



A Maharatna Company

एन टी पी सी लिमिटेड
(भारत सरकार का उद्यम)

NTPC Limited
(A Govt. of India Enterprise)

केन्द्रीय कार्यालय / Corporate Centre

Date: 03.06.2024

The Secretary
Central Electricity Regulatory Commission,
7th floor, Tower-B, World Trade Centre
Nauroji Nagar, New Delhi-110029

Subject: NTPC Submissions on Draft CERC (Deviation Settlement Mechanism and Related Matters) Regulations- 2024

Sir,

Hon'ble Commission has published Draft CERC (Deviation Settlement Mechanism and Related Matters) Regulations-2024 and has invited comments from the stakeholders on the draft regulation.

In this regard, please find enclosed submissions of NTPC on Draft CERC (Deviation Settlement Mechanism and Related Matters) Regulations- 2024.

Thanking you,

Yours sincerely

Ajay Dua
ED (Commercial)

NTPC Submissions on Draft CERC (Deviation Settlement Mechanism and Related Matters) Regulations-2024.

1. Operational Margin to take care of inadvertent deviations beyond the reasonable control of the generators

In the regulation 8(1) of the draft regulations, the existing permissible deviation limit of 10 % of SG or 100MW whichever is less in the frequency range of 49.95 Hz =<Freq =< 50.03 Hz, has been removed for a general seller other than an RoR generating station or a generating station based on municipal solid waste or WS seller.

Hence any deviation from the schedule shall lead to DSM implication depending upon the frequency.

Submission: It is submitted that, inadvertent and natural deviations are part of the operation of thermal power plants, and these are beyond reasonable control of an operator.

Some of the Technical and Operational Difficulties to achieve 'Zero Deviations' in case of a thermal generator are listed below:

(A). Response of the Control System:

- (i) Thermal Power stations comprise of a large number of equipment and systems running in tandem and as per the desired Load set point at any point of time for generating power.

Though most of the stations are now-a-days equipped with advanced automation and Control and Instrumentation systems, the complexity of the power generation process with multi-variable control environment makes it difficult to achieve Zero deviation from the set point.

However, being a multi-variable process, whenever the process parameter varies due to process disturbance (such as coal quality variation, soot blowing and other process parameters including weather conditions), unit load demand is automatically adjusted in CMC mode to keep the process parameter deviations within a stable limit thus ensuring safe operation of units and equipment. **Maintaining unit load at a steady value at all the times, with zero deviation is not possible under such circumstances.**

- (ii) The control systems in a power plant are typically tuned to operate most efficiently at high loads. **At part load operation of the units, the stability of the units gets impacted, affecting the response of the Control Systems.** With higher penetration of RE in the system, incidences of part load operation of the units increase, affecting the response of the Control System which results in deviations from the Load Set points.
- (iii) In the flexible operation regime, load demand varies frequently. Boiler response time varies from 3 mins to 5 mins. Thus, during load ramping, matching unit load as per scheduled demand without any deviations is also not possible.

(B). Variations in Process Parameters and Operating Conditions:

(i) Calorific Value of Coal: Coal fed to the Boilers of a thermal generator is a generally comes from different sources. Moreover, being a heterogenous mixture, the Calorific value of Coal is never constant and varies continuously, which affects the generation level also. With same coal feeding rate of coal to the Boiler, the output can vary causing deviation between command by the operator and the actual output.

In most of the cases, the Operators would not have much control over this factor. It is observed that at Non-Pit Head stations like Kudgi, where coal comes from various sources, the GCV of Coal ranges from 1850 Kcal/Kg to 5000 Kcal/kg. The variation in the GCV value of Coal received from different sources in a day is seen to be as high as 2000 kCal/kg. With such variation in coal quality, it is difficult to maintain generation at the setpoint with zero deviation.

(ii) Wet Coal: Sometimes, especially during the rainy seasons, wetness of coal makes it difficult to maintain constant flow of coal through the milling system and affects combustion in Boiler, thus creating variation in generation level.

(iii) Load Variations during Soot Blowing: In thermal power plants, Boiler operation results in deposition of ash and slag (soot) on the boiler internals i.e. water walls and other radiant & convective zones/ heat transfer sections of boilers. This reduces the thermal conductivity of surface deteriorating the boiler efficiency substantially. Accordingly, the soot is dislodged periodically from boiler heat exchanging surfaces by the method of blowing of steam.

It may be pertinent to mention that ash and slag deposition on the heat exchanging surfaces is a gradual process, however blowing of steam to dislodge soot results in an abrupt change in local heat transfer capacity. Further, the slags generally fall in the water bath below the furnace. This tends to disturb the fire ball of the boiler furnace. Therefore, during soot blowing there is load fluctuations even though the boiler firing remains the same.

Each soot blowing cycle on an average takes about 45 to 60 minutes (i.e. 3 to 4 blocks). To maintain the Boilers in safe and efficient condition, Soot blowing is carried out periodically (generally once in every shift of 8 hours or as specified by OEM). Load variation during soot blowing cannot be avoided.

(C). Frequent Changes in Schedule may lead to deviations:

(i) Frequent ramp up and ramp down: Generators often get ramp up and ramp down schedule on daily basis. Due to increased penetration of RE in the system such Ramp up/down of schedule has increased to take care of variations in RE generation. Deviations from Scheduled Generation (SG) are more likely when there is a change in schedule of the units/ station. The rotating mass of the machines has an inherent inertia, which clubbed with ramping signals causes variations with respect to schedule.

Similarly, for maintaining Grid frequency, frequent AGC signals are given to Generators by Grid operator and these signals cause consistent ramping, both up and down of machines.

- (ii) Similarly, during activation of AGC signals, on an average, a 1000 MW station gets 5% ~50 MW AGC signal, up or down in a time block. Typical performance of AGC response is expected to be 70-80% only. So, there'd be an unavoidable deviation of 10-15 MW in a time block for each AGC command.
- (iii) After implementation of RTM, it is observed that the total no of revisions in schedule for a station in a day goes upto as high as 200 times.

To summarize, it is submitted that Deviations from schedules are much more likely whenever there is a change in schedule and ramp up/ ramp down operation.

(D). Metering and Measurement Accuracy:

- (i) There is a limit to Metering and Measurement Accuracy (0.2 class for instrument transformer, 0.2 class for meters), which produces inherent error on account of usage of different meters/Instrument transformer with respect to measurements of deviation and operation of Unit. Further, accounting of deviations is done based on SEM meters and Unit is operated on ABT/SCADA meters and this can result in accounting deviations.
- (ii) While dealing with the issue of sign change issue in the CERC (DSM and related matters) (5th Amendment Regulations) 2019, Hon'ble Commission took cognizance of the difference in SEM and SCADA data and increased the tolerance band from +/- 10 MW to +/- 20 MW, as captured in the Statement of Reasons of the CERC (DSM and related matters) (5th Amendment Regulations) 2019 (Page 5, 2nd paragraph). Relevant extracts are captured below:

Quote:

However, the Commission, while recognizing the current operational constraints, has decided to allow a tolerance band of +/- 20 MW from schedule (as against the proposed tolerance band of +/- 10 MW), which would be a subset of the existing deviation flexibility of 150 MW/200MW/250MW as provided under Regulation 7(1) &7(2). It is felt that this tolerance band would be sufficient to subsume various inadvertent deviations including those arising out of SCADA-SEM metering inaccuracies.

Unquote

(E). Deviations in Gas based generating Stations:

- (i) In gas stations operating in Combined Cycle operation mode, the steam turbine performance is affected by exhaust temperature of gas turbine. In case of AGC triggers of 30 MW, GT may deliver 20 MW and ST may deliver in range of 08

MW to 15 MW depending upon the real time operating condition of GT exhaust temperature, resulting in a deviation from SG.

- (ii) In Gas stations, for the purpose of No_x Control, sometimes Water/ Steam injection is done, causing deviations in Generation.
- (iii) Similarly, during fuel changeovers, Generation is likely to deviate from the Schedule Generation value.

(F) Primary response and Free Governor Mode Operations:

- (i) PRAS (Primary Reserve Ancillary Services) is provided through governing action of generator and is not in control of the generators as the Regulations requires that the Governing system of the Generators has to be kept in Free Governor Mode services at all times.

This can cause machines to deviate from the schedule up to 5% of MCR. It may please be noted that there may be inadvertent deviation in a time block from SG due to primary frequency response provided for supporting the Grid.

It is also pertinent to mention that the Hon'ble commission while dealing with similar issue under CERC (Sharing of Inter-State Transmission Charges and Losses) (First Amendment) Regulations-2023, has provided that transmission deviation charges shall not be levied for the quantum of over-injection for providing primary response by a generating station, subject to verification of such over-injection by concerned RPC.

Further, it may be appreciated that these PRAS support is required for 5 minutes to control of frequency excursions in the Grid. It may happen that after PRAS response of a generator in a block, the average frequency in that block of 15 minutes may settle in such a way that the generator may have to bear loss due to DSM charges. For example, if a generator under-injects by PRAS in a block due to upward spike in frequency but the average block frequency settles at a frequency below 50.00 Hz, the generator has to bear loss due to DSM charges.

Thus, it can be seen that an operational Margin is required for thermal generators to take care of such deviation from schedule.

- (ii) Primary response and deviations in Hydro generating Stations:

As per clause 30(10)(h) of IEGC 2023 Regulations, Hydro Power Stations are mandated to provide primary response up to +/-10% of MCR whereas the draft DSM Regulations 2024 do not provide any operational margin beyond the generation Schedule and during high frequency variations in a block such primary response may lead to loss to a generator.

Therefore, a suitable operational margin is required to take care of Primary response requirement.

Deviation by the stations:

Based on the actual data of SG and AG of different stations for the FY 2023-24, it can be observed that the percentage of time a station is generally able to generate without deviation is negligible as shown in the table below:

Station	% of Time blocks	Number of blocks with zero deviation
Singrauli	0.32	114
Lara	0.26	92
Darlipali	0.23	81
Tanda-II	0.28	99
Mouda-II	0.17	59
Gadarwara	0.13	47
Kudgi	0.14	50
Barh-II	0.19	66
Farakka-I&II	0.24	85

It is worthwhile to mention that the factors as cited above, have been appreciated by Hon'ble commission in the past and Hon'ble Commission has pleased to mention that:

“However, there may be some deviation due to technical reasons beyond their control as made out by the generators, especially on account of FGMO/RGMO, primary response requirement, etc. Based on the suggestions of experts on the subject and comments of stakeholders the Commission has decided that no deviation charges shall be levied within band of +/- 2%.”

Accordingly initially a 2% deviation from SG in all frequency bands was allowed in DSM Regulations-2022 and later on the Hon'ble commission considered it appropriate to provide an operational margin of deviation up to 10% D_{SG} or 100MW whichever is lower in the frequency band of 49.95Hz to 50.03Hz without any DSM implications.

Considering all these factors as explained above, the following is submitted:

(i) In the frequency range of 49.90 Hz =<Freq =< 50.05 Hz An operational Margin of +/-5% may be provided for thermal generators to take care of natural and inadvertent deviations which are beyond the reasonable control of the operator.

(ii) Within this Margin of +/-5%, any over-injection and over-injection should be settled at the rate of Reference charge rate of the stations and there should not be any DSM penalty. In other words, for any over-injection, the generator should receive @ Reference charge rate and for any under-injection, the generator should pay @ Reference charge rate.

2. Equitable incentive for supporting the Grid vis a vis penalty imposed for deviating from Schedule.

In the proposed Draft regulation, at any frequency 50.05Hz or below, the penalty for failing to support the grid is **3.3 times higher** than the incentive for supporting the same grid. For instance, the incentive for supporting the grid has been squeezed to 15 % of ECR on the other hand, penalty for failing to support the grid has been increased up to 110% of ECR for over-injection at higher frequencies and 50% of ECR for under-injection at lower frequencies.

Submission: It is worthwhile to mention that despite deployment of ancillary services, Grid frequency don't maintain at 50.00Hz and many times even goes beyond the band of 49.95Hz to 50.03Hz. Under these circumstances, support of thermal generators guided by DSM mechanism cannot be undermined and it plays vital role in maintaining stability of grid frequency.

Earlier also, Hon'ble commission in its Suo motu order 01/SM/2023 dtd. 06.02.2023, has also observed that *"... the Commission observes that though some improvement in the frequency excursions above 50.05 Hz was observed, the overall frequency profile still remains a matter of concern. The required support from the buyers and the sellers in the form of Reserves and Ancillary Services, as was envisioned, under the Ancillary Services Regulations dated 31.01.2022, has not been forthcoming. The general impression given by the buyers and the sellers is that prior to 05.12.2022, when the deviation charges were linked to frequency, passive support from the buyers and the sellers used to come because of the inherent incentives in the Regulations which were applicable at that time."*

With this observation a modified incentive and penalty mechanism was reintroduced vide CERC order 01/SM/2023 dtd. 06.02.2022 to ensure the support of thermal generators in maintaining the grid frequency.

It is submitted that till the sufficient reserves and ancillary services are available in the system to maintain the frequency in the range of 50 Hz, the support provided by the generators through DSM mechanism may be continued to be incentivized.

Hence it is proposed that DSM charges may be specified in such a way that incentive opportunities and penalty provisions are balanced and equitable and the incentive for supporting the Grid by over-injection or under-injection may be increased up to 50% of Reference charge rate.

3. Incentive for supporting the Grid in excess of the limit of 10 % of SG or 100MW whichever is less

As per the provisions of draft DSM Regulations 2024, there is no ECR recovery & incentive to support the grid by under-injection if $f > 50.00$ Hz and for over-injection if $f < 50.00$ Hz in excess of the limit of 10 % of SG or 100MW whichever is less.

Submission: Hon'ble CERC, vide 01/SM/2023 has provided incentive for supporting the Grid in situations when frequency is beyond the range of 49.95Hz to 50.03Hz, by way of over-injection or under-injection in excess of the volume limit of 10 % of SG or 100MW whichever is less.

While issuing the above order, Hon'ble commission has highlighted that:

“... the Commission observes that though some improvement in the frequency excursions above 50.05 Hz was observed, the overall frequency profile still remains a matter of concern. The required support from the buyers and the sellers in the form of Reserves and Ancillary Services, as was envisioned, under the Ancillary Services Regulations dated 31.01.2022, has not been forthcoming. The general impression given by the buyers and the sellers is that prior to 05.12.2022, when the deviation charges were linked to frequency, passive support from the buyers and the sellers used to come because of the inherent incentives in the Regulations which were applicable at that time.”

It is worthwhile to mention that India is facing unprecedented growth in power demand. The Ministry of Power (MoP) has issued orders under section-11 of the electricity act the imported coal base plants and the gas-based power plants in order to address the escalating electricity demand in year 2024 and ensuring continuous supply of electricity in the public interest while maintaining the grid security. The Grid operator after over-viewing the grid conditions, deploys ancillary services and at times even costlier RLNG based gas generations are being brought into service under Ancillary services for maintaining the Grid frequency. However, despite such remedial actions, it is being observed that many times frequency goes beyond 50 Hz.

Under such situations it will be beneficial from grid stability point of view to incentivise a generator if it has capability to support beyond 10 % of SG or 100MW whichever is less. It may be appreciated that such generation support is available from the stations which are already on bar and immediately provide support to the grid whenever frequency deviations occur. Further from system point of view, such support is much cheaper than the costly ancillary services like RLNG based gas stations and is readily available against the ancillary services which may require direction to provide the support.

It is worthwhile to mention that, as per the provisions proposed in the draft Regulation although over injection in low frequency is significantly benefitting the grid situation, but the generator is not even getting his fuel cost, let alone any incentive over and above the cost for mitigating the grid situation. Therefore, there is need to review the provisions and following is proposed:

It is submitted that, for over injection if $f < 50.00\text{Hz}$ and for under injection if $f > 50.00\text{Hz}$, the Deviation charges for deviation beyond [10 % of SG or 100MW whichever is less] may be same as the Deviation charges for deviation within [10 % of SG or 100MW whichever is less]

4. Deviations in time blocks when Schedule is less than minimum turn down level (MTL)

Submission: It may please be noted that many times beneficiaries are giving schedules as per their own considerations but without considering technical limitations of a generating unit or the grid stability. The minimum turn down level (MTL) is a technical imperative for the machine and therefore for safe and stable operations, units are constrained to over-inject into the Grid in the blocks wherein beneficiaries are giving less than MTL schedules.

Post implementation of IEGC 2023 the percentage of Time block with Schedule < MTL has significantly increased. The details for some of the NTPC stations for the period from 01.10.2023 to 31.03.2024 is as shown below:

Sr.No.	Station	% of Time blocks with SG< MTL
1	Farakka-I&II	16.58
2	Kudgi	14.82
3	Barh-II	11.69
4	Gadarwara	8.99
5	Mouda-II	7.47
6	Tanda-II	4.75

Though as per IEGC 2023, the generator has an option to go for USD whenever schedules are below MTL but most of the times, practically it is not possible, as the stations are given low schedules only for a short period of time (few intermittent blocks) and the generator is expected to ramp up to higher schedules (many times full schedules) during other blocks. The station has to be kept On-bar to meet the peak demand and support the grid.

It may be appreciated that such scheduling pattern poses a risk for the stability of the grid as thermal units cannot operate below MTL and thermal units are forced to over inject in Grid when schedule is below MTL. In alternate scenario if a generator opts to go under USD, it may deprive the grid of the spinning reserves which may lead to more adverse situation.

Thus, it can be seen that in current scenario, due to implication of DSM on such over injections the generator is being panelised for keeping the unit and bar and supporting the Grid during peak demand.

In view of the above, it is submitted that in order to protect generator from the losses due over injection for the infeasible scheduling behaviour of beneficiaries, the generator may be paid at the rate of reference charge rate for the over injections to keep the unit up to MTL level. Hence while normal over injection can be penalized, the following provision may please be provided in the Regulation 8, for over injections caused due to infeasible schedules.

A seller shall be paid at the rate of Reference charge Rate for over injection due to schedule below minimum turn down level.

5. DSM implications due to infeasible schedules on account of ramping.

Submission: Generators often get high number of ramp up and ramp down schedules on daily basis. The number of ramps received by some of the NTPC stations **at the rate of 1% of ramp rate (excluding ramps below 1% ramp rate)** for the blocks during the period FY 23-24 are mentioned below:

NTPC Station	Ramp up/down received during 2023-24
Unchahar-I	2245
Kahalgaon-I	1392
Solapur	1061
Bongaigaon	1028
Unchahar-IV	944
Telangana	903
Barh-II	880
Khargone	860

It may please be noted that after two consecutive blocks of same schedule, during 1st ramp-up/down time block or ramp direction change without giving flat schedule in between (i.e., V or \wedge pattern), achieved ramp will only be 50% of the scheduled ramp which is depicted as below:

Illustration:

Illustration-1: 1st ramp up of 1% per minute.

- a) A generation station with capacity of 1000 MW might get a schedule of 600 MW in one block (say block no. 66) and 750 MW Schedule in the next block (block no. 67) as depicted in **Table-1**. Considering ramp rate of 1%/ minute for the station ($1\%/minute \times 1000 \text{ MW} \times 15 \text{ minute} = 150 \text{ MW}$), it would appear to be within the capability the station to meet the schedule.
- b) With the feasible ramping capability, the station would be able to achieve 750 MW only at the end of block no.67. The Average Generation for this 67th block would be 675 MW and the station would get penalized due to deviation (here -75 MW) in Actual Generation from Scheduled Generation.

Block No.	SG (MW)	AG (MW)	Deviation (MW)
65	600	600	0
66	600	600	0
67	750	675	-75

Table-1

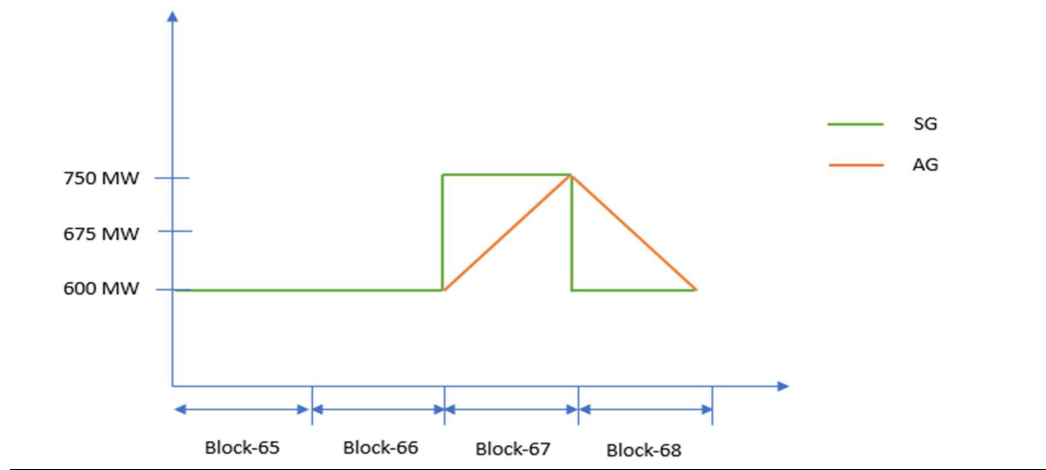
Hence it can be observed that despite operating at 1% ramp rate the generator shall incur DSM liability.

Illustration-2: “V” or “Λ” pattern of ramping

- a) A generation station with capacity of 1000 MW might get a schedule of 600 MW in block no. 66, 750 MW Schedule in Block no. 67 and again 600 MW in Block no. 68 as depicted in **Table-2**.
- b) With the feasible ramping capability, the station would be able to achieve 750 MW only at the end of Block no. 67 and 600 MW at the end of Block no. 68 as depicted in **Graph-1**. The Average Actual Generation both for Block no. 67 & Block no. 68 would be 675 MW and the station would get penalized due to deviation of -75 MW in Block no. 67 & +75 MW in Block no.68.

Block No.	SG (MW)	AG (MW)	Deviation (MW)
65	600	600	0
66	600	600	0
67	750	675	-75
68	600	675	75

Table-2



Graph-1

Hence it can be observed that despite operating at 1% ramp rate the generator shall incur DSM liability. If such ramp up/down continues to occurs for more than one consecutive time blocks, the generator shall incur more DSM loss despite operating at 1% ramp rate.

It is also worthwhile to mention that during ramps, mills and other auxiliaries have to be taken in or out of service. For instance, for a 500MW unit, BHEL manual suggests that number of mills to be kept in service increases from 4 to 5 at 55% load to 6 to 7 at 100 % load, depending on quality of coal being fed to a 500 MW unit and vice versa.

Further, it may please be noted that in compliance with the Regulation 30(2)(iii) of CERC (Terms and Conditions of Tariff) Regulations-2019, NLDC has issued “Detailed Guidelines for Assessment of Ramping Capability of ISGS” dtd 30.12.2020. The said guidelines have noted that generating stations may have requirement of taking

in/cutting out mills, and other auxiliaries during ramps and clause-4(5) [page-5] of the guidelines provides that:

“...while calculating F, for the blocks where the scheduled ramp in preceding block was less than 0.5%/min, if the ramp in actual generation is greater than or equal to 0.5%/min, that block shall be counted in F (i.e., ISGS shall be considered to have achieved 1%/min in that block).”

Thus, it can be observed that the above-mentioned guidelines consider the ramp rate of 0.5%/min in the first block of the ramp equivalent to the ramp rate of 1%/min in that block.

This issue has been highlighted many times before NLDC and NLDC has appreciated the issue and the necessary changes in the scheduling software have been incorporated by RLDCs for giving schedule to ISGS from beneficiaries. However, the similar change in the scheduling software has not been incorporated for giving the schedules due to SCED/TRAS.

Due to such anomaly in scheduling, generators are continuing to suffer DSM losses even after achieving 1% ramp rate.

Therefore, in case of 1st ramp-up/down block and “V” or “Λ” pattern ramping, the seller should get paid for Over-injection or pay back for under injection @ Reference charge rate irrespective of frequency and following provision may be added in the Draft Regulations:

In case of blocks having ramps (up or down) and deviations occurring even after 1% ramp rate fulfilment by the seller, the seller may be paid back for Over-injection or pay back for under injection @ Reference charge rate irrespective of frequency.

6. DSM charges in case of Partial outage

Regulation 8(12) of the draft regulations provides that:

“Notwithstanding anything contained in Clauses (1) to (5) of this Regulation, in case of forced outage of a seller, the charges for deviation shall be @ the reference charge rate for a maximum duration of eight-time blocks or until the revision of its schedule, whichever is earlier.”

Submission: It may please be noted that operation of thermal stations involves running large number of auxiliary systems in tandem, and unit capability gets affected due to various factors beyond the reasonable control of the generator e.g. breakdown of auxiliaries, changes in weather conditions, variations in the coal quality etc., which require DC revisions.

It is pertinent to mention that considering the submissions of generating stations, Hon'ble CERC has allowed limited numbers of DC revisions due to reasons such as a partial outage of the unit or variation of fuel quality or any other technical reason to be recorded in writing vide its Suo-motu order 18/SM/2023 dtd. 18.12.2023.

Though the commission has pleased to allow the revision of DC on account of partial outage, the generator continues to bear the DSM implication till the schedule gets revised on account of partial outage for the reason beyond its reasonable control.

Therefore, it is submitted that the charges for deviation in case of partial outage may also be considered in line with the provisions for forced outage and Regulation 8(12) of the draft regulation may be modified as follows:

“Notwithstanding anything contained in Clauses (1) to (5) of this Regulation, in case of forced outage or partial outage of a seller, the charges for deviation shall be @ the reference charge rate for a maximum duration of eight-time blocks or until the revision of its schedule, whichever is earlier.”

7. DSM charges for the period starting from start-up till reaching Minimum Turn down level (MTL)

Submission: It is pertinent to mention that during start-up of a generating unit, most of the control loops like Feed water control, coal flow control, primary & secondary air flow control etc. are in manual mode and parameter variations are higher than usual. These inadvertent deviations in actual generation from the scheduled till reaching the minimum turndown level (MTL) are beyond reasonable control of the operator.

It is submitted that suitable provisions are required to be incorporated in the draft regulation so that the settlement for over-injection or under-injection from the schedule till MTL is achieved is settled @ Reference charge rate irrespective of frequency.

In view of above following provision may please be added under regulation 8 as below:

In case of startup of a thermal generating station, the DSM charges Receivable by the Seller for Deviation due to over injection and DSM charges payable by the Seller for Deviation due to under injection shall be @ the reference charge rate for the period starting from start-up till reaching MTL, irrespective of the Grid frequency.”

8. Treatment of Infirm Power Injection:

Regulation 8 (8) of the draft regulation provides that:

“The charges for deviation for injection of infirm power shall be zero: Provided that upon such infirm power being scheduled, the charges for deviation for such power shall be as applicable for a general seller or WS seller, as the case may be.”

Submission: The CERC (Terms and Conditions of Tariff) Regulations 2024 stipulates the following wrt the Capital Cost of Project:

Quote

19(2) The Capital Cost of a new project shall include the following:

...

(g) Adjustment of revenue due to the sale of infirm power in excess of fuel cost prior to the date of commercial operation as specified under Regulation 6 of these regulations

....

Unquote

The proposed provision of draft DSM Regulations would mean no payment/ fuel reimbursement to the generator on account of injection of infirm power into the grid in case of non-scheduling of power. This will lead to capitalization of the entire fuel cost used during commissioning activities, which will push up the total capacity cost of a project and increase the AFC burden on the beneficiary states.

From the available data of Fuel cost before COD (infirm injection), it is estimated that in case of 800 MW stations, the impact on Normative FC could be around 6-8 Paise/ Unit.

It is submitted that, the fuel costs incurred for injection of power may be reimbursed to the generator from the Pool and the Draft regulation 8(8) may be modified as follows:

“The charges for deviation for injection of infirm power shall be zero:

Provided that the seller shall be paid reference charge rate from the pool;

Provided further that upon such infirm power being scheduled, the charges for deviation for such power shall be as applicable for a general seller or WS seller, as the case may be.”

9. Non revision of schedule under T-GNA in case of DC revision on partial outages

Submission: Based on the request received from various discoms due to less quantum of GNA, NTPC stations have issued NOC to different DISCOM to enable them to schedule power of their entitlement under TGNA.

In case of forced outage of the unit, whenever the DC is being revised the corresponding schedule under T-GNA is getting revised.

However, whenever the DC is being revised by the generator due to partial outage the power scheduled by beneficiary under TGNA is not being revised, causing schedule higher than the DC and DSM loss for the generators.

As mentioned above the long term tied up power is being scheduled by beneficiary under TGNA due to the requirement of beneficiaries but due to non-revision of schedule of such power, generators are incurring the DSM loss without any fault on its part but only due to regulatory provisions.

Hence under such circumstances revision of schedule under T-GNA may also be allowed and till such time the deviation occurred due to above reason may be settled at reference charge rate.

10. Definition of Reference Charge Rate:

The Draft regulation provides that:

“ ‘Reference Charge Rate’ or ‘RR’ means

(i) in respect of a general seller whose tariff is determined under Section 62 or Section 63 of the Act, Rs/ kWh energy charge as determined by the Appropriate Commission, or

(ii) in respect of a general seller whose tariff is not determined under Section 62 or Section 63 of the Act, the daily weighted average ACP of the Day Ahead Market segments of all the Power Exchanges, as the case may be;”

Submission: It is submitted that in regards with Section 62 generating stations, Regulation 64(5) of the Tariff regulations-2024 provides that:

Quote

14. Components of Tariff: (1) The tariff for the supply of electricity from a thermal generating station shall comprise two parts, namely, capacity charge (for recovery of annual fixed cost consisting of the components as specified in Regulation 15 of these regulations) and energy charge (for recovery of primary and secondary fuel cost and cost of limestone and any other reagent, where applicable as specified in Regulation 16 of these regulations).

(2) The Supplementary tariff consisting of supplementary capacity charges and supplementary energy charges, on account of the implementation of revised emission standards in existing generating stations or new generating stations, as the case may be, shall be determined by the Commission separately.

(3) The capacity charge and energy charge of a generating station shall be determined in accordance with the provisions of Chapter 11 of these regulations.

Unquote

Hence the computation of energy charge rate for generating stations is done as per the provisions & formulations provided in Tariff regulations on month-to-month basis. Therefore, for the sake of more clarity the definition of **‘Reference Charge Rate’** or **‘RR’** may be modified as follows:

‘Reference Charge Rate’ or ‘RR’ means

(i) in respect of a general seller whose tariff is determined under Section 62 or Section 63 of the Act, Rs/ kWh energy charge computed as per the provisions of Tariff regulations as applicable time to time or

(ii) in respect of a general seller whose tariff is not determined under Section 62 or Section 63 of the Act, the daily weighted average ACP of the Day Ahead Market segments of all the Power Exchanges, as the case may be;

11. Requirement of providing definition of ‘Scheduled Generation’

Regulation 6 of the draft Regulation provides that:

“6. Computation of Deviation

(1) Deviation in a time block for general sellers shall be computed as follows: Deviation-general seller (DGS) (in MWh) = [(Actual injection in MWh) – (Scheduled generation in MWh)].”

Submission: The term ‘**scheduled Generation**’ used for computation of Deviation has not been clearly defined in the draft regulation. In view of various components of Scheduled generation there is need to define the schedule generation, to ensure uniformity in DSM accounts issued by different RPCs, Accordingly, the Schedule generation may be defined as:

Scheduled generation in MWh for DSM= Beneficiary Schedule+ SCED+ Market operation Schedule+ TRAS+ SRAS.

12. Submissions on Wind/Solar related provisions:

(i) Requirement of reviewing the proposed Tolerance band for Solar & Wind Projects

Submission: Clause 8 (4) (Charges for Deviation) provides as under:

*“Charges for Deviation, in respect of a **WS Seller being a generating station based on wind or solar or hybrid of wind–solar resources, including such generating stations aggregated at a pooling station through QCA shall be without any linkage to grid frequency, as under:***

.....”

Submission: Review of proposed Tolerance band for Solar & Wind Projects:

The draft Regulation has proposed the following tolerance bands with penalty for Solar & Hybrid generators:

Tolerance Band	Over Injection (Received by Seller)	Under Injection (Payable by Seller)
Up to 5%	@ Contract Rate	@ Contract Rate
5% to 10%	@ 90% of Contract Rate	@ 110% of Contract Rate
10% to 20%	@ 50% of Contract Rate	@ 150% of Contract Rate
Above 20%	Zero	@ 200% of Contract Rate

Similarly, the following tolerance band with penalty is proposed for wind Generators:

Tolerance Band	Over Injection (Received by Seller)	Under Injection (Payable by Seller)
Up to 10%	@ Contract Rate	@ Contract Rate

10% to 15%	@ 90% of Contract Rate	@ 110% of Contract Rate
15% to 25%	@ 50% of Contract Rate	@ 150% of Contract Rate
Above 25%	Zero	@ 200% of Contract Rate

With the higher penetration of solar and wind in the total generation capacity, Hon'ble commission has proposed to tighten the tolerance band for better grid management. However, it is pertinent to mention that forecasting tool and technology has yet not improved to the extent to predict accurately and operate within the tightened band.

In the DSM Regulation 2022, Hon'ble Commission has already tightened the operating band in comparison with earlier band notified in 2015. This tightening of operating band has resulted higher DSM charges on Solar/Wind Developer as it was not achievable with existing forecasting tool and technology.

Now Hon'ble CERC has proposed to further tighten the tolerance band in comparison with DSM Regulations 2022. The said band will put more financial burden on Solar/Wind Developer in terms of higher Deviation Charges. Following points may be considered by Hon'ble CERC in the proposed DSM Regulation'2024:

- a) The requirement of tightening the tolerance band is appreciable, as accurate forecasting eases the task of grid management. But in the last few years, there has been no significant technological advancement or breakthrough observed in the space of forecasting and scheduling at the global level, which could increase the accuracy of forecasting drastically.
- b) The level of accuracy for forecasting has remained almost constant in the past few years, but more stringent regulations post-2022 have put additional burden on developers and squeezed their profit margins.
- c) Specifically, in the case of wind projects, it is very unlikely that the forecasting will match reality. Wind projects need to bear a high penalty due to a major deviation in actual generation from the forecasted one.
- d) Currently, schedule revisions are allowed before 6 blocks (1.5 hours). To accurately forecast the generation before 7-8 blocks or almost 2 hours prior is quite a challenging task, and further tightening of the tolerance band will make the task even more difficult.
- e) RE projects with major capacities are bid out via a competitive bidding mechanism under Section 63 of Electricity Act'23. Developers may start factoring in financial implications resulting from more stringent tolerance band for operation at the bidding stage itself more judiciously, and it might be reflected in higher tariffs post-implementation.
- f) The Performance of Solar Stations for the FY 2023-24 w.r.t. Deviation Charges is as follows:

	Under Injection (-) & Over Injection (+)	
NGEL RE Project	15 Min. Time blocks (No.) /(% of time blocks)* (Deviation Range -5% to -10% & +5% to +10%)	15 Min. Time blocks (No.) /(% of time blocks)* (Deviation Beyond -10% & +10%)
Anantapur (250 MW)	5334 (28.03%)	2634 (13.84%)
Ettyapuram (230 MW)	4716 (24.78%)	5594 (29.39%)
Devikot (150 +90 MW)	4393 (23.08%)	3659 (19.23%)
Fatehgarh (296 MW)	5059 (26.58%)	3040 (15.97%)
Nokhara (300 MW)	4770 (25.06%)	4472 (23.50%)
SKB I&II (150 + 250 MW)	4752 (24.97%)	4695 (24.67%)
Avg. Deviation (%)	4837 (25.42%)	4015.67 (21.10%)

* % of time block has been considered based on 13 Solar hours in a day.

From the above data, it has been observed that out of total 19,032-time blocks of 15 minutes in a FY, on an avg. 4837 (25.42%) time blocks experienced deviation in the range of 5% to 10%, and 4015.67 (21.10%) time blocks experienced deviation beyond 10% due to over/under injection.

If the proposed draft would be implemented, then 4837 (25.42%) newer time blocks would be exposed to penalty, and 4015.67 (21.10%) time blocks are exposed to higher level of penalty, which is not the case as per the existing regulations.

g) The likely financial impact w.r.t. provisions of draft DSM Reg. 2024 is as follows:

(Rs. In Lakh)

NGEL RE Project (FY 23-24)	Total DSM Impact (Under Injection)	Total DSM Impact (Over Injection)	Total
Draft DSM Regulation 2024	2474.72	1276.15	3750.87
Extant DSM Regulations 2022	1159.80	882.95	2042.75
DSM Regulation 2014	354.74	113.62	468.37
Additional Impact w.r.t. extant Regulation	1314.92	393.19	1708.11
Addition Impact w.r.t. 2014 Regulation	2119.98	1162.53	3282.50

DSM Impact w.r.t extant Regulations

under-injection periods : **2.13** times.
over-injection periods : **1.45** times
Net Impact : **1.84** times

It is clear from above analysis that proposed hike in rate of penalty with squeezed tolerance band in the current draft results in substantially higher deviation charges for solar/wind projects. These proposed changes may hamper the investor's sentiment and restrict the expected cash flow in the sector that is required for reinvestment in the sector to achieve the capacity addition targets.

Based on NTPC experience and accuracy achieved by appointed QCA at our various RE assets, it is requested to relax and revised the tolerance band with applicable penalty as given below:

In view of above it is requested that following Tolerance Band for Solar & Hybrid may please be considered:

<i>Tolerance Band</i>	<i>Over Injection (Received by Seller)</i>	<i>Under Injection (Payable by Seller)</i>
<i>Up to 15%</i>	<i>@ Contract Rate</i>	<i>@ Contract Rate</i>
<i>15% to 25%</i>	<i>@ 90% of Contract Rate</i>	<i>@ 110% of Contract Rate</i>
<i>25% to 30%</i>	<i>@ 50% of Contract Rate</i>	<i>@ 150% of Contract Rate</i>
<i>Above 30%</i>	<i>Zero</i>	<i>@ 200% of Contract Rate</i>

Similarly following Tolerance Band for Wind Generators may be considered:

<i>Tolerance Band</i>	<i>Over Injection (Received by Seller)</i>	<i>Under Injection (Payable by Seller)</i>
<i>Up to 15%</i>	<i>@ Contract Rate</i>	<i>@ Contract Rate</i>
<i>15% to 25%</i>	<i>@ 90% of Contract Rate</i>	<i>@ 110% of Contract Rate</i>
<i>25% to 30%</i>	<i>@ 50% of Contract Rate</i>	<i>@ 150% of Contract Rate</i>
<i>Above 30%</i>	<i>Zero</i>	<i>@ 200% of Contract Rate</i>

(ii) Company-wide Aggregate scheduling for all the generators falling under a single RLDC.

Submission: IEGC, Regulations 2023 provides that NLDC shall submit procedure for aggregation of pooling stations for the purpose of combined scheduling and deviation settlement for wind or solar or renewable hybrid generating stations that are regional entities, within six months of notification of these regulations for approval of the Commission.

Accordingly, NLDC had issued the draft procedure however, the CERC-approved procedure is yet to be issues by NLDC. The draft procedure proposes that any WS

Generator may opt QCA which shall perform scheduling & dispatch function at pooling station level.

The aggregate scheduling is likely to reduce the forecasting error (in %) (Deviation b/w SG vs AG) as the forecasting is done on aggregate basis for various generators spread in a large area.

In view of above it is submitted that the procedure is issued at the earliest or at least along with DSM Regulations 2024.

Further, it is also submitted that procedure may be formulated to facilitate company-wide Aggregate scheduling for all the generators falling under a single Regional Load Despatch Centre.

(iii) Schedule revision for WS generators may be made effective from 4th Block

Submission: With the implementation of the IEGC 2023 w.e.f. 01.10.2023, the Forecasting and revision in schedules for WS generator has become more strenuous since as per Grid Code, the revised schedule becomes effective from 07th and 08th time-block instead of 4th block as was existing under IEGC 2010.

The increase in schedule revision time has made intraday revisions of schedule difficult and non-accurate since it requires accurate weather prediction at least 02 hours before.

This in turn is resulting in increase in DSM impact for RE generators as the actual generation for RE generators mainly depend upon Solar Irradiance or Wind speed which changes frequently due to local weather conditions (such as cloud cover, sandstorms, rain, etc.) and such variations are difficult to predict 2 hours before.

It is submitted that the schedule revision for WS generators may please be made effective from 4th Block instead of 7th /8th block to promote consistent growth of new capacity addition.

13. Issues related to Payment of Charges for Deviation

(i) Relaxation in timeline for payment of charges for deviation

Regulation 10 (1) provides the following:

“The payment of charges for deviation shall have a high priority, and the concerned regional entity shall pay the due amounts within 7 (seven) days of the issue of the statement of charges for deviation by the Regional Power Committee, failing which late payment surcharge @ 0.04% shall be payable for each day of delay.”

Submission: Payment processing and remittance, every time within 7 days of issue of accounts is a very stringent timeline, specifically when the statements are issued in late evening or when there are intervening holidays.

It is submitted that the payment period may be made 10 days or alternatively, may be made seven working days.

(ii) Regulation of power to the entities with outstanding payments

Regulation 10 (3) provides the following:

“In case of failure to pay into the Deviation and Ancillary Service Pool Account within 7 (seven) days from the date of issue of the statement of charges for deviation, the Regional Load Despatch Centre shall be entitled to encash the LC of the concerned regional entity to the extent of the default and the concerned regional entity shall recoup the LC amount within 3 days.”

Submission: The Explanatory memorandum issued for the draft Regulation provides the following:

“Grid India has communicated that there is a deficit of the order Rs. 400 Crore in the DSM and Ancillary Services pool account as on March 2024, resulting in delays in the payments to ancillary service providers.”

Such a deficit in the pool causes a delay in payment to generators which in turns leads to difficulty in arranging the fuel and particularly the gas.

Though one of the significant reasons for such deficit is requirement of payments to Ancillary services providers but at the same it is also aggravated by delay in *payment of charges for deviation* to the pool.

It is required that power supplies to the entities whose payments remain outstanding beyond a certain time, may be regulated.

Such provision shall act a deterrent to such entities and help in making the due payment to generators timely.

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