Before the

MAHARASHTRA ELECTRICITY REGULATORY COMMISSION

13th Floor, Centre No.1, World Trade Centre, Cuffe Parade, Mumbai- 400 005
Tel. 022 - 22163964/65/69 Fax. 022 - 22163976
Email: mercindia@merc.gov.in
Website: www.merc.gov.in / www.mercindia.org.in

Case No. 86 of 2013

In the matter of

Petition filed by Shri Sudhir Budhay for seeking guidelines for connectivity to Solar generators below 1 MW

Shri Vijay L. Sonavane, Member

Smt. Chandra Iyengar, Member

Shri. Sudhir Budhay .....Petitioner

39, Shankar Nagar, Nagpur – 440 010.

1. Maharashtra State Electricity Distribution Co. Ltd (MSEDCL)
2. Maharashtra State Electricity Transmission Co. Ltd (MSETCL)/STU
3. Maharashtra State Load Dispatch Centre (MSLDC)
4. Reliance Infrastructure Ltd. - Distribution (R Infra-D)
5. The Tata Power Company Ltd. – Distribution (TPC-D)
6. The Brihan Mumbai Electric Supply & Transport Undertaking (BEST) .....Respondents

Present during the hearing:

Advocate/ Representative for the Petitioner : Shri Sudhir Budhay

Advocate/Representative of MSEDCL : Shri S.S. Paratkar (Rep.)
Shri A.S. Ghogare (Rep.)

Advocate/Representative of MSETCL /STU	:	Shri M.C.Walke (Rep.) Shri P. G. Narnaware (Rep.)
Advocate/Representative of MSLDC	:	Shri J.R. Kulkarni (Rep.)
Advocate/Representative of RInfra-D	:	Shri A. Naralkar (Rep.) Shri G. J. Thakkar (Rep.)

ORDER

Dated: 25 November, 2013

Shri Sudhir Budhay (hereinafter referred to as "the Petitioner") filed a petition on affidavit on 1 July, 2013, seeking formulation of guidelines for connectivity to solar generators below 1 MW within Maharashtra. Under the said petition, various relaxations were sought such as waiver of transmission charges, cross subsidy surcharge and provision of 24 hrs banking facility by the licensees, etc., for the power so generated from such solar generators.

2. The prayers of the Petitioner are as under:

"1) Hon'ble Commission may please admit this petition.

2) Condone any inadvertent omissions/errors/shortcomings and permit petitioner to add/change/modify/alter this filing and make further submissions as may be required at a future date.

3) Examine the concerns expressed by the petitioner for a favourable dispensation.

4) Finalize connectivity norms for Solar generators below 1MW with minimum procedures and paper work for consumers especially for captive consumption with generation/consumption at one or multiple places.

5) Waive off transmission/wheeling charges & Cross Subsidy Surcharge for the power so generated from Solar Power Generation Plants for the consumers consuming the power during the active solar power generation period.

6) Charge differential rate as banking charge per unit for the consumers opting for "Power Banking Scheme" & consume power deposited any time in 24 hrs.

7) Formulate procedure for metering and certification of power generated by micro solar power plants to be accounted only for the purpose of reducing

REC buying liabilities and if needed charge reasonable metering & certification charges per KW certified to the beneficiary.

8) Pass such further and other orders, as the Commission may deem fit and proper keeping in view the facts and circumstances of the case."

3. The Petitioner in its petition submitted that various types of consumers have the capacity and willingness to invest in solar power for the purpose of captive consumption but are restricted by the existing regulatory framework which does not allow connectivity with the grid for solar power plants below 1 MW.

4. The Petitioner elaborated various types of solar power (<1 MW) generation and consumption models which would enable development of solar power of such capacities and which would benefit retail level consumers. The different models highlighted by the petitioner in the petition are as following:

a) Generation and consumption during day time (or active solar generation period)

- Generation and consumption within the same premises
- Generation outside the premises at single or multiple locations (grid usage)
- Generation at one location and consumption at multiple locations (grid usage)

b) Generation during day time (active solar generation period) with facility of banking power with Discom and consumption during 24 hrs as needed.

c) Generation and consumption by corporate business houses for getting credit to reduce their REC buying liabilities / RPO.

5. The Petitioner also highlighted the need for amendments in the connectivity and open access policy in Maharashtra, in order to facilitate promotion of <1 MW solar generators in the State.

REGULATORY PROCEEDINGS IN THE MATTER

6. Submission of BEST as made on 2 August, 2013 in the matter is summarized as under:

a) BEST stated that, the provisions of the Electricity Act, 2003 and the present MERC (Distribution Open Access) Regulations, 2005 as well as Draft MERC (Distribution Open Access) Regulations, 2013 restricts distribution open access for the consumers whose contract demand is below 1 MW.

b) BEST, therefore submitted that any new guidelines for permitting open access below 1 MW load needs changes in regulatory framework before its implementation.

7. Submission of MSEDCL as made on 5 August, 2013 is summarized as under:

a) MSEDCL submitted that guidelines for grid connectivity at LT level have not been formulated and the solar power generators may use their generation for their captive consumption without connecting to the grid.

b) MSEDCL also pointed out a number of operational and technical difficulties involved in allowing grid connectivity on LT side including regulatory provisions for grid connectivity, metering arrangements, energy accounting, scheduling requirements, wheeling charges and losses, administration costs, reactive energy, REC benefits, isolation of generator during a planned or unplanned shutdown of the distribution network, maintenance of grid standards, commercial losses, difficulties in synchronisation, etc.

8. The Commission vide notice dated 8 July, 2013 scheduled a hearing in the matter on 5 August, 2013. During the hearing, the Petitioner made a presentation before the Commission in line with its submissions in the petition. MSEDCL also made a presentation before the Commission expressing its views and highlighting various concerns in the matter. Further, BEST reiterated its views already stated vide its earlier submission. The Commission directed the Petitioner to serve a copy of the petition along with its presentation to all the parties impleaded in this matter. MSEDCL was directed to file a rejoinder on the Petitioner's submissions within 10 days time to the Commission and serve the copy of its submission along with the presentation to all the parties impleaded in this matter. The consumer representative from Vidarbha Industries Association (VIA) was directed to be present during the next hearing in the matter. The Petitioner was further directed to implead CE (STU) and CE (MSLDC) as parties in the matter by serving a copy of the petition along with the presentation on them. TPC-D, RInfra-D, MSETCL, STU and MSLDC were directed to file their submissions in this matter to the Commission within 10 days time.

9. As per the Commission's directives, MSETCL made its submission on 13 August, 2013 in the matter, and the same is summarised as under:

a) MSETCL submitted that connectivity to small rooftop solar PV generators can be at 415V level by the distribution licensee without any system augmentation. MSETCL also submitted that energy banking from solar generators can also be considered but such banking arrangement should be made available only till a specific percentage of solar energy generation from such plants.

b) On the issue of technical feasibility of grid interconnection, MSETCL submitted that excess generation from rooftop PV generators may cause some disturbance in the network which needs to be studied well and addressed properly by the distribution company.

c) Finally, MSETCL submitted that regulatory framework for connectivity of solar rooftop solar PV generators below 1 MW at LT level should address the issues related with energy scheduling and accounting, safety, load shedding, etc.

10. Submission of Vidarbha Industries Association (VIA) as made on 14 August, 2013 is summarised as under:

a) VIA submitted that grid connectivity and open access to solar generation below 1 MW is not barred in the Electricity Act, 2003.

b) VIA in its submission also gave certain recommendations with regards to technical and commercial issues such as banking arrangement, safety of licensees staff during maintenance, and various other issues related to losses, metering and tariff which can facilitate the connectivity of solar generators below 1 MW to the grid at LT level.

c) Considering the benefit to consumers and the licensees from such solar generation, VIA suggested the Commission to make suitable Regulations for harnessing such green energy after holding public hearing in the matter.

11. Submission of TPC-D as made on 16 August, 2013 is summarised as under:

a) TPC-D submitted that CEA has specified technical standards for grid connectivity at 33 kV level. For solar rooftop projects which have relatively smaller installed capacity, stepping up to a voltage of 33 kV may be technically and financially unviable.

b) As regards applicability of transmission charges, TPC-D submitted that the same should continue to apply in case the generator and the consumer are in areas of different distribution licensees and should not apply if both the generator and the consumer are connected to LT network of the same distribution licensee.

c) TPC-D stated that the existing concession on cross subsidy charges for RE transactions in the State are adequate and no further incentive by waiving off cross subsidy surcharge may be given to solar energy transactions.

d) With regards to banking facilities, TPC-D submitted that the same may be allowed to solar generators on the similar lines as allowed to wind generators. As regards metering arrangement, TPC-D submitted that the present metering arrangement as followed for consumers connected to the distribution network may be followed for the generator connected to the distribution network.

12. Submission of RInfra-D as made on 20 August, 2013 is summarised as under:

a) RInfra-D submitted that connectivity standards need to be finalised before finalizing the connectivity norms for solar generators below 1 MW. As regards metering, RInfra-D submitted that Special Energy Meters (SEM) with AMI (Advanced Metering Infrastructure) is recommended as "must" so as to enable ongoing efforts for implementation of smart grid.

b) RInfra-D also submitted that power banking norms need to be developed for small generating projects and DISCOMs should be compensated for banking.

c) RInfra-D highlighted that solar generators below 1 MW would be embedded in the Discom's network and hence the energy scheduling and settlement for such generators would impact the scheduling of power of Discoms. Therefore, RInfra-D suggested that necessary changes need to be incorporated in Regulations so that scheduling & settlement process is established.

d) As regards waiver of cross subsidy surcharge, RInfra-D submitted that wheeling charges, cross subsidy surcharge etc. may be carefully examined as it may impact the tariff of other consumers.

13. The Petitioner submitted its reply to the contentions of MSEDCL in the matter on 20 August, 2013. The reply is summarised as under:

a) The Petitioner submitted that if the solar power to be injected is less than the present connected load then technical feasibility need not be done for the given project. All applicable regulations for the solar generation as per the state grid code shall be acceptable to the Petitioner in such case.

b) The Petitioner also submitted that CEA & State grid code shall be acceptable if they are applicable to smaller solar generation as well. Appropriate agreement can be entered in to by DISCOM and the consumer, if recommended by the Commission. Verification/Certification of solar generation setup can be done by electrical inspector as applicable. Protocol for monitoring & third party verification is acceptable as per Electricity Rules, 2005.

c) The Petitioner submitted that for small solar generator below 100 kW, real time communication facility should not be made compulsory and simple "Import/Export Meter" based on units is proposed. Considering the amount of energy produced, no administrative charge should be charged below 100 kW and Reactive energy compensation charges not to be levied.

d) The Petitioner also submitted that existing HT consumers may opt for connectivity at 11kV. However for LT consumers, typically less than 100 kW; it will not be financially viable to connect to 11 kV. Further, CEA guidelines

do not specify voltages and hence it is presumed that it is applicable to all voltages.

14. Further to its earlier submission in the matter, VIA made additional submissions vide letter dated 29 October, 2013. The same is summarised as under:

a) VIA submitted that CEA has recently published CEA (Technical Standards for Connectivity of Distributed Generation Resources) Regulations, 2013 applicable to all generating companies or persons owning distributed generating resources connected to or seeking connectivity with the electricity system without specifying any bar for capacity of generating plant.

b) VIA also submitted that different regulations have been formulated to support rooftop generators in different states in India and the Commission should formulate suitable regulations for harnessing such green energy after public hearing in the matter.

15. Prayas Energy Group, vide its email dated 29 October, 2013 submitted its written submission as regards the present petition. The submissions of Prayas Energy Group is summarised as under:

a) Prayas Energy Group submitted that there are a number of issues with regard to distributed generators which need to be addressed in a comprehensive manner. Multiple possibilities with regard to captive generation at one or more locations, open access, applicability of REC benefits, banking, scheduling, impact of feeding electricity back into the grid, battery based distributed generators, adherence and certification of technical norms, etc. can bring up issues which are currently unforeseen by all stakeholders.

b) Further, Prayas Energy Group submitted that the Commission should initiate a study resulting in a discussion paper on the issue followed by a public consultation after which the Commission should appropriately modify its existing regulations to allow for such connectivity of distributed generators.

c) Prayas submitted the following aspects to be deliberated by the Commission in detail:

i) Examine the experience of rooftop PV in other States as regards technical and other Commercial/procedural aspects.

ii) Areas that need particular attention are connectivity at LT level, banking of excess generation, OA and captive use and resulting charges/losses, REC/RPO crediting.

iii) Clearly separating purely technical and grid connectivity issues (for which CEA norms have been notified) from other procedural and commercial arrangements/concessions.

iv) Look into the issue of technical and other procedural/monitoring norms separately for small and large sized projects.

16. Further to its earlier submission in the matter, MSEDCL made additional submissions on 30 October, 2013. The same is summarised as under:

a) MSEDCL submitted that CEA vide notification dated 30 September, 2013, finalised technical standards for connectivity of distributed generation resources for generating stations feeding electricity into the electric system below 33 kV.

b) MSEDCL also submitted that despite the above development, a detailed study needs to be undertaken to address unforeseen practical difficulties associated with connectivity at LT level before its implementation.

17. The Petitioner submitted its reply to the contentions of RInfra-D in the matter on 30 October, 2013. The reply of the Petitioner is summarised as under:

a) The Petitioner also submitted that the technical issues raised by RInfra-D in its submission have been automatically answered by the recently notified technical standards for connectivity of distributed generation resources issued by CEA.

b) With regards to scheduling and settlement, the Petitioner submitted that solar generation can be anticipated if not scheduled based on the radiation data available and the anticipated generation can be considered for planning. The solar power injected will be so low that it may not affect the schedule much. With regards to banking charges and wheeling and cross subsidy charges, the Petitioner submitted that the Commission may decide the same.

18. The Commission vide notice dated 16 October, 2013 scheduled hearing in this matter on 30 October, 2013. During the hearing, MSLDC was directed to file its submission on affidavit within a week time. All impleaded parties were directed to submit their comments, if any, on draft CEA (Installation and Operation of Meters) Amendment Regulation, 2013 with copy to the Commission. The Commission further directed to constitute a Working Committee under Director (EE), MERC along with the representatives from all impleaded parties (MSEDCL, TPC-D, RInfra-D, BEST, MSETCL, STU & MSLDC) including the Petitioner and Prayas Energy Group to study the issues involved in the matter.

19. As per the directives of the Commission, MSLDC made its submission vide mail dated 7 November, 2013 in the matter, and the same is summarised as under:

a) MSLDC submitted that CEA vide Draft CEA (Installation and Operation of Meters) Amendment Regulations, 2013 has introduced a new type of meter called ‘Renewable Energy Meter’ and a metering arrangement called ‘net metering’. Accordingly, if notified, all solar energy generators including such

as envisaged in the petition will be covered under the same regulations for connectivity and metering.

b) MSLDC also submitted that a separate tariff may be determined for such generation and it may be adjusted against the consumers' electricity charges for the month. All such connections will be within the distribution network only and the connectivity, metering, meter reading and commercial settlement should be the responsibility of the concerned distribution licensee. Sale of such generation to the host distribution licensee only may be allowed to keep the process simple.

COMMISSION'S OBSERVATIONS

20. The Commission has heard submissions made by various parties during the hearings and has considered the various written submissions from concerned parties placed before the Commission in the matter. Prima facie, the Commission appreciates the concerns highlighted by the Petitioner and recognises the need to harness solar energy and requirements to promote decentralised form of solar installations of less than 1 MW capacity. However, the Commission is also of the view that addressing each prayer of the Petitioner involves dealing with numerous technical, commercial, regulatory and operational issues to enable grid connectivity of small rooftop solar PV power plants for captive consumption and third party wheeling, that were highlighted during the proceedings in the matter. The Commission observes that the Central Electricity Authority (Technical Standards for Connectivity of Distributed Generation Resources) Regulations, 2013 stipulate standards and strive to address certain technical aspects associated with the present matter. For several other issues, merit comprehensive study requires public consultation to address state specific situation, which has been highlighted by several stakeholders.

21. Further, the Central Electricity Authority (Installation of and Operation of Meters) Amendment Regulations, 2013, which shall be applicable to all Grid Interactive Renewable Energy Plants seeking connectivity to the grid at 415 V and below voltage levels, is presently in the draft stage and the same is yet to be finalised. The said metering Regulations shall play a significant role in outlining important regulatory framework enabling metering, energy accounting and grid connectivity for solar generators of less than 1 MW. Thus, finalisation of the same is also an important milestone to address the issues in the present petition.

22. Besides, grid connectivity of solar power plants having an installed capacity of less than 1 MW shall have a bearing on almost all categories of consumers and various regulations such as grid code, supply code, open access regulations etc. As such, it is essential that any amendment in the regulatory provisions with respect to the same will have to follow a diligent exercise of identifying implementation aspects and

addressing the same through a comprehensive stakeholder and public consultation process.

23. The Commission also notes that most of the stakeholders including MSEDCL, RInfra-D and consumer representatives viz. Prays Energy Group and VIA who were also respondents or impleaded parties to the present petition have highlighted the need for evolving a suitable framework for grid connectivity of solar generator of <1 MW and have suggested to the Commission to adopt wider stakeholder/public consultation process.

COMMISSION'S RULING

24. **In view of the complexities involved in the matter and the far-reaching implications that it would have on the distribution companies and LT level consumers, the Commission has decided to study the issues involved in the matter in detail. Thus, the Commission directs formation of a Working Committee under Director (EE), MERC along with the representatives from all impleaded parties (MSEDCL, TPC-D, RInfra-D, BEST, MSETCL, STU & MSLDC), including the Petitioner and Prayas Energy Group to study issues involved in the matter. The Working Committee is further directed to prepare a draft Terms of Reference (ToR) and submit it to the Commission for approval. The Committee shall submit its report to the Commission within period of six months from the date of issuance of this Order, which shall form the basis for formulation of appropriate regulatory framework for exploring grid connectivity of solar generators below 1 MW.**

With the above order, the Case No. 86 of 2013, stands disposed of.

Sd/-
(Chandra Iyengar)
Member

Sd/-
(Vijay L. Sonavane)
Member