

**Before the**  
**MAHARASHTRA ELECTRICITY REGULATORY COMMISSION**  
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**In the matter of**

**Removal of Difficulty in applicability of State Periphery Charges under the MERC  
(Forecasting, Scheduling and Deviation Settlement for Solar and Wind Generation)  
Regulations, 2018**

**ORDER**

**Dated: 19 April 2021**

1. The MERC (Forecasting, Scheduling and Deviation Settlement for Solar and Wind Generation) Regulations, 2018 (**F&S Regulations**) were notified on 20 July 2018 and commercial implementation of these Regulations commenced from 6 January 2020. Prior to commencement of commercial arrangement, the Commission vide common Order dated 30 September 2019 in respect of 43 Renewable Energy (**RE**) Generators addressed various difficulties in implementation of F&S Regulations including the issues faced during mock trial mainly related to Qualified Co-ordinating Agency (**QCA**) registration, appointment of QCAs, meter data accessibility, payment security arrangement, and applicability of State Periphery Charges for computation of Deviation Settlement Charges (**DSM**) charges. However, the specific request to waive off the State Periphery Charges for RE Generators was not considered in that Order.
2. After commercial implementation of these Regulations in January 2020, 28 RE developers approached the Commission with their separate Petitions (Case Nos. 12 to 20 of 2020, 29 to 42 of 2020, 49 to 51 of 2020, 55 of 2020 and 56 of 2020) wherein they prayed for an additional trial period for implementation of the F&S Regulations claiming that the additional trial period was needed to assess the challenges faced by them in compliance of the F&S Regulations. They also raised the issue related to delay in issuance of the amended RE DSM procedure dated 19 December 2019 by the Maharashtra State Load Despatch Centre (**MSLDC**) under the F&S Regulations. The Petitioners, inter alia, had raised the issue regarding absence of clarity in computation of the State periphery charges in the DSM bills issued by MSLDC. They had contended that if QCA registration for most of the new Pooling Sub-stations (**PSS**) could get completed as late as in January and February 2020, then it was not evident as to how MSLDC

derived the State Periphery Charges in absence of absolute deviation of all PSSs for the State level Deviation.

3. It was observed that some RE generators had also approached the Hon'ble High Court challenging the F&S Regulations on the issue of applicability of State Periphery Charges as the levy of deviation charges at State Periphery to RE generators was alleged to be excessive which adversely impacted their revenues thus making RE project economically unviable. The Stay Applications filed by the RE generators were disposed off as infructuous by the Hon'ble High Court vide Order dated 14 August 2020, however the main matters on merit are pending for adjudication. Further, 9 RE Generators (Renew Wind Power and Others) have also challenged the Commission's common Order dated 30 September 2019 to the extent of applicability of State Periphery Charges under Regulation 12.1 (d) of F & S Regulations before the Hon'ble Appellate Tribunal for Electricity in Appeal No. 237 of 2020, which is also pending for adjudication.
4. Vide its Order dated 12 August 2020 in Case No. 12 to 20 of 2020 and batch, all the issues raised by the Petitioners were addressed by the Commission and it was observed that the need for additional trial period could not be established by the Petitioners, hence the prayer for additional trial period was not granted by the Commission while passing the Order. However, in view of the concerns raised by the Petitioners on the issue of State Periphery Charges, the Commission deemed it prudent to undertake scrutiny of the sample bills so as to ascertain whether or not the computation of claims towards impact of State Periphery Charges in RE DSM bills were reflective of the principles stipulated under F&S Regulations and procedures formulated thereon. Accordingly, the Commission directed the DSM Working Group (which is formed by the Commission for addressing difficulties in the implementation of MERC (Deviation Settlement Mechanism and Related Matters) Regulations, 2019) to undertake detailed scrutiny of the computation of impact of the State Periphery Charges in RE DSM bills vis-à-vis the requirements laid down under the RE DSM procedures and the F&S Regulations. The relevant para. of the Order is as under:

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**3. The DSM Working Group is directed to undertake detailed scrutiny of the computation of impact of the State Periphery Charges vis-à-vis the requirements laid down under the procedure and the Regulations. Maharashtra State Load Dispatch Centre is directed to extend necessary co-operation to DSM Working Group and provide all the required data for undertaking analysis. The DSM Working Group would complete the analysis of the sample RE DSM bills already issued by Maharashtra State Load Dispatch Centre within three months from the date of issuance of this Order and submit its report to the Commission.**

*4. From the date of issuance of this Order, Maharashtra State Load Dispatch Centre would compute the impact of State Periphery Charges as per existing procedure, however while issuing the RE DSM bill to QCAs, only the RE DSM Charges at PSS level as specified under Regulation 7.2 of MERC F&S Regulations [viz. Excluding reference to Regulation 12 as per footnote at Table-1 of Regulation 7.2 of MERC F&S*

*Regulations] shall be made applicable and the impact of State Periphery Charges [on account of Regulation 12.1(d)] shall not be considered till the further directions of the Commission in the matter.*

**5. Based on the outcome of the analysis of the DSM Working Group, the Commission shall decide the further course of action with respect to component of RE DSM State Periphery Charges already collected and to be collected in the future bills by MSLDC.”**

5. Accordingly, the DSM Working Group has analyzed the RE DSM bills issued by MSLDC during the period 6 January 2020 to 26 July 2020 (29 Weeks) and submitted its interim Report to Commission on 12 November 2020 and thereafter the final report on 12 April 2021 along with its various findings and recommendations on the issue of State Periphery Charges.

**Summary of the DSM Working Group Report:**

6. The objective of the analysis was to review the computation of State Periphery Charges vis-à-vis the Regulation 12.1 of the F&S Regulations and recommend to the Commission its opinion on continuation or otherwise of RE DSM State Periphery Charges, to be levied in the future bills and those which are already collected after reviewing the methodology of computation of these charges.
7. The Working Group, in its report, has carried out analysis of RE Deviation Bills issued by MSLDC for 29 weeks (19488 Time-blocks) starting from 6 January to 26 July 2020. Total 115 (104 PSS and 11 nos. of small capacity PSS merged with nearby PSS) Pooling Substations (PSS) were covered in the analysis which included 80 nos. of Wind PSS and 35 nos. of Solar PSS. For the month of January 2020, 101 PSS were considered for scheduling which gradually increased to 104 PSS (which included 11 small capacity PSS) in the month of July 2020. The State deviation bills issued by WRPC for the same period were also examined.
8. Key findings of the analysis undertaken by the DSM Working Group are as under:
  - i. For Deviation error analysis, four sample PSS were selected (two wind PSS [one with higher capacity and another with small capacity] and two Solar PSS) and it was observed that in case of Wind PSS, for over 85% of the time-blocks, the Absolute Error was within the range of +/-15% and in case of Solar PSS, for over 92% of the time-blocks, this Error was within the range of +/-15% band. This is irrespective of the size of the installed capacity at PSS.
  - ii. Comparison of scheduled generation with actual generation (Wind +Solar) for the period of 29 weeks indicates that for majority of the weeks (26 out of 29 weeks), actual generation (complete week taken together) is less than the scheduled generation (i.e., under-injection). Only in the 3 weeks there is an over-injection. Thus, there was an under-injection by the RE Generators in most of the weeks. The average Deviation was -2.83%. Time-block wise RE Deviation is in the range of -16.57% to + 20.80%.

- iii. The difference between scheduled generation and actual generation is on higher side during initial weeks of 29 weeks analysis period, which has reduced in later weeks towards weeks of June and July 2020. This may be due to improvement in forecasting accuracy or forecasting during windy season could be relatively better.
  - iv. If the State as a whole is considered, there was an under-drawal for 10572 time-blocks (54% of total) and over-drawal for 8916 time-blocks (46% of total) for 29 weeks (Total 19488 Time-blocks). The net deviation of State over 29 weeks was 118 MUs (under-drawal). This is mainly because of netting of +ve and -ve deviations of the State as a whole.
  - v. The Average RE DSM Charges at PSS level (**PSS Charges**) are 5.89 paise/unit whereas Average RE Deviation Charges due to Periphery impact (**Periphery Charges**) are 9.52 Paise/unit making the total RE DSM charges of 15.41Paise/unit.
  - vi. The total PSS level deviation Charges billed are Rs. 32.61 Cr. whereas total Periphery Charges billed to PSS are Rs. 37.27 Cr. making the total RE DSM Charges billed on RE PSS as Rs. 69.88 Cr.
  - vii. The Commission in its common Order dated 30 September 2019 has clarified that, it is necessary to ensure that declared available capacity of Solar generation will be “nil” during night hours. Accordingly, MSLDC has incorporated necessary provision in the software which would ensure that the non-zero availability declared by Solar PSS during non-solar hours (18.30 Hrs. to 06:15 Hrs.) will not be accepted.
  - viii. Further, to monitor false/error declaration by the wind generators, MSLDC has confirmed that it has modified the software to generate an error message in case, the PSS declares higher Availability than the installed capacity of PSS.
9. Since the focus of the analysis was on the State Periphery Charges, the DSM Working Group has studied the time-block wise impact of RE deviation on state periphery deviation (O/D or U/D) under the following four quadrants as summarized below:

<b>State periphery RE Generation</b>	<b>Over-drawal (O/D)</b>	<b>Under-drawal (U/D)</b>	<b>SUM</b>
RE Over-Injection	1898 (10%) <b>(Reduce O/D)</b>	2880 (15%) <b>(Increase U/D)</b>	<b>4778 (25%)</b>
RE Under-injection	7018 (36%) <b>(Increase O/D)</b>	7692 (39%) <b>(Reduce U/D)</b>	<b>14710 (75%)</b>
<b>Total no. of time-blocks</b>	<b>8916 (46%)</b>	<b>10572 (54%)</b>	<b>19488</b>

Based on over-drawal/under-drawal from the grid at the State periphery and status of RE deviation (Under-injection/Over-injection), following four scenarios emerged which have been examined by the DSM Working Group, as explained below:

**a. Scenario I:- State Over-drawal and RE Over-injection (1898 time-blocks i.e. ~10% of the total 19488 time-blocks of 29 weeks ):-**

The State was payable under these time-blocks of O/D. The over-injection by RE helped the State to reduce the over-drawal to some extent. Since RE over-injection has supported by reducing over-drawal at State periphery, RE Periphery Charges are not payable by RE although State as a whole was required to pay DSM Charges during these time-blocks.

**b. Scenario II: State Under-drawal and RE Over-injection (2880 time-blocks i.e. ~15% of the total 19488 time-blocks of 29 weeks):-**

The State was receivable under these time-blocks of U/D. Since RE over-injection has contributed to periphery receivable for the State, proportionate share of receivable Deviation Charges for the State as a whole, has been shared with RE Generators.

**c. Scenario III: State Over-drawal and RE Under-injection (7018 time-blocks i.e. ~36% of the total 19488 time-blocks of 29 weeks):-**

The State was payable under these time-blocks of O/D. As RE under-injection, has also contributed to increasing State Over-drawal, the State Periphery DSM Charges are apportioned to RE Generators in proportion to their under-injection. Hence, RE Periphery DSM Charges are payable.

**d. Scenario IV: State Under-drawal and RE Under-injection (7692 time-blocks i.e. ~39% of the total 19488 time-blocks of 29 weeks):-**

The State was receivable under these time-blocks of U/D. As RE was under-injecting, it did not contribute to State's receivable DSM Charges, Hence the State's Receivable Charges are not shared with RE Generators.

The summary of RE DSM Charges and State DSM Charges as given in the Report of DSM Working Group is provided in the following table:

Parameters	State O/D and RE O/I	State U/D and RE O/I	State O/D and RE U/I	State U/D and RE U/I	Total
No of Time Blocks	1898	2880	7018	7692	19844 No.
State O/D or U/D in MUs	70	-145	275	-318	-118 MUs
RE O/I or U/I in MUs ( +ve O/I and -ve U/I)	87	162	-525	-577	-853 MUs
State DSM Charges in Rs. Lakh	1682	2680 (receivable)	7968	6825 (receivable)	Rs.145 Lakh
RE PSS Level Charges in Rs. Lakh (always payable)	576	1004	842	840	Rs. 3262 Lakhs
RE Periphery Level DSM Charges in Rs. Lakh	1 (receivable )	1789 (receivable)	5502	15	Rs. 3727 Lakh

As seen from the above Table, for 29 weeks, State was net payable for Rs. 1.45 Cr. to the Regional pool whereas RE Generators were made payable for Rs. 69.88 Cr., i.e., Rs. 32.61Cr. as PSS Charges and Rs. 37.27 Cr. as State Periphery Charges.

10. The DSM Working Group has verified the State Periphery Charges computed by MSLDC vis-à-vis the State DSM Charges (payable/receivable), RE deviation (over-injection/under-injection) and also adequacy of PSS charges to meet the shortfall at State periphery. The DSM Working Group has concluded that for all 19488 time-blocks of 29 weeks analysis period starting from 6 January to 26 July 2020, MSLDC has correctly calculated State Periphery Charges in line with the F&S Regulations.
11. After undertaking the above stated analysis, the Working Group has provided its recommendations on the State Periphery Charges and these recommendations have been categorized under two issues, viz. (i) Applicability of State Periphery Charges to RE Generators and (ii) Treatment to be given to the State Periphery Charges already collected from RE Generators, as follows:
12. ***Issue No. 1: Applicability of State Periphery Charges to RE Generators***

***DSM Working Group's Recommendations***

- 12.1 MSLDC has calculated State Periphery Charges based on the contribution of RE Deviation at periphery as required under the F&S Regulations. In the existing FBSM framework, Generators' deviations are not calculated separately but the same are indirectly borne by the Distribution Licensees. Further, the timelines of existing Final Balancing Settlement Mechanism (**FBSM**) billing are not aligned with RE DSM Billing due to delay in FBSM billing. Under the existing FBSM framework, the contribution of deviation of Intra-state generators (conventional generators and RE generators excluding Wind and Solar) and deviation of Intra-State Buyers (Distribution Licensees and the InSTS connected full Open Access consumers) cannot be identified as same is not being monitored and presently settlement is being undertaken based on surplus/shortfall of the Distribution Licensees vis-à-vis their contracted generators /sources. Contribution of deviation of Intra-State Generators and Buyers could be clearly identified after implementation of DSM framework (for conventional /Co-generators and Buyers, Discoms, Full OA category) along with RE DSM framework. RE DSM framework has been commercially implemented however, the same for the DSM framework is yet to be commence.
- 12.2 It is observed from the analysis of RE deviations over the period of 29 weeks, PSS Charges are sufficient to meet the impact of RE deviation at State Periphery.
- 12.3 Accordingly, till the commercial implementation of DSM framework to cover conventional generators under ambit of deviation accounting (i.e. MERC (Deviation Settlement Mechanism and Related Matters) Regulations, 2019), the Commission may continue with its directives of deferring State Periphery Charges for RE generators issued under the Order dated 12 August 2020. MSLDC may be directed to continue with the

computation of the State Periphery Charges as per existing procedure, however while issuing the RE DSM bill to QCAs, only the PSS level charges as specified under Regulation 7.2 of MERC F&S Regulations may be made applicable and the impact of State Periphery Charges (on account of Regulation 12.1(d) of the F&S Regulations) may not be considered till further directions of the Commission.

***Commission's Analysis and Ruling:***

12.4 The Commission notes that the Regulation 12 of F&S Regulations specifies the methodology for RE deviation settlement for the State. The Regulation reads as under:

*“ 12.1 The methodology for deviation settlement for the State shall be as follows:*

*(a) The Deviation Charge payable or receivable for the State as a whole at the State periphery shall be determined by the SLDC.*

***(b) The SLDC shall compute the impact of the deviation of the Solar and Wind Energy Generation and its contribution to the Deviation Charge at the State periphery.***

*(c) The SLDC shall compute the Absolute Error, i.e. the difference between the scheduled and the actual energy injected, in respect of each Pooling Sub-Station and each Generator feeding energy directly to another Sub-Station, and shall accordingly determine the amounts payable on account of the Deviation Charge in accordance with Regulations 7 and 8.*

*(d) Any shortfall in the aggregate amount of Deviation Charge payable by Solar and Wind Energy Generators at the State periphery and the amount receivable from them by the Pool Account shall be paid by the respective QCAs in proportion to their deviation reflected at the State periphery.”*

12.5 Thus, for computation of the State Periphery Charges, MSLDC has to compute the impact of the deviation of the Solar and Wind Energy Generation and its contribution to the Deviation Charge at the State periphery. MSLDC has computed the State Periphery Charges in line with these Regulations and also in line with the methodology stipulated in the RE DSM procedure which has been verified by the DSM Working Group. Whenever the State was payable, MSLDC has computed the percentage of RE deviation vis-à-vis the State deviation and the State's payable amount has been apportioned to RE as the RE deviation impact. Further, it has been verified if PSS charges are adequate to meet this RE deviation impact and only in case of shortfall, State Periphery Charges have been worked out. Whenever the State was receivable, same logic has been applied.

12.6 However, it is a matter of fact that the deviation data pertaining to the Intra-State Generators and the Distribution Licensees is presently not available. It cannot be the case that these Intra-State Generators and the Distribution Licensees operate without any deviation. Had there been the data availability of the deviation of conventional generators and the Distribution Licensees, the deviation impact of RE generators could have been

distinguishable from deviation impact of conventional generators and the Distribution Licensees.

12.7 Further, the objective of State Periphery Charges is to meet any shortfall in the aggregate amount of Deviation Charge payable by the RE Generators at the State periphery and the amount receivable from them in the Pool Account. It has been highlighted in the report of the DSM Working Group that PSS Charges levied on RE Generators are sufficient enough, if the entire period of 29 weeks (starting from 6 January to 26 July 2020) is considered together. This may be on account of the fact that although the State has underdrawn (-118 MUs) during the 29 weeks' period due to lower demand and has been receivable for substantial period, the RE Generators have not been able to get share of above receivable as it has under-injected for most of the period of 29 weeks of analysis period. At the same time, the RE generators were required to pay the PSS charges for PSS level deviations beyond permissible error band stipulated in the F&S Regulations.

**12.8 Hence, the Commission finds merit in the recommendation of the DSM Working Group on this issue and accordingly, deems it appropriate to continue its earlier direction passed in the Order dated 12 August 2020 wherein, in exercise of its powers under Regulation 19 of F&S Regulations to remove difficulties in implementation, the Commission had directed to defer levy of impact of State Periphery Charges. The Commission is of the opinion that the grid discipline needs to be enforced in a manner that the defaulters are made responsible for the deviations and this applies equally to Conventional generators, the Distribution Licensees and the full Open Access consumers as well. It is thus necessary to continue to study the impact for a longer period of time. Hence, such deferment of the State Periphery Charges shall be continued till the further directions of the Commission in the matter.**

12.9 MSLDC shall compute the impact of State Periphery Charges as per existing procedure, however while issuing the REDSM bill to QCAs, only the REDSM Charges at PSS level as specified under Regulation 7.2 of F&S Regulations (viz. excluding reference to Regulation 12 as per footnote at Table-1 of Regulation 7.2 of F&S Regulations) shall be made applicable and the impact of State Periphery Charges (on account of Regulation 12.1(d)) shall not be considered till further directions of the Commission in the matter.

13. *Issue No. 2: Treatment to be given to the State Periphery Charges already collected from RE Generators*

***DSM Working Group's Recommendation***

13.1 As per the Order of the Commission dated 12 August 2020, MSLDC has stopped levying State Periphery Charges from the 17<sup>th</sup> week i.e., from 27 April 2020.

13.2 The State Periphery Charges levied to RE generators (from 6 January 2020 till issuance of Order dated 12 August, 2020 (Cases Nos. 12 to 20 of 2020 and others)) may be adjusted



towards future liability of payment of PSS level charges of respective RE generators through QCAs.

*Commission's Analysis and Ruling*

**13.3 The Commission accepts the recommendation of the DSM Working Group and directs MSLDC that the State Periphery Charges already collected from the RE Generators through QCAs during the period from 6 January 2020 to 27 April 2020 (i.e., till issuance of Order dated 12 August 2020 (Cases Nos.12 to 20 of 2020 and others)) shall be adjusted towards future liability of payment of PSS charges of respective RE generators through QCAs. MSLDC, through QCAs, shall ensure that the State Periphery Charges shall be correctly adjusted to the same RE Generators who have paid those charges through QCAs.**

14. The Commission further notes that there have been improvements in forecasting of RE generators after implementation of the F&S Regulations. The objective of implementation of F&S Regulations is to facilitate grid operators for better grid management while accommodating maximum penetration of variable RE integration into grid, as Must run generation while managing state periphery drawal and plan for appropriate balancing requirements /reserve requirements in advance. With this objective, the Commission notes that RE F&S Regulations has positively impacted the deviation at State level:

- i. State's Over-drawal /Under-drawal has improved in 2020 as compared to 2019 and it is well within the permissible band of 49.90 Hz to 50.05 Hz. Out of 35,040 time-blocks in a year, for about 31,428 time-blocks, deviation is within the frequency range of 49.90 Hz to 50.05 Hz. This time-block count is 6% higher as compared to year 2019. This improvement may not be attributed to F&S Regulations alone, however it can be inferred that implementation of F&S Regulations may also have benefited the system.
- ii. As compared to year 2019, in the year 2020, the State deviation error has reduced by 2.5%. This shows that scheduling discipline introduced for RE generators has reduced the deviation at State periphery to some extent.
- iii. As a separate input, the DSM Working Group has provided the following comparison of DSM/ADSM Charges for the State for calendar year 2019 and year 2020.

<b>Particulars of State DSM Charges</b>	<b>2019 (January to December)</b>	<b>2020 (January to December)</b>
DSM Charges in Rs. Lakh	-1502.68	-6945.92
Additional DSM Charges in Rs. Lakh	9272.64	5785.19
Total DSM Charges (DSM +ADSM) in Rs. Lakh	7769.94	-1160.73

- iv. It is seen that in both the years, DSM charges were receivable, however in 2020, it has increased 5 times. Similarly, Additional DSM charges have been reduced by about Rs. 35 Crore. The overall DSM +ADSM charges which were payable in 2019, are

receivable in 2020. There may be other reasons for State receivable like reduction in State demand, availability of more Intra-State generation etc., however, scheduling discipline of RE generation is also possibly one of the important factors which could have benefited in reducing the State periphery DSM and ADSM charges.

15. **Thus, the implementation of F&S Regulations has proved to be in overall interest of State's power sector. Also, the deferment of the State Periphery Charges on RE Generators would also provide relief to the RE Generators. The Commission expects that as the time progresses, the RE Generators/QCAs will gain experience and the forecasting accuracy would further improve.**
16. **The DSM Working is directed to continue to monitor implementation of the F&S Regulations. Once the commercial implementation of the MERC (Deviation Settlement Mechanism and Related Matters) Regulations, 2019 commences, the data regarding deviation of conventional generators and the Distribution Licensees would be available. DSM bills for the six months' period after commercial implementation of the DSM Regulations shall be analyzed by the DSM Working Group for providing its suggestions on the modality of the determination of State Periphery Charges for RE Generators which would be considered by the Commission at the time of review of the F&S Regulations for duly making any needed changes.**

**Sd/-  
(Mukesh Khullar)  
Member**

**Sd/-  
(I. M. Bohari)  
Member**

**Sd/-  
(Sanjay Kumar)  
Chairperson**

  
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Secretary

