,

the decision of the Commission shall be final.

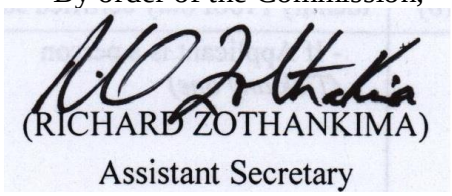
Enquiry and Investigation

6.5 All enquiries, investigations and adjudications under these Regulations shall be done by the Commission through the proceedings in accordance with the provisions of the Conduct of Business Regulations.

Power to Amend

6.6 The Commission, for reasons to be recorded in writing, may at any time vary, alter or modify any of the provision of these Regulations by amendment.

By order of the Commission,



Appendix I: Framework for deviation charges for under or over injection by generator connected to the State grid and selling power outside the State

The wind or solar generators connected to the State grid and selling power outside the State boundary shall be paid as per schedule

a) In the event of actual generation being less than the scheduled generation, the deviation charges for shortfall in generation shall be payable by such wind or solar generator, or the QCA on their behalf, to the State DSM Pool as given in Table below:

Table III: Deviation Charges in case of Under Injection

Sr. No.	Absolute Error in the 15-minute time block	Deviation Charges payable to State DSM Pool
1	< = 15%	At the Fixed Rate for the shortfall energy for absolute error upto 15%
2	>15% but <= 25%	At the Fixed Rate for the shortfall energy for absolute error upto 15% +110% of the Fixed Rate for balance energy beyond 15% and upto 25%
3	>25% but <=35%	At the Fixed Rate for the shortfall energy for absolute error upto 15% +110% of the Fixed Rate for balance energy beyond 15% and upto 25% + 120% of the Fixed Rate for balance energy beyond 25% and upto 35%
4	> 35%	At the Fixed Rate for the shortfall energy for absolute error upto 15% + 110% of the Fixed Rate for balance energy beyond 15% and upto 25% + 120% of the Fixed Rate for balance energy beyond 25% and upto 35% + 130% of the Fixed Rate for balance energy beyond 35%

Where the Fixed Rate is the PPA rate as determined by the Commission under section 62 of the Act or adopted by the Commission under section 63 of the Act. In case of multiple PPAs, the weighted average of the PPA rates shall be taken as the Fixed Rate. The wind and solar generators shall furnish the PPA rates on affidavit for the purpose of Deviation charge account preparation to SLDC supported by copy of the PPA.

Fixed Rate for Open Access participants selling power which is not accounted for RPO compliance of the buyer, and the captive wind or solar plants shall be the Average Power Purchase Cost (APPC) rate at the National level, as determined by CERC from time to time.

b) In the event of the actual generation being more than the scheduled generation, the Deviation Charges for excess generation shall be payable to the wind or solar generator, or the QCA on their behalf, from the State DSM Pool as given in Table below:

Table – IV: Deviation Charges in case of over injection

Sr. No.	Absolute Error in the 15-minute time block	Deviation Charges payable
1	< = 15%	At the Fixed Rate for excess energy upto 15%
2	>15% but <= 25%	At the Fixed Rate for excess energy upto 15% + 90% of the Fixed Rate for excess energy beyond 15% and upto 25%
3	>25% but <=35%	At the Fixed Rate for excess energy upto 15% + 90% of the Fixed Rate for excess energy beyond 15% and upto 25% + 80% of the Fixed Rate for excess energy beyond 25% and upto 35%
4	> 35%	At the Fixed Rate for excess energy upto 15% + 90% of the Fixed Rate for excess energy beyond 15% and upto 25% + 80% of the Fixed Rate for excess energy beyond 25% and upto 35% + 70% of the Fixed Rate for excess energy beyond 35%

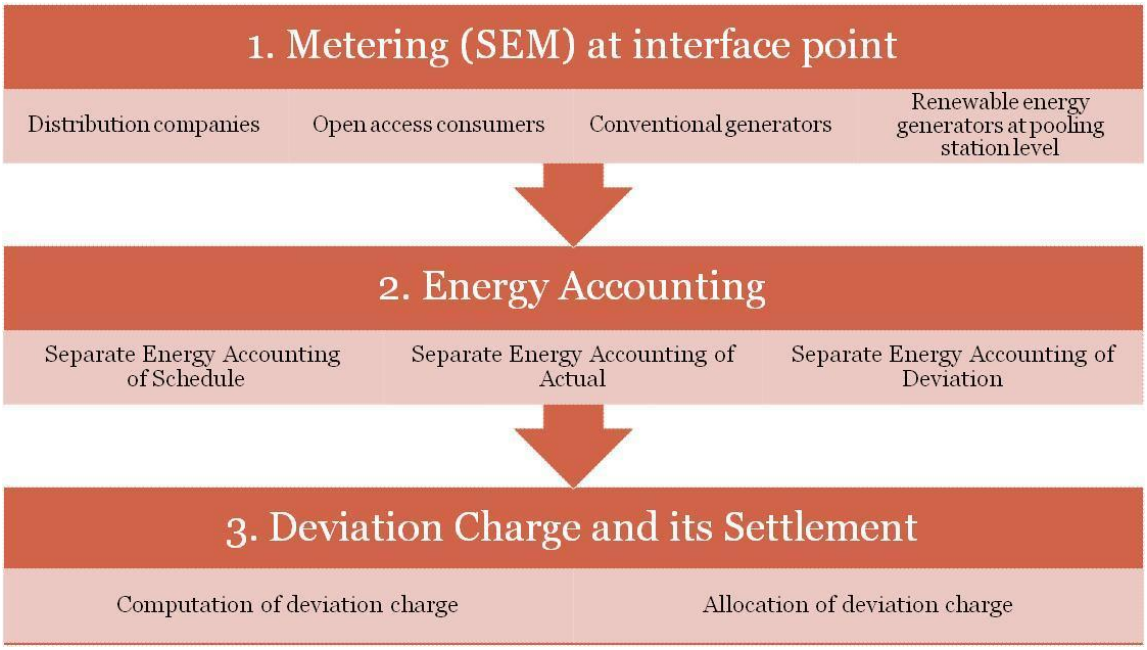
Where the Fixed Rate is the PPA rate as determined by the Commission under section 62 of the Act or adopted by the Commission under section 63 of the Act. In case of multiple PPAs, the weighted average of the PPA rates shall be taken as the Fixed Rate. The wind and solar generators shall furnish the PPA rates on affidavit for the purpose of Deviation charge account preparation to respective SLDC supported by copy of the PPA

Fixed Rate for Open Access participants selling power which is not accounted for RPO compliance of the buyer, and the captive wind or solar plants shall be the Average Power Purchase Cost (APPC) rate at the National level, as determined by the CERC from time to time.

c) In reference to clauses (a) and (b) as above, for balancing of deemed renewable purchase obligation (RPO) compliance of buyers with respect to schedule, deviations by all wind and solar generators which are selling power outside the State boundary shall first be netted off for the entire pool on a monthly basis and any remaining shortfall in renewable energy generation must be balanced through purchase of equivalent solar and non-solar Renewable Energy Certificates (RECs), as the case may be, by SLDC by utilising funds from the Pool Account. For positive balance of renewable energy generation, equivalent notional RECs shall be credited to the State DSM Pool and carried forward for settlement in future.

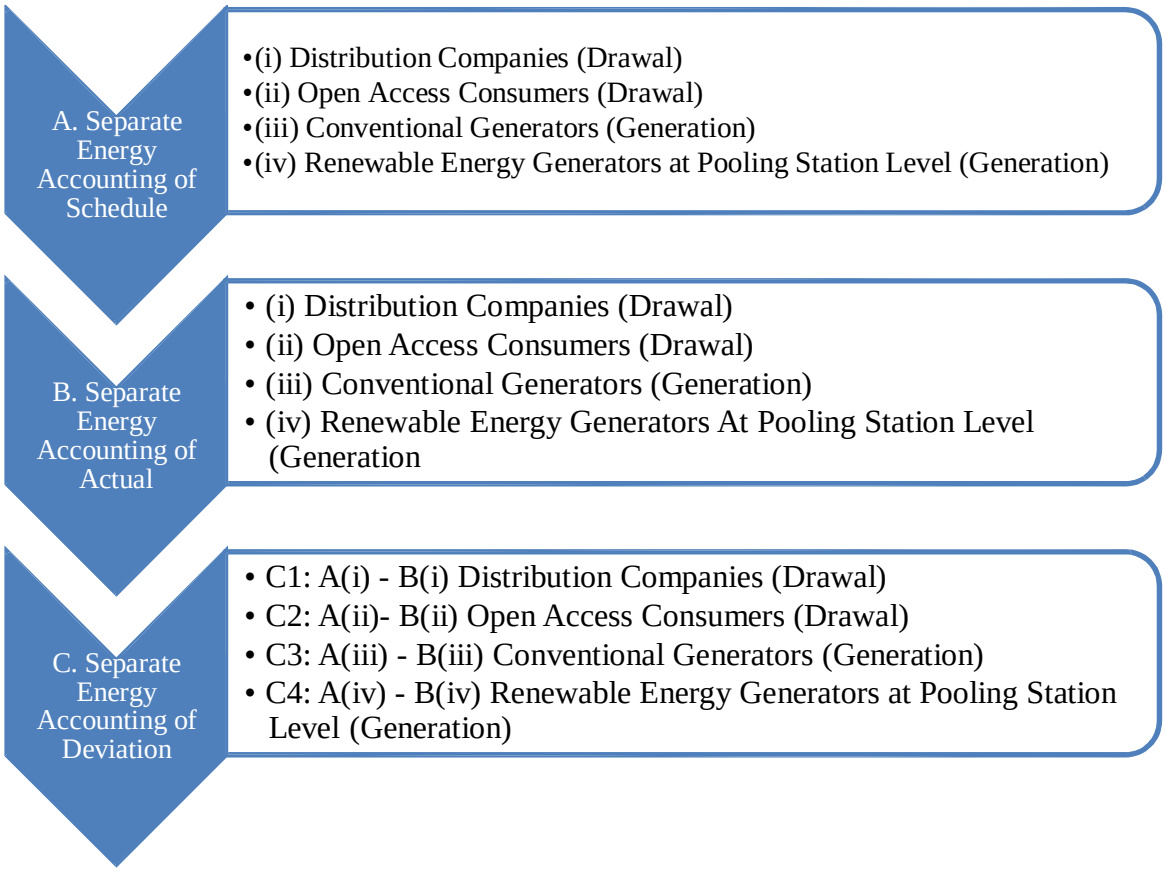
Appendix II: Metering, Energy and Deviation Accounting

Separate metering, schedule preparation, accounting of actual generation/drawl, accounting of energy deviations and deviation settlement shall be undertaken for different types of entities in the State. The complete accounting process will be operationalized in the following manner:



1. **Metering:**
   Interface Metering for intra-state entities shall be undertaken on an urgent basis. Every entity must be metered with a Special Energy Meter (SEM).

2. **Energy Accounting**
   Every intra-State grid connected entity shall be metered with a Special Energy Meter (SEM), and the energy accounting for each such entity shall be done in the following manner:



3. Deviation Settlement

Deviation settlement for the State shall be governed by the following provisions:

Stage – 1: Transitional Arrangement

3.1 Computation of Deviation Charge

Deviation charges shall be computed in the following manner:-

a) Deviation Charge (D) payable/receivable for the State as a whole at the State periphery shall first be computed.

b) Deviation charge (R1) from the pooling stations/RE generators based on these regulations, shall be collected and pooled in the State DSM Pool.

3.2 Settlement of deviation charge

Deviation charge as above shall be allocated to different grid connected entities in the following manner:-

a) Deviation charge shall be allocated (D) amongst the distribution companies/OA consumers/conventional generators/RE generators in proportion to their respective deviation viz., C1/C2/C3/C4

b) For RE generators, assuming (i) the share out of State level deviation charge as D4 and (ii) receipt of deviation charge from RE generators (Pooling station) based on the charges for deviation as per the model regulation, as R1 - actual commercial impact for the State as a result of deviation of RE generation would be D4-R1

This amount (D4 - R1 if greater than zero) can be refunded to the State DSM pool from PSDF/NCEF.

Stage – 2: Long-Term Arrangement:

3.3 Computation of Deviation Charge

a) Compute Deviation Charge (D) payable/receivable for the State as a whole at the State periphery
b) Implement Deviation Settlement Mechanism(DSM) for conventional generators on lines of CERC DSM or any other variant, that is, determine in advance the deviation charge payable/receivable by all grid connected entities within the state
c) Implement DSM mechanism for RE generators on lines of model regulation and collect in the State DSM pool, deviation charge (R1) from the pooling stations/RE generators based on the said model

3.4 Settlement of deviation charge

a) Compute for the distribution companies / OA consumers / conventional generators, the deviation charges payable/receivable by them in proportion to their respective deviation viz., C1/C2/C3 (this should be as per State level DSM)....(assume net balance as D1)
b) In respect of RE generators, collect deviation charge from the RE generators (Pooling station) based on the charges for deviation as per the model regulation (assume as R1)
c) Actual commercial impact for the State as a result of deviation of RE generation would be D4-R1

If D is greater than (D1+R1), the differential be made good from the PSDF/NCEF.