

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

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Date: 6th May 2016

STATEMENT OF REASONS

Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) (Third Amendment) Regulations, 2016

In exercise of the powers conferred under Section 178 of the Electricity Act, 2003 (36 of 2003), and all other powers enabling it in this behalf, the Central Electricity Regulatory Commission ("the Commission") notified the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2014, (referred as the "Principal Regulations" hereafter). These regulations came into force on 17.2.2014.

2. The Commission issued Draft Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) (Third Amendment) Regulations, 2016 on 23rd October 2015, vide public notice No.:L-1/(3)/2009-CERC, whereby it was proposed to set deviation limits of States in proportion to their peak demand met during the previous financial year.
3. Comments on the aforesaid draft amendment were invited from stakeholders by 16th November, 2015. Thereafter, a public hearing was held on 23rd December, 2015. A list of stakeholders who submitted their comments in writing and at the hearing is available in Annexure- I.
4. The various issues raised by the stakeholders and Commission's analysis and decision thereof are discussed in subsequent sections below:

1. DSM limit vis-a-vis RE power injection in renewable rich states

Comments Received

- 1.1. Indian Wind Power Association (IWPA) has commented that fixing DSM limit based on peak demand puts States like Tamil Nadu in a great disadvantage where the wind power injection is around 30% (4144 MW) during high wind season. IWPA has stated that it is highly disappointing to fix same DSM limit of 250 MW both for UP and Tamil Nadu based on peak demand given that Tamil Nadu has around 30% of variable wind power injection (highest in the country) during wind season whereas UP has no such variable power injection into their grid.

IWPA has further elaborated that the SLDC in Tamil Nadu is backing down the wind generation to the extent of 50%, adducing the reason that the variation in wind power endangers the grid. That is the reason why the WEGs made all the hue and cry before the authorities to increase the existing DSM limit of 150 MW which in turn led to this draft amendment. For the year 2015-16, the SLDC backed down the wind generation taking evacuation loss to the extent of around 5000 MUs. IWPA apprehends that the SLDC may very well say that the 250 MW of DSM limit has been fixed by the CERC only to manage the normal grid variation (and nothing is

given to wind power variation) and therefore backing down of wind power will continue. Therefore, they feel that the purpose of the draft amendment is defeated.

IWPA has further suggested that the Commission may consider an appropriate percentage of wind plus solar injection into the grid as the DSM limit subject to the minimum DSM limit proposed by the Commission in Annexure III of the draft amendment. The minimum limit will take care of the low level of infirm RE power injection into the grid and also makes this formula as a universal formula which can be adopted not only to the wind rich states but to all the States. IWPA has suggested fixing 15% of Peak wind plus solar injection as DSM limit for the wind/ solar rich states. It is commented that such limit may be imposed on the dynamic wind/ solar injection into the grid so that during non-wind season there will not be any undue high DSM limit.

- 1.2. Indian Wind Turbine Manufacturers' Association (IWTMA) has also stated that the DSM limit has been based on only peak demand of states, whereas the major concern of deviation of implementation of Renewable Energy Project, especially Wind & Solar project where the accurate forecasting is difficult. All the windy and solar states are facing major problems to maintain the deviation between scheduled and actual power generation. IWTMA feels it is required that wind rich states be given an additional 1% margin and amend the maximum limit from 250 to 450 as given in table below:

States	Peak demand	Deviation (MW)-Proposed in Draft Regulations		Deviation Proposed (MW) - IWTMA	
Maharashtra	19,804	250	1.3%	448~450	2.3%
Gujarat	13,499	250	1.9%	385~400	2.9%
Tamil Nadu	13,498	250	1.9%	385~400	2.9%
Rajasthan	10,642	250	2.3%	356~350	3.3%
Madhya Pradesh	9,717	200	2.1%	397~300	3.1%
Karnataka	9,549	200	2.1%	395~300	3.1%
Telangana	6,755	150	2.2%	218~200	3.2%
Andhra Pradesh	6,784	150	2.2%	218~200	3.2%

- 1.3. Jaipur Vidyut Vitran Nigam Ltd (JVVNL) has pleaded that Rajasthan is a State with abundant wind energy and there are various challenges faced by the State in managing the wind energy in the state. It is stated that the major issue faced by Rajasthan Discoms is unavailability of hydel power to balance the deviation due to renewable energy and non availability of any mechanism for integration of energy generated from wind power with energy generated from conventional sources of power. This means that the sudden jerks in variation cannot be absorbed by the system. On account of these variations or deviations the Rajasthan Discoms are facing a lot of financial implications in the form of penalties and UI charges. The Rajasthan Discom has submitted that the deviation and related charges incurred due to the varied nature of the energy generated from wind power should not be linked to frequency band.

It has been further submitted that deviation charges should be in line with the Average Pooled Power Purchase Cost as determined by the State Commission on a yearly basis or as per the Average Tariff of the wind generators.

- 1.4. U.P. Power Corporation Ltd (UPPCL) has commented that for the State of Uttar Pradesh, weather conditions vary drastically between seasons and also during the day. At times this variation is so sharp that there is sudden variation in demand of

electricity which cannot be exactly predicted in advance. Similarly, due to heavy rains and adverse weather conditions of high wind and rains there are major break down and shut down which give rise to sudden variation in load which are difficult to manage.

UPPCL has further stated that similar to other States, in Uttar Pradesh also huge solar capacity addition is taking place. Total installed solar capacity in the State is likely to become 1000 MW by year 2016-17. Since generation from solar power plants depends on weather conditions which are not very predictable for the State of UP, the availability of solar power cannot be ascertained correctly in advance for the next day and accordingly there could be huge difference in demand and supply.

Additionally, a large amount of power is generated through cogenerating units which have been kept outside the ambit of intra State ABT by the State Commission, accordingly it is difficult to control the quantum of electricity generated from these plants through backing down or ramp up instruction.

- 1.5. Gujarat Energy Transmission Corporation Limited (GETCO) and State Load Despatch Centre have disagreed with the conclusion in the explanatory memorandum that for Gujarat, "Wind Generation variability has negligible adverse effect on deviation from the schedule." This is countered by the following data:

Direct impact of wind energy injection on State DSM account

Date	CAP UI RS_ LAKH	Wind Energy injection (MUs)	Remarks
2/Jun/15	25.90692	11.504	Wind injection reduced & UI Cap reduced
4/Jun/15	13.89272	6.195	
11/Jun/15	23.00042	9.047	Wind injection increased & UI Cap increased
12/Jun/15	34.63067	17.315	
23/Jun/15	22.99867	21.949	Wind injection increased & UI Cap increased
24/Jun/15	41.09864	31.911	
9/Jul/15	41.96935	47.618	Wind injection increased & UI Cap increased
10/Jul/15	66.47792	53.122	
13/Jul/15	23.42297	18.549	Wind injection increased & UI Cap increased
14/Jul/15	71.42237	23.394	

Accordingly, GETCO and SLDC have requested that:

- DSM violation due to RE injection variation to be exempted from operational/commercial/legal penalty. As per Inter-State RE framework, for error within the band of +/- 15% , no penalty is imposed on RE generators, i.e. RE injection deviation is absorbed by the grid.
- Therefore, for operational purpose, State drawl (monitored at RLDC level) to be modified accordingly. (i.e the quantum of error within 15% to be waived and State drawl to be modified accordingly).
- Drawl thus computed may be considered for DSM calculation as per deviation limits (MW) – "L" of annexure-III of draft regulation.

- DSM violation due to tripping of large size generators/having merchant share to be exempted from the penalty.

Analysis and Decision

GETCO has stated their disagreement with POSOCO’s analysis on impact of wind deviation on state’s DSM violations. Several stakeholders have commented that special dispensation should be made for states that have higher installed capacity of infirm renewable sources of energy, as the deviations caused by these sources are harder to manage. Several states (Gujarat, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu, etc) have presented in front of the Commission on the problems they face in managing deviations due to RE, specifically wind.

The Commission acknowledges that wind power, and solar power (to a lesser extent) are infirm sources of power. The solution to managing higher capacity of wind and solar generators on the grid lies in better forecasting, scheduling and balancing capability. To this end, the Commission has notified the Framework on Forecasting, Scheduling and Deviation Settlement of Wind and Solar projects (regional entities) in 2015. The Commission also shared a Model Regulation on the same with the Forum of Regulators (FOR). Several States such as Karnataka, Madhya Pradesh, Tamil Nadu, etc have issued draft regulations for their states. As the developers and the corresponding load despatch centers initiate this process, greater visibility into infirm RE power that is expected to be injected will itself address majority of these issues. At the same time, all stakeholders have to progress towards operationalizing spinning reserves and ancillary services. The Commission has laid out a vision for the same, through CERC (Ancillary Services Operations) Regulations 2015 and Order in Petition No. 11/SM/2015 dated 13.10.2015 regarding “Roadmap to operationalise Reserves in the country”.

While the ecosystem builds this capacity to manage higher capacity of wind and solar generating stations, as a temporary measure, the Commission has decided to relax the deviation limits for Renewable Rich States, while retaining existing DSM limits for all other States.

“**Renewable-rich State**” has been defined as a State that has 1000 MW or more of installed wind/solar capacity. Two categories have been considered, based on the total installed capacity:

Renewable-rich States Category	Combined Installed Capacity of Wind & Solar projects	Deviation Limit under DSM Regulations
A	>=1000 MW up to 3000 MW	200 MW
B	> 3000 MW	250 MW

Following note has also been added to bring clarity that for the purpose of these Regulations combined installed capacity of wind and solar plants shall be reckoned as on the last day of the month for the next month i.e. capacity installed till last day of the previous month shall be considered for the next month.

For the purpose of estimating combined installed capacity of wind and solar plants as on the last day of the month for a State, respective RLDC shall be responsible. Intra-state solar and wind generators shall inform their respective SLDCs immediately on installation of capacity. SLDCs are directed to inform the same to RLDC. Similarly solar and wind generators which are regional entities should inform RLDC immediately upon installation of their capacity.

Accordingly, the definition of Renewable Rich State has been defined as under:

“Renewable Rich State means a State whose minimum combined installed capacity of wind and solar power is 1000 MW or more.

Note: Combined installed capacity shall be reckoned on the basis of the capacity installed as on the last day of the month for the purpose of deciding the installed capacity for the next month.”

The table of installed wind plus solar capacity for each State as per the data available is annexed as Annexure- II which is indicative only. RLDCs shall identify the Renewable Rich States based on their installed capacity of wind and solar power in accordance the definition of Renewable Rich State.

Accordingly, the various relevant provisions have been modified/substituted.

2. DSM limit based on Peak Demand

Comments Received

- 2.1. Kerala State Electricity Board (KSEB) has stated that the State depends heavily on inter-State schedule of power to meet its internal demand. The proportion between peak demand and the net import schedule of southern states during a typical day (23-11-2015) as given in the table below will explain the higher dependence of Kerala on imported power.

Comparison of peak demand and drawal for 23-11-2015:

State	Peak demand (MW)	Net drawal (MW)	Drawal as a % of peak demand
Andhra	4893	789.94	16.14
Telangana	5174	3103.95	59.99
Karnataka	6923	1552.68	22.43
Kerala	3171	1947.66	61.42
Tamilnadu	10533	4866.79	46.21

KSEB has elaborated that dependence of Kerala on inter-State purchase of power to meet its demand is further evident from a comparison of the consumption of the state with the net import schedule of southern states during a typical day (23-11-2015) as given in the table below:

State	Consumption (MU)	Drawal Schedule (MU)	Drawal schedule as a percentage of consumption (%)
Andhra	148.65	19.43	13.07
Telangana	147.52	93.3	63.25
Karnataka	167.42	30.23	18.06
Kerala	63.3	44.05	69.59
Tamilnadu	278.36	122.26	43.92

From the above tables it is evident that the state of Kerala is heavily dependent on import of power from outside the state for meeting its demand. As per the existing regulations on Deviation Settlement Mechanism, the maximum deviation allowed for a utility is 12% of the schedule or 150MW whichever is lower. However, in the proposed amendment, Commission has proposed for a deviation limit on the basis of peak demand. A comparison between the existing and the proposed deviation limits for the utilities in SR based on the condition of 23-11-2015 is tabled below:

State	Peak demand (MW)	Net drawal (MW)	Deviation limit as per the existing regulation	Deviation limit as per the proposal (MW)
Andhra	4893	789.94	94.79	150
Telengana	5174	3103.95	150	150
Karnataka	6923	1552.68	150	200
Kerala	3171	1947.66	150	100
TamUnadu	10533	4866.79	150	250

With the peak demand scenario existing in the SR utilities as tabled above, it is observed that with the proposal, the existing deviation limits of the state of Andhra, Karnataka and Tamil Nadu has increased above 12% of the schedule, whereas the deviation limit of Kerala has decreased from the existing limit of 150MW to 100MW. Even while the net import schedule of Andhra Pradesh and Karnataka are lower than that of Kerala, the deviation limit is higher by 50% and 100% respectively for these states. It is submitted that revising the deviation limit based on peak demand alone does not have sound rationale as demand of a state can be met through internal generation and only shortage over and above the internal generation is met through import from outside the state. Hence the deviation has to be linked to the import schedule also.

- 2.2. POSOCO has suggested that the definition of Peak Demand mentions that the Peak availability for each State /Union territory as published by CEA for year 2014-15 may be taken, which requires further clarity. There is a need for clarification on peak demand or peak availability. The figures taken from CEA website are demands met i.e. not unrestricted demand.

Analysis and Decision

KSEB has commented that instead of peak demand, ISTS drawl schedule of a state should be considered. As several states with high peak demand met also have generating stations located within state boundary, while Kerala relies heavily on generating stations located outside state control area. The Commission has reviewed the proposal and now, peak demand met will not be relevant as the Commission has decided to give additional DSM limit to states with large installed capacity of infirm renewable sources. For all the other states, including Kerala, no modification shall be made to the existing DSM limit, depending on installed capacity of renewable projects in their state.

3. Proposed DSM limits are strict

Comments Received

- 3.1. Assam Power Distribution Company Limited (APDCL) has prayed to at least retain the deviation limit of Assam at 120 MW instead of curtailing to 100 MW. They have

elaborated that demand of Assam is increasing. The allowable deviation limit of APDCL is about 120 MW, as per existing provision of Regulations. But under the scenario of proposed Regulation the limit for APDCL would get reduced to 100 Mw. The NER is a Hydro dominant region; therefore there is always higher generation of hydro (water) energy during monsoon (high hydro) period and lower generation of hydro energy during lean season, resulting in wide variation of energy availability during the both seasons. During high hydro period there is normally higher generation of water energy exceeding the need of the region. The rainfall is not predictable for making and bilateral agreement beforehand, so for avoiding water energy loss, there seems to be no other way but to utilize by pushing into the grid. On the other hand, water energy goes down lean season due to depletion of water level. The major operating thermal stations of the region are the OTPC, Pallatana and AGBPP, NEEPCO which are also found unreliable, so far constant support is concerned mainly due to non availability of fuel gas in commensuration to their installed capacity. These constraints force Assam to import from outside NER on occurrence of such sudden grid disturbance.

Moreover, Assam or NER is lagging far behind the rest of the country either in per capita consumption or industrial/commercial load growth because of unreliable electricity. Therefore it is the need of the hour to support state like Assam through policies and Regulations so that it can develop at par to those states of the mainland.

- 3.2. KSEB has pleaded that there is a downward revision in the deviation limit for the state of Kerala from 150MW to 100MW. This reduction of 50MW in deviation limit will cause both operational issues and financial burden to the state, which depends heavily on interstate schedule of power to meet its internal demand.

Such reduction in deviation limit without considering the dependence of imported power will put undue hardships on Kerala especially considering the following:

- (i) Rigidity in STOA schedule: CERC(Open Access in inter-State Transmission) (Amendment) Regulations, 2009 have put restriction on the revision of short term open access schedules and have fixed the cancellation or downward revision of the short-term open access schedules to be made before expiry of a minimum period of two (2) days. Lack of flexibility in STOA transactions in real time increases the risk of deviation whenever there is demand variation or generation outage.
- (ii) Non availability of balancing mechanism like ancillary services mechanism: balancing mechanism vide Central Electricity Regulatory Commission (Ancillary Services Operations) Regulations, 2015 has been introduced. However, the mechanism has not been in operation and Commission is only in the process of finalizing the procedure of operation of Ancillary Service mechanism. Reducing the deviation limit without the practical implementation of the Ancillary Service mechanism will put the state into operational constraints.
- (iii) In view of this restriction imposed by Hon'ble Commission on the revision of STOA schedules and non-availability of alternate balancing mechanism, DISCOMs including KSEB Ltd. are forced to rely on deviation mechanism to balance demand supply mismatch in real time, whenever there are sudden variations in demand and variation in infirm power generation. Hence limiting the deviation volume without removing this restriction will adversely affect all the utilities.

- (iv) Further, it is submitted that the limits on the deviation volume may be revised only with the introduction of extended market session of power exchanges. The trading platform in the exchanges may be made more efficient by reducing the time taken in the RLDC and NLDC for attaining scheduled transaction from the present four time blocks to one time block. This requires automation of STOA approvals at RLDC, NLDC and SLDCs.

3.3. UPPCL has commented that even though it is proposed to enhance the overdrawal/underdrawal limit for application of additional deviation charges, from the existing 150 MW to 250MW, it is humbly submitted that the enhanced limit of 250 MW is not sufficient for a State like Uttar Pradesh which now has a continuous demand of over 12500 MW round the year and which is likely to increase further to 19000 MW in view of State Government ambitious plan to provide 24X7 hours supply to all electricity consumers in the State.

It has argued that many of the units of the State owned generating companies are very old and have outlived their life. For these machines FGMO operation is not possible to provide the primary response. Hydro power helps in meeting the sudden load variations, however, in the State of Uttar Pradesh there is very little hydro capacity. Adding to that presently no products are available at the power exchanges for meeting the exigencies during the day itself. Accordingly, with little options available it feels that the only recourse is to draw power from the grid for short durations to meet the exigencies.

UPPCL has further underlined that with such large load of 19000 MW to cater from FY 2016-17; even a small variation of say 1% would result in deviation of 1900 MW. Given the system limitations it would be very difficult to quickly adjust to the new conditions without exceeding the proposed limit of 250 MW.

Accordingly, UPPCL has suggested that either these additional deviation settlement charges should be done away with or in the interest of justice this limit should be made at least equal to capacity of single largest generating unit in the State i.e. 660 MW for the State of Uttar Pradesh, or at least no penalty should be levied for initial 1 hour in case deviation in within this limit of 660 MW.

3.4. TPDDL has submitted that it met a peak load of approx. 1700 MW in FY 14 – 15; however as it is part of Delhi, a deviation limit of 38 MW is applicable on TPDDL (Delhi's deviation limit being 150 MW). The Regulations have put a deviation limit of various states as follows:

State	Peak Demand Met (MW)	Deviation Limits {MW}-"L"
Himachal Pradesh	1,422	100
Assam	1,257	100
Jharkhand	1,055	100

Apart from the aforementioned states there are 12 other states/UTs whose Peak demand Met is below 1000 MW but their deviation limit is fixed at 50 MW.

TPDDL, which manages its power scenario independent of other Discoms in Delhi, and has met a peak load of approx. 1700 MW, has been allowed a deviation limit of 38 MW only, whereas other states/utilities which have met peak load demand less than TPDDL has deviation limit of 100/50 MW. TPDDL has therefore requested that TPDDL

and other such entities may be provided a deviation limit that is exclusive of the other DISCOMS in the area i.e. its deviation limit may be raised to 100 MW in place of the 38 MW limit that exists currently.

- 3.5. MP Power Management Company Ltd (MPPMCL) has argued that for States like Sikkim and Mizoram the proposed deviation limit is 56-60% of the peak demand met and for Madhya Pradesh it is only 2%. The following table indicates the ratio of peak demand met and deviation limit:

State	Peak demand met (MW)	Deviation limit (MW) "L"	Percentage
Maharashtra	19804	250	1.26
Gujarat	13499	250	1.85
Rajasthan	10642	250	2.35
Punjab	10023	200	1.99
Madhya Pradesh	971.7	200	2.06
Haryana	9152	200	2.19
West Bengal	7524	150	1.99
Delhi	5925	150	2.53
Odisha	3892	100	2.57
Assam	1257	100	7.95
Jharkhand	1055	100	9.48
DNH	714	50	7.00
Sikkim	83	50	60.24
Mizoram	88	50	56.81

The variation in ratio (percentage) of deviation limits allowed to peak demand met is in the range of 1.2% to 60.24%. Thus, the States having low peak demand have been allowed higher deviation limits whereas States having met higher peak demand have been allowed very stringent deviation limits. MPPMCL submitted that managing a demand of around 10000 MW is a far more difficult task than managing a demand of some 100 MW.

MPPMCL has further stated that increase in deviation limit for regional entities / State is a welcome step, however a re-look into the proposed deviation limits is required. Madhya Pradesh has shown to have met a peak demand of 9717 MW and a deviation limit of 200 MW has been proposed. It is submitted that in the month of December 2015, the State of MP has successfully supplied a peak demand of about 10700 MW, and thus is entitled for a deviation limit of 250 MW, as being proposed in case of Rajasthan having peak demand of 10642 MW. A difference of 50 MW in deviation limit makes a lot of difference for State utility as far as DSM charges are concerned.

Analysis and Decision

APDCL and KSEB have opposed the proposed regulation stating that their DSM

limits are getting a downward revision. It should be noted that the Commission has decided not to modify the DSM limit of the States other than Renewable rich States.

Further, UPPCL has stated that even the enhanced limit of 250 MW is insufficient for the State. The Commission reiterates that the States have to build capacity to better forecast and manage their net load deviations. In fact with the final amendment, U.P shall continue to operate under existing DSM limit (12% of schedule or 150 MW, whichever is lower). Moving towards a grid with sufficient spinning reserves is the only long-term solution. Additionally, Power Exchanges have intra-day products and are open 24 hours. These are not being utilized by the stakeholders sufficiently.

TPDDL has suggested that it should be provided an independent limit. This is outside the scope of this amendment. The States shall continue to have a DSM limit on the State boundary.

MPPMCL has highlighted that States with lower demand get a limit which is much higher as a percentage compared to large states like M.P. This is intentional and justified, as large states also have a larger variety of generators within the state boundary to balance load deviations. This is an internationally accepted methodology.

4. Additional DSM charges and penalties in case of forced outage of generating units or lines

Comments Received

- 4.1. Adani Power has recommended that proviso below table-II under regulation 7(3) be substituted as: "Provided that in case of forced outage of a generating unit or generating station, the additional deviation charges as per the Table I-G shall not be applicable to the Generating Station for 4 time blocks counting the time block in which unit tripped to be first one and the Generating station has to pay only charges for deviation as stipulated under Regulation 5 for these 4 time blocks.". They have argued that IEGC stipulated that in the event of forced outage of a unit, the revised schedule will come into effect after 4 time blocks; which means that there will be deviation from the schedule for 4 time blocks to the extent of unit ex-bus capacity. For generators with Unit sizes of 330 MW, 660 MW & above, any forced outage of a unit will lead to deviation of more than the regulated limits causing huge commercial implications in the form of additional deviation charges. They have underscored that such outages are not intentional & beyond the control of the generator, therefore, forced outages should be exempted from additional deviation charges.
- 4.2. Vedanta has argued that in case of forced outages of units there is no provision in the IEGC for revision of Collective Transactions. Even Bilateral transactions are revised after six time blocks from the time of receipt of request. Due to the above, Generators have to face huge Deviation Settlement Charges due to any Technical Constraints which are beyond their control, causing extreme financial hardships.
- 4.3. Tata Power Delhi Distribution Ltd (TPDDL) has highlighted the case of tripping of transmission lines. One of the situations due to which the DISCOMs may underdraw is when a section of the load is disconnected due to tripping of transmission lines or power transformer maintained by CTU or STU due to faults. Further, the problem is compounded by the fact that Delhi DISCOMs procure bulk of the power from generating stations situated outside Delhi except for some distributed solar (less than 2 MW), and are thus completely dependent on the STU and CTU for delivery of

power. It is pleaded that any subsequent corrective action to revise the schedule to the alternate demand takes at least 4 time blocks. Nearly 70% of the tripping events are restored within 4 time blocks (data pertains to FY 14-15) and remaining beyond 4 time blocks. In any case corrective action is not possible within 4 times blocks and penalty becomes payable for this period. TPDDL has therefore submitted that an appropriate amendment may be included in the new Regulations to the effect that the DISCOM should not be held liable for any under-drawal on account of any unforeseen failure of a CTU or STU equipment, which resulted in such under-drawal and may be excluded from liability in case of such events. A suitable definition of "Force Majeure" in line with the above may also be considered to be included in the regulations.

- 4.4. MPPMCL has suggested that a provision be introduced to relax the norms of DSM charges in emergency situation of sudden tripping of generating station/breakdown of transmission and distribution system and such other pre specified forces majeure conditions beyond the control of beneficiaries.
- 4.5. ACB India Ltd has commented that these DSM Regulations have acted very harsh on IPPs having one or two generating units. The Generating Plant having no long term PPA, has to sell the power through short term bilateral contracts/collective transactions through Power Exchange. They have added that Units of 100 MW and above are permitted revision of schedule for bilateral transaction only and even for Units above 100 MW, no revision in schedule is allowed for collective transaction through Power Exchange. Further, no revision of schedule is permitted for units below 100 MW either for bilateral or collective transactions. ACB has also requested not to levy additional DSM charges which tantamount to penalty on account of under injection due to forced outage of the Generating Unit when the power is traded through collective transaction or bilateral transaction for the period revision in schedule is not permitted as per IEGC. It is suggested that DSM charges at normal rates corresponding to Grid frequency for under injection due to forced outage may only be charged.

Analysis and Decision

Adani Power, Vedanta, TPDDL and MPPMCL have commented that tripping of generator units and transmission lines leading to under injection should be exempted from additional DSM charges. Further, they have requested that collective transactions should have the provision for revision in such a case, and bilateral revisions should happen sooner than the current time-frames. ACB India has underscored the problems faced by smaller generating stations. The Commission has taken note of these comments. However, these are outside the scope of the present amendment.

5. Definition of generating station

Comments Received

- 5.1. Chattisgarh State Power Transmission Company Limited (CSPTCL) and Chhattisgarh Vidyut Mandal have commented that the Original CERC (Deviation Settlement Mechanism and Related Matters) Regulation 2014 kept only two categories "Seller" and "Buyers" while in subsequent amendments some more categories were introduced- like in Second Amendment "Wind and Solar Generators" was included and in draft of third Amendment "Generating Station" has been treated as different category than seller; therefore must be defined specifically. Similarly looking to the peculiar nature of business of Distribution Licensee (i.e.

Beneficiary) specific provisions should be made regarding defining allowable limits of deviations (under draw /over draw). Presently Distribution Licensee is included in Buyer category, therefore CSPTCL feels there is a need to define specifically (recognized as separate entity) Distribution Licensee (i.e. Beneficiary) like repealed CERC (UI) regulation 2009.

- 5.2. Adani Power has commented that the definition of Generating Station and Seller except Generating Station should be specified.
- 5.3. POSOCO has stated that presently all IPPs & other than Sec-62/63(Electricity Act) generating Units are considered as Sellers by Regional Power Committees for energy accounting & DSM. From the explanatory memorandum it is evident that the amended volume limits (50-250 MW) are not applicable for these stations & the present volume limit of 12% or 150 MW or (48MW if injection schedule \leq 400 MW) will be applicable for them. Thus, they have suggested that definition of Generating station may be incorporated for better clarity:

“Generating station means a „Generating Company” or an ISGS or a CGS or an Independent Power Producer as defined in section 2(1) of the Grid Code, whose scheduling & energy accounting is done at regional Level by the RLDCs.”

Analysis and Decision

CSPTCL, Adani Power and POSOCO have recommended that for further clarity, definition of generating station and other seller should be specified. This was required as per the draft amendment. Since the final amendment does not make distinction between generating stations and states as injecting entities, the Commission decides this would be redundant at this point.

6. Deviation charges for buyer and seller

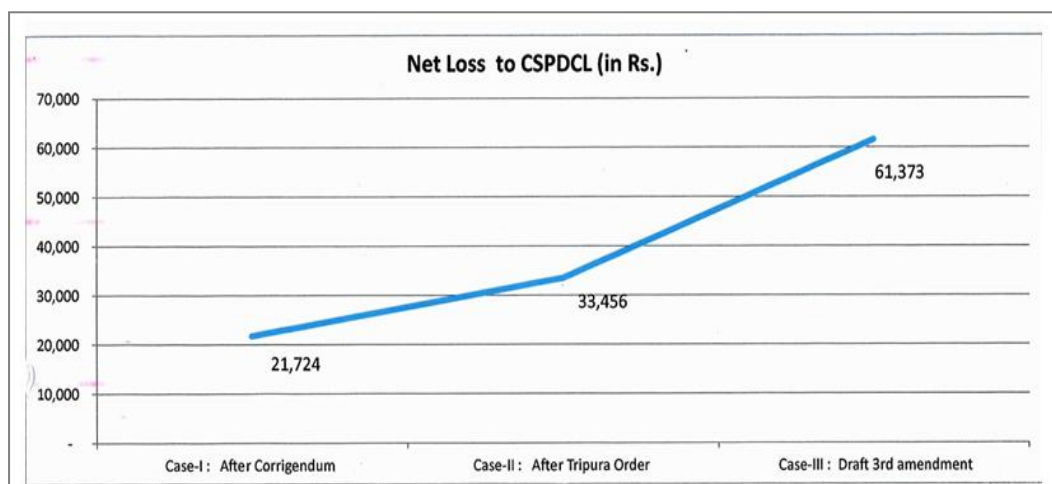
Chhattisgarh State Power Transmission Company Ltd (CSPTCL) has commented that the UI/DSM regulations are made as per requirements of Central Grid where the connectivity of buyer and seller are independent i.e. the deviations made by seller does not affect directly the deviations of buyer. Whereas the situation in case of State Grid is different, the deviations of sellers (generators) directly affect the deviations of buyer in respect of central grid (CSPDCL-which is a buyer as regional entity), therefore to avoid any direct financial implications for regional entity (Distribution Licensee) it is necessary that the UI/DSM billing methodology should be exactly *same* for sellers (as embedded generators to State Grid) with the methodology of bill of DSM charges as applicable to Buyer, as regional entity.

CSPTCL has elaborated that initially the provisions of billing of DSM charges were kept same for buyers and sellers in Regulations as notified on 6th Jan'2014, but on 17th Feb'2014 one proviso was added in regulation 7 (3) as corrigendum - as reproduced below –

"Provided further that when the schedule is less than or equal to 150 MW, the additional charges for deviation shall be based on percentage of deviation worked out with reference to schedule of 150 MW as per Table-I (A) and Table-II (A) above. "

This proviso is giving again relaxations (advantages) to small (whose schedule is less than 150 MW) Buyers/Sellers in billing of additional DSM charges. Since CSPDCL's

schedule generally remains more than 150 Mw, so this proviso is not giving any relaxation to CSPDCL, whereas, all embedded generators are getting advantage of this relaxation which is causing financial burden to the end consumer of the state. If the same provisions of DSM billing are implemented for embedded generators of the CG State then these will not only cause financial implications to the end consumers but may also affect State Grid security.



Analysis and Decision

The Commission has noted the comments from CSPTCL. It needs to be understood that the Commission decides the applicable DSM limits and deviation charges at the State boundaries. It is upon the State Commission to decide how to allocate these charges among the intra-State entities embedded inside the State grid. CSPTCL may approach the State Commission regarding the cited problems.

7. Miscellaneous comments

7.1. POSOCO has commented that information of the intra-state entities is available with the concerned SLDC. In view of this, it is suggested that the proviso may be amended as below:

*“Provided that deviation shall be calculated for the Regional Entities by concerned RLDC/RPC which shall be attributed to various entities embedded within States **by SLDC.**”*

7.2. Adani Power has stated that the charges for the Deviation for the over-injection by the generating station in a time block in excess of 12% of the schedule or 150 MW, whichever is less, shall be zero if the frequency is more than 50.00 Hz. The grid is considered to be stable at 50 Hz frequency. Over-injection by any generator, when the frequency is below 50 Hz, should be allowed & incentivized.

7.3. CSPDCL has suggested that a separate category for distribution licensee (like "beneficiary" in UI regulation) must be inserted and bandwidth of deviation should be broadened i.e. DSM charges must be receivable (to distribution licensee) for under-drawal up to a limit of 8% of peak demand met last financial year or 250 Mw whichever is lower in place of around 3% (100 MW) of peak demand met in year 2014-15 (as proposed in draft for CG) and similarly Additional DSM charges should be applicable (by distribution licensee) for over drawl beyond 8% of peak demand met last year or 250 Mw whichever is higher in place of around 3% (100 MW) of

peak demand met in year 2014-15 (as proposed in draft for CG). The allowable bandwidth of deviation should be based on nature of business of the entity. It has been highlighted that distribution licensee supply to a cluster of different nature of consumers (Industrial, Agriculture, Commercial, Domestic etc.), so the deviation in their demand is very much dynamic and unpredictable varies mainly due to change in whether condition and market condition.

7.4. SRPC has pleaded that limits for Goa-SR need to be specified. Else Goa-SR needs to be merged with Goa-WR and entire Goa be made pool member of WR. Goa has 100 MW of allocation from NTPC Ramagundam and most of this share is transferred via Karnataka system. Goa (SR) is presently a DSM pool member of Southern Region. SRPC has further argued that 9 limits i.e 50, 75,100,125,150,175,200,225 & 250 should be specified. This would avoid sudden jumps like Dada Nagar Haveli with peak met of 714 MW having deviation limit of 50 MW while Jharkhand with peak met of 1055 MW has deviation limit of 100 MW. Odisha with Peak met of 3,892 MW has deviation limit of 100 MW.

7.5. POSOCO has suggested that there is a need to review the provision of 48 MW for generators having schedule in a time -block less than 400 MW. The Regulation 5.iv of the amended Regulations is quoted below:

“Provided that in case schedule of a generating station in a time block is less than or equal to 400 MW, the charges for the Deviation for the over-injection in excess of 48 MW shall be zero.”

The application of this provision to a Generator having Installed Capacity of say 50 MW, may tantamount to relaxation of deviation nearly upto 100% for the Generating station, which may not be desirable.

The draft amendment only speaks about over-injection upto 48 MW and Under-drawl upto 48MW is not mentioned. It is therefore suggested that the provision of Under-drawl upto 48 MW may be included in the amendment.

7.6. POSOCO has highlighted the provision in the Annexure-III of the Regulation quoted below:

“Note: For the Regional entities not covered above , the deviation limit (L) shall be equal to 2% of its (Long term Access+ Medium term open access+ short term open access) subject to minimum of 50 MW and maximum of 250 MW.”

The deviation limit for Regional entities being equal to 2% of its (Long term Access+ Medium term open access+ short term open access) needs more clarity. For example there is a Generator with schedule less than 400MW, and taking 2% as the deviation limit, the figure works out to be 8 MW (2% of 400 MW) which is much lower than the limit given upto 48 MW in clause 5(iv) of the Regulation and 50 MW as per Annexure-III. Further, the (LTA+MTOA+STOA) figures are normally construed as drawl from ISTS grid, whereas peak demand met is from all sources including internal generation. More clarity is required on whether the datum will be (LTA+MTOA+STOA) contracted capacity or scheduled quantum, after duly incorporating the losses.

7.7. POSOCO has made several other suggestions:

7.7.1. **ACE Monitoring:** Internationally, for ACE Monitoring, the NERC Standard talks about the frequency bias, usually expressed in megawatts per 0.1 Hertz (MW/0.1 Hz), associated with a balancing authority area that approximates the balancing authority area's response to Interconnection frequency error. It is suggested such kind of ACE Monitoring may be introduced in the Indian power system and frequency bias (MW/Hz.) may be considered as 3% of peak demand met.

7.7.2. **Zero Crossing Violation:** Presently, there is no commercial implication for Zero Crossing Violation. To provide for a Commercial deterrent in case the zero crossing violation is observed, it is suggested that the respective entities shall pay additional charges, as may be specified by the Commission.

7.7.3. **Review of Charges for Deviation at 50 Hz. frequency :** The Deviations are the last resort for an entity to meet its demand after scheduling all the resources. It should be priced in a manner which encourages participants' behavior to move towards more organized demand and supply management. Deliberate deviations should ideally be commercially unviable. In this context, NLDC in its letter dated 8th September, 2015 suggested for review of Deviation charges notified by the Hon'ble Commission under CERC (Deviation Settlement Mechanism and related matters Regulations), 2014 (copy enclosed at Annexure-I).The Hon'ble Commission may kindly review the deviation charges and possibly link the 50 Hz deviation price to Day Ahead Market price.

7.7.4. **Simultaneous Deviation by all the Regional entities in a Region calls for increase in Transmission Reliability Margin in TTC/ATC Calculations**

The methodology for computation of Transmission Reliability margin(TRM) covered in Detailed Procedure issued under the Regulation 3(1) of the Central Electricity Regulatory Commission (Measures to relieve congestion in real time operation) Regulations, 2009 (Congestion Management) provides that computation of TRM for a region or control area or group of control areas would be based on:

(i)Two percent (2%) of the total anticipated peak demand in MW of the control area/group of control area/region (to account for forecasting uncertainties);

(ii)Size of largest generating unit in the control area/group of control area/region It has been experienced in case of that persistent Overdrawl/Underdrawl by all the Regional entities of a Region, the summation of the deviation of the Regional entities in a region is very large in comparison to the Reliability margin provisions as mentioned above. The graph corresponding to the simultaneous deviation of the regional entities plotted region wise for the year 2014-15(attached at Annexure-II) clearly depicts the phenomenon. It is suggested that the Hon'ble Commission may consider higher Reliability margin in view of the higher deviation limits as per the provisions of the DSM Regulations, to ensure that the interconnected transmission network is secure under a reasonable range of uncertainties in system conditions.

7.7.5. **Frequency Band**

The frequency band as per IEGC is 49.90- 50.05 Hz. However, the DSM Regulation is applicable for the utilities/Regional entities deviating within the frequency range of 49.70 Hz and 50.10 Hz. This needs to be harmonised and

reviewed by the Commission as the System operator on one hand, have the task of maintaining the system frequency within the IEGC band, while on the other hand, the state utilities/Regional entities are allowed deviation within the range of 49.70 Hz- 50.10 Hz.

- 7.8. Vedanta has stated that the primary objective of the Deviation Settlement Mechanism regulation is to reduce the instances of Unscheduled Interchange in the grid, thereby leading to a healthy and stable system. In the proposed amendment, the limits for Over Drawal/ Under Drawal have been increased, which is contrary to the objective. This will cause further instability/ Indiscipline in the system, with the State Discoms not scheduling power up to requirement. Further, the proposed increased limits in turn shall increase the quantum of Unscheduled Interchange in the system causing a major harm to the Grid Frequency. Therefore, it is submitted that for maintaining grid stability and discipline the limits should be reduced to maximum of 10 % of the schedule or 100 MW whichever is lower.
- 7.9. Shri Vijay Menghani has suggested that there should not be any administratively decided volume limits, these should be derived from technical limit of tie lines deriving these from line flow, voltage limits and stability limits and using deviation settlement and Real time congestion management in conjunction, objective of grid discipline can be achieved at less regulatory and commercial cost.
- 7.10. MP Power Management Company Ltd. (MPPMCL) has brought up the issue of schedule equivalent to technical minimum generation being given by RLDC/SLDC resulting in heavy under drawal causing DSM penalty. Thus, proposed amendment in IEGC regarding technical minimum and DSM are in contradiction to each other. This results in excessive financial burden on Distribution Companies. Technical minimum may be limited to only 30% of installed capacity as indicated by CEA in its submission in petition No. 142/MP/2012 vide letter dated 12.9.2013 that unit can operate: at any lower load without any limits; and minimum load without oil support is taken as about 30% of MCR and operation below this limit needs oil support. Arbitrary claims of technical minimum requirement are being made by the generating stations and RLDC are giving generation schedule upto 60-70% of MCR causing heavy under drawal by the beneficiaries because of low system demand.
- 7.11. TPDDL has stated that IEGC 2010 and subsequent amendments stipulate that the scheduling/revision of power should be executed in four time blocks. This timeline is adhered to incase when revision is within region however, the process takes approx. 6 time blocks in cases when seller and buyer are located in different region. Further, the scheduling of URS takes more than stipulated 4 time blocks as consent of multiple parties is involved in the same. These discrepancies between regulation and practicalities restrict the immaculate planning and execution required to meet such a stringent norm.
- TPDDL has requested the Commission that in light of the aforementioned submissions, the DSM liability should be passed on to the party who is in a better condition to control the parameters. The Transmission Utility and concerned Load Despatch Centers should also be active party to the said Regulations and the Utility/Discom should not be made to bear the penalties on account of events not attributable to it.
- 7.12. MPPCL suggests that frequency has stabilized closer to 50 Hz and it is time to consider to relax the norms so that the State distribution utilities can manage their demand supply scenario on self-discipline basis. Every charge/penalty being levied in electricity sector results in terms of financial burden on the ultimate consumers of the country in the end whether it is being imposed on generation, transmission or

supply licensee. The distribution sector is reeling under heavy debt burden and suffering huge financial losses across the country. The distribution is the only core activity which earns revenue for the sector. The revenue earned by the distribution licensee recalculates amongst transmission and generation companies. Hence, if the distribution sector is critical, it will have gross negative impact on financial conditions of the whole electricity industry.

Keeping this in view, they have suggested that for managing the grid discipline and ensuring the safety of the grid, technical measures like introduction of Ancillary services, spinning reserve may be considered in place of stringent commercial mechanism.

7.13. THDC India Ltd has recommended that separate Table C under regulation 7(3) should be included for case when schedule of a generating station in a time block is less than or equal to 400 MW to make the concept more clear. Similarly, separate illustration "C" under Annexure-I of the principal regulation for computation of Additional Charges for the Deviation in case under injection by a generating station when schedule in a time block is less than or equal to 400 MW should be included.

7.14. THDC has further stated that over injection/under injection by generating station is beyond its control provided the machine is running under RGMO. Accordingly, they have suggested that clause (iv) of Regulation 5 may be substituted as follows:

“The charges for deviation for the over injection by generating station in a time block in excess of 12% of schedule, shall be payable equivalent to charges corresponding to average grid frequency of time block provided the machine is running under RGMO except in case of injection of infirm power, which shall be governed by the clause (5) of this regulation.”

Similarly, THDC has proposed modifications to the clause for additional charges, and to clause (2) of Regulation 7.

sAnalysis and Decision

1. POSOCO has suggested revision to the proviso proposed to Regulation 2 (1) (h) on the basis of information flow in the system. The Commission accepts the changes and modifies the final proviso as follows:

“Provided that deviation shall be calculated for the Regional Entities by concerned RLDC/RPC which shall be attributed to various entities embedded within States by SLDC.”

2. Comments by Adani Power and CSPDCL are issues that were already considered by the Commission while framing the final DSM Regulations, 2014.
3. SRPC's suggestion regarding Goa-SR is beyond the scope of this amendment. Regarding DSM limits to be set in smaller steps, the pros of doing that need to be balanced with the increased difficulty in administering so many limits. For now, the limits are not modified for states except those having higher installed capacity of infirm renewables.
4. POSOCO has recommended that similar to over-injection upto 48 MW, the provision of Under-drawl upto 48 MW may be included in the amendment. This suggestion is accepted and the following proviso shall be included under clause (iii) of Regulation 5(1):

“Provided that in case schedule of a buyer (except renewable rich states) in a time block is less than or equal to 400 MW, the charges for the Deviation for the under-drawal in excess of 48 MW shall be zero.”

5. POSOCO has suggested that the deviation limit for Regional entities being equal to 2% of their access (Long term Access+ Medium term open access+ short term open access) needs more clarity. This suggestion is not applicable anymore as this statement is being deleted from the amendment.
6. POSOCO has made several other suggestions on a variety of issues- ACE monitoring, linking DSM charges to the market, increase in transmission reliability margin and harmonizing frequency band between the IEGC and DSM Regulations. All these suggestions have been noted by the Commission. These are outside the scope of the present regulatory process, and some of these ideas are already being examined by appropriate technical Committees.

Regarding penalty for zero crossing violation, it was not proposed in the draft amendment and hence it would be taken up at a later point in time.

7. Comment from Vedanta on making the DSM limits stricter is a welcome suggestion. Better grid discipline is the only path forward. However, the Commission is allowing this relaxation temporarily as the States prepare themselves to better manage deviations through roll-out of ancillary services, including spinning reserves, within their State boundaries.
8. Shri Vijay Menghani’s suggestions are also acknowledged, and would be taken up in future. The Commission feels that the control systems in place are inadequate to move to a completely dynamic regime. Additionally, it has been observed by several stakeholders that deploying a DSM limit known to the grid entities ahead of time is an effective tool to discourage deviations.
9. MPPMCL has commented that schedule equivalent to technical minimum generation being given by RLDC/SLDC results in heavy under drawal causing DSM penalty. The Commission has already notified the amendment to reduce technical minimum of ISGS coal-based plants to 55%, which the states are welcome to adopt. It may be noted here that the MP State Commission could be approached to have a lower technical minimum for plants located within the State.
10. TPDDL has noted that revision of schedule within four time-blocks is not being achieved in certain cases. The Commission notes the concern, and directs the RLDCs to ensure that Regulations are being complied with.
11. MPPCL has suggested that with the grid frequency stabilizing close to 50 Hz, entities should be allowed to enforce self-discipline. While the Commission agrees with the spirit of the suggestion, unfortunately, it is felt that various stakeholders are not ready for the same. The progressive stabilization in grid frequency has come through strict enforcement of DSM Regulations, and still, several states have huge amounts of deviation charges accumulated. DSM Regulations act as a deterrent to grid indiscipline, and shall hopefully incentivize the States to build balancing capability in order to graduate to the next level of strict DSM limits.
12. THDC India Ltd has recommended a separate Table C under regulation 7(3) for case when schedule of a generating station in a time block is less than or equal to 400 MW. The Commission feels that the provisions of the Regulation are quite

clear and a table is not required at this point. THDC has further commented that machines with RGMO are unable to comply with regulation as over/under injection by the generating station is beyond its control. We are not inclined to consider this suggestion as same is beyond the scope of current Regulations.

**sd/-
(M.K. Iyer)
Member**

**sd/-
(A.S. Bakshi)
Member**

**sd/-
(A.K. Singhal)
Member**

**sd/-
(Gireesh B. Pradhan)
Chairperson**

Annexure-I: List of stakeholders who submitted their comments

S. No.	Company/Stakeholder/Individual
1.	Southern Regional Power Committee (SRPC)
2.	Vedanta
3.	TATA Power-DDL
4.	Power system Operation Corporation Limited (POSOCO)
5.	Indian Wind Turbine Manufactures Association (IWTMA)
6.	Indian Wind Power Association (IWPA)
7.	Northern Regional Power Committee (NRPC)
8.	Chhattisgarh Vidyut Mandal
9.	Adani Power
10.	Vijay Menghani, Director (CEA)
11.	Chhattisgarh State Power Transmission company Limited (CSPTCL)
12.	U. P. Power Corporation Ltd. (UPPCL)
13.	Kerala State Electricity Board (KSEB)
14.	Assam Power Distribution Company Limited (APDCL)
15.	Jaipur Vidyut Vitran Nigam Limited (JVVNL)
16.	Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL)
17.	Tehri Hydro Development Corporation (THDC)
18.	Gujarat Energy Transmission Corporation Limited (GETCO)
19.	Kerala State Electricity Board (KSEB)
20.	MP Power Management Company Ltd (MPPMCL)

Annexure-II: State-wise installed capacity of Grid-connected Infirm Renewable Power (Solar + Wind) as on 31.01.2016, as per our records

S. No.	STATES / UTs	Wind Power	Solar Power(as on 29-2-2016)	Total Infirm Renewable Capacity
		(MW)	(MW)	(MW)
1	Andhra Pradesh	1155.12	475.74	1630.86
2	Arunachal Pradesh		0.27	0.27
3	Assam		0.00	0.00
4	Bihar		5.00	5.00
5	Chhatisgarh		73.18	73.18
6	Goa		0.00	0.00
7	Gujarat	3876.50	1024.15	4900.65
8	Haryana		12.80	12.80
9	Himachal Pradesh		0.00	0.00
10	Jammu & Kashmir		0.00	0.00
11	Jharkhand		16.00	16.00
12	Karnataka	2886.53	104.22	2990.75
13	Kerala	35.10	12.025	47.13
14	Madhya Pradesh	1200.19	678.58	1878.77
15	Maharashtra	4638.35	378.7	5017.05
16	Manipur		0.00	0.00
17	Meghalaya		0.00	0.00
18	Mizoram		0.00	0.00
19	Nagaland		0.00	0.00
20	Odisha		66.92	66.92
21	Punjab		300.32	300.32
22	Rajasthan	3877.54	1264.35	5141.89
23	Sikkim		0.00	0.00
24	Tamil Nadu	7514.76	562.945	8077.71
25	Telangana		392.39	392.39
26	Tripura		5.00	5.00
27	Uttar Pradesh		140.00	140.00
28	Uttarakhand		5.00	5.00
29	West Bengal		7.21	7.21
30	Andaman & Nicobar		5.10	5.10
31	Chandigarh		5.04	5.04
32	Dadar & Nagar Haveli		0.00	0.00
33	Daman & Diu		4	4.00
34	Delhi		6.71	6.71

35	Lakshwadeep		0.75	0.75
36	Pondicherry		0.025	0.03
37	Others	4.30	0.79	5.09
	Total (MW)	25188.39	5547.21	30735.60
MW = Megawatt				