

Comments on Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations, 2021

By Asit Singh on individual capacity

A. Positives about DSM Regulations 2021

Frequency linked based DSM Regulations cannot coexist with full-fledged RRAS in place. Therefore it is positive step to withdraw the existing Frequency based DSM Regulations to this suggested draft (as noted in para 2.4 of EM).

Removal of sign change clauses are a welcome step.

B. Comments on draft DSM Regulations 2021 which can be addressed

i. Inherent deficit Load Generation Balance by design

Only deviation charges payable are envisaged and no receivables are envisaged for over injection for sellers. This means that all the sellers will be will be generating less than the schedule including WS, ROR, GS based on municipal waste.

No receivables are envisaged for under drawal for buyers. This means that all the buyers will be will overdrawing from the grid.

The design of DSM with inherent Load Generation Balance is not in the interest of secure system operation. Differential/controlled/regulated payment for over injection by seller and under drawl by buyer could be considered to avoid the inherent deficit Load Generation Balance. Regulation 8 can be modified accordingly.

ii. Loss of inherent netting of deviations of regional entities

In the present system operation considering the existing RRAS signal based on Regional ACE is generated. ACE for a region is based on net deviation of all the regional entities of a region with a frequency correction component. In para 3.7.1 & 3.11 of EM it is mentioned that all grid connected entities adhere to schedule, but in grid scenario where load forecasting has not matured, RE forecast is not implemented/matured for all intra-sate entities, maintaining of mandatory reserves in both up and down direction, must Run status to RE and nuclear stations, RTM power is available at 1-1.5 hrs, 24 hours energy security to all etc it looks difficult task to loose the benefit of net netting of deviation of regional entities. All the margins available would not be available for SRAS & TRAS at regional level. The reserve margins available with the states/sellers will be lost and there will be excessive pressure on RRAS/TRAS at Regional level to correct the ACE, which in turn will turn out to be costly.

The reserves available with states, sellers will be lost, there would be one directional approach on system operation by SLDCs/Sellers/buyers which will not be line with required system operation. Differential/controlled/regulated payment for over injection/under drawl can be considered with strict volume limits to avail the reserves from states/sellers for which they have margins and to avoid the inherent deficit Load Generation Balance. This will reduce the load on SRAS/TRAS at Regional Level. Regulation 8 can be modified accordingly.

iii. Intra-state SRAS/TRAS and SRAS/TRAS at Regional level

In para 3.1 of EM it is mentioned that after the gate closure, the system operator takes over and manages the system imbalances or deviations through deployment of ancillary services and same is reiterated for generators in para 3.7.1 of EM for regional generators, and it is stated that generators can continue to play the same role through instructions of System Operator by participating in Ancillary Services Mechanism. It may be noted that there are no payments envisaged for under drawl/ over injection so their buyer/seller operation bandwidth is very limited (slightly over drawl for buyer and slight under injection for seller otherwise they even loose on variable cost also). To operate in this limited bandwidth he buyer/seller has to keep operating reserves with them and all reserves cannot participate in Regional Level SRAS/TRAS. The Regional level SRAS/TRAS correct only the Regional ACE while the deviations are to be managed only by the buyer/seller themselves.

Till the Intra-state SRAS/TRAS is implemented in the states differential/controlled/regulated payment for over injection/under drawl can be considered with strict volume limits to avail the reserves from states/sellers for which they have margins and to avoid the inherent deficit Load Generation Balance. Regulation 8 can be modified accordingly.

iv. SCADA and SEM discrepancy

System operation is based on SCADA values while the payments/receivables to pool are based on SEM values, to overcome this a 20 MW margin was given to avoid penalties in earlier DSM Regulations.

+/- 20 MW deviation should be considered as the meeting the schedule by the entities and no penal charges should be applicable. Regulation 8 can be modified accordingly.

v. Charges for DSM for general seller being generating station based on municipal solid waste

Para 3.9 of EM elaborately covers the need for exemption of penal DSM charges for generating station based on municipal solid waste upto 20%. In the suggested draft it appears that generating station based on municipal solid waste has to under inject by design thus leading to deficit Load generation Balance Condition. Payment for deficit upto 20% by beneficiary and will be used to offset the Fixed Charge liability is not on accounting principle, tariff computations and will not lead to energy balance.

It is suggested that +/-20% generating station based on municipal solid waste can be exempted from any penal DSM charges it can receive payment from pool for over injection and make payment under injection. This would ensure the generating station based on municipal solid waste generation remains close to its schedule/forecast and not create undue stress on the grid. Regulation 8 can be modified accordingly.

vi. Deviation Settlement of Nuclear stations and its beneficiaries

The Nuclear stations are not part of Deviation Settlement Mechanism , presently the actual injection of nuclear is reflected in REA while the DSM of Nuclear stations is settled by the beneficiaries in monetary terms (with no modification in schedule of beneficiaries) in SR. Other regions may be following different methodology. But in draft DSM Regulations there is an issue as there are no payments envisaged to be paid to any beneficiary and due to post facto adjustments of computing the schedules equal to actual for nuclear station beneficiaries there would be a discrepancy in energy balance/payment liability.

Example Nuclear Station of 1000 MW capacity selling completely to one beneficiary

Over Injection case

Nuclear Station schedule = 1000 MW and Actual Injection = 1100 MW Deviation = +100 MW

Beneficiary Schedule = 9000 MW (Other schedules) +1000 MW (Nuclear schedule) (loss considered zero) , Actual drawal = 10000 MW , Deviation = 0 MW

REA will show 1100 MW schedule so the beneficiary has to pay for 100 MW more as per REA but as per DSM he has not drawn this 100 MW. Due to post facto adjustment

Revised Beneficiary Schedule = 9000 MW (Other schedules) +1100 MW (Nuclear schedule) (loss considered zero) , Actual drawal = 10000 MW , Deviation = -100 MW, so it gets from the pool and he pays to Nuclear generator as per REA.

Under Injection case

Nuclear Station schedule = 1000 MW and Actual Injection = 900 MW Deviation = -100 MW

Beneficiary Schedule = 9000 MW (Other schedules) +1000 MW (Nuclear schedule) (loss considered zero) , Actual drawal = 10000 MW , Deviation = 0 MW

REA will show 900 MW schedule so the beneficiary has to pay for 100 MW less as per REA but it would have drawn this energy as per DSM. Due to post facto adjustment

Revised Beneficiary Schedule = 9000 MW (Other schedules) +900 MW (Nuclear schedule) (loss considered zero) , Actual drawal = 10000 MW , Deviation = +100 MW, so it has to pay to pool for this 100 MW and he pays to Nuclear generator as per REA.

Therefore it is suggested that all the deviations of nuclear stations would be settled by beneficiaries with the pool as per share allocation % as per the available billing rates . This will ensure net neutrality of nuclear station deviation's for nuclear stations and for its beneficiaries and pool account.

Or

Nuclear Stations may settle their deviations with the pool at as per the available billing rates (it may be noted that they are not under ABT only deviations are to be settled). This will net neutrality of nuclear station deviation's for nuclear stations and pool account.

Sub clause under Regulation 8 can be added.

vii. Normal Rate of Charges for deviation

The block-wise normal rates paise/kWh needs to be computed and published by POSOCO.

This may be added in Regulation 7.

viii. Deviation for WS Seller

Charges of Zero for over injection and limit of 10% for WS Seller appears to very constraint for WS seller considering the present WS forecasting errors.

Deviation upto 15% can be allowed for WS. Other Hybrid RE generators can also be covered. Regulation 8 can be modified accordingly.

ix. Ancillary Services Regulations vs DSM Regulations 2021

All the payments/receivables of Ancillary Services Regulations should be ensured through DSM Regulations as the design of DSM should in line Ancillary Services Regulations.

While the ACE has a frequency component (a small component) but there is no incentive/disincentive to maintain the frequency as per DSM Regulations 2021.

Credit to Deviation and Ancillary Pool Account

- SRAS-Down Variable Charge/compensation charge
- TRAS-Down

Deviation and Ancillary Pool Account charged for

- SRAS-Up Variable Charge/compensation charge
- SRAS-Up Incentive upto 40p/kWh
- SRAS- Down part load compensation Charge
- SRAS-Down Incentive upto 40p/kWh
- TRAS—Up for energy instructed to be dispatched
- TRAS-Up commitment Charge
- Emergency Up VC/Compensation Charge

The missing can be added in Regulation 9(5).

x. Based on above Regulation 8 can be modified accordingly

Table A

Entity	Charges for deviation payable/receivable to Deviation and Ancillary Service Pool Account			
Seller	Deviation by way of over injection	Receivable	Deviation by way of under injection	Payable
For a general seller other than an RoR generating station or a generating	0-20 MW	Normal rate of charges	0-20 MW	Normal rate of charges
	20 MW - 5% Deviation	70% of normal rate	20 MW - 5% Deviation	110% of Normal rate of charges

station based on municipal solid waste		of charges subject to maximum of 303.04p/kWh		
	5%- 10 % Deviation	50% of normal rate of charges subject to maximum of 303.04p/kWh	5%- 10 % Deviation	125% of Normal rate of charges
	> 10 % Deviation	Zero	> 10 % Deviation	150% of Normal rate of charges
For a general seller being an RoR generating station	0-20 MW	Normal rate of charges	0-20 MW	Normal rate of charges
	20 MW - 5% Deviation	90% of normal rate of charges subject to maximum of 303.04p/kWh	20 MW - 5% Deviation	110% of Normal rate of charges
	5%- 10 % Deviation	70% of normal rate of charges subject to maximum of 303.04p/kWh	5%- 10 % Deviation	125% of Normal rate of charges
	> 10 % Deviation	Zero	> 10 % Deviation	150% of Normal rate of charges
For a general seller being a generating station based on municipal solid waste	0%-20%	PPA rate	0%-20%	PPA rate
	> 20%	Zero	> 20%	110% of PPA rates
For WS seller	0-20 MW	Max (Normal rate of charges, Weighted PPA/APPC rate)	0-20 MW	Max (Normal rate of charges, Weighted PPA/APPC rate)
	20 MW - 7% Deviation	90% of Max (Normal rate of charges, Weighted PPA/APPC rate)	20 MW - 7% Deviation	110% Max (Normal rate of charges, Weighted PPA/APPC rate)
	7%- 15 % Deviation	70% of Max (Normal rate of charges, Weighted	7%- 15 % Deviation	125% Max(Normal rate of charges, Weighted

		PPA/APPC rate)		PPA/APPC rate)
	> 15 % Deviation	Zero	> 15 % Deviation	150% Max (Normal rate of charges, Weighted PPA/APPC rate

Table B

Entity	Charges for deviation payable/receivable to Deviation and Ancillary Service Pool Account			
Buyer	Deviation by way of under drawl	Receivable	Deviation by way of over drawl	Payable
Buyer (other than the buyer with schedule less than 400 MW and the RE rich State)	0-20 MW	Normal rate of charges	0-20 MW	Normal rate of charges
	20 MW to deviation up to 12% Deviation-buyer (in %) or 150 MW Deviation-buyer (in MWh) in a time block,	70% of normal rate of charges	20 MW to deviation up to 12% Deviation-buyer (in %) or 150 MW Deviation-buyer (in MWh) in a time block,	110% of normal rate of charges
	Deviation 12% Deviation-buyer (in %) or 150 MW Deviation-buyer (in MWh) in a time block to deviation up to 20% Deviation-buyer (in %) or 250 MW Deviation-buyer (in MWh) in a time block,	50% of normal rate of charges	Deviation 12% Deviation-buyer (in %) or 150 MW Deviation-buyer (in MWh) in a time block to deviation up to 20% Deviation-buyer (in %) or 250 MW Deviation-buyer (in MWh) in a time block,	120% of normal rate of charges
	Deviation > 20% Deviation-buyer (in %) or 250 MW Deviation-buyer (in MWh) in a time block,	Zero	Deviation > 20% Deviation-buyer (in %) or 250 MW Deviation-buyer (in MWh) in a time block,	140% of normal rate of charges
Buyer (with schedule up to 400 MW)	0-20 MW	Normal rate of charges	0-20 MW	Normal rate of charges
	20 MW – 12% dev	70% of normal rate of charges	20 MW – 12% dev	110% of normal rate of charges

	12% dev -20% dev	50% of normal rate of charges	12% dev -20% dev	120% of normal rate of charges
	> 20% dev	Zero	> 20% dev	140% of normal rate of charges
Buyer (being an RE Rich State)	0-20 MW	90% of normal rate of charges	0-20 MW	Normal rate of charges
	20 MW – Min (12% dev/250 MW)	70% of normal rate of charges	20 MW – Min (12% dev/250 MW)	110% of normal rate of charges
	Min(12% dev,250 MW) to Min (20% dev, 300 MW)	50% of normal rate of charges	Min (12% dev,250 MW) to Min (20% dev,300 MW)	120% of normal rate of charges
	> Min (20% dev ,300 MW)	Zero	> Min (20% dev,300 MW)	140% of normal rate of charges

Note: The deviations of nuclear stations would be settled by beneficiaries with the pool as per share allocation % as per the available billing rates.

To capture the frequency impact of ACE it is suggested

Frequency Range	Receivable in Table A & B	Payable in Table A & B
49.98 – 50.01 Hz	No Change	No change
50.01 Hz to 50.05 Hz	Decrease the receivable by 5 %	
> 50.05 Hz	Decrease the receivable by 10%	
49.98 Hz – 49.90 Hz		Increase the payable by 5 %
< 49.90 Hz		Increase the payable by 10 %
