

Before the
MAHARASHTRA ELECTRICITY REGULATORY COMMISSION
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Case No. 129 of 2021

Petition of Cogeneration Association of India for seeking clarifications and/or amendments to the MERC (Grid Interactive Rooftop Renewable Energy Generating Systems) Regulations, 2019.

Cogeneration Association of India (CAI) : Petitioner

Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL) : Respondent

Coram

Sanjay Kumar, Chairperson
I.M. Bohari, Member
Mukesh Khullar, Member

Appearance:

For the Petitioner : Ms. Shikha Ohri (Adv).
For the Respondents : Mr. Abhishek Shrivastava (Adv)

ORDER

Date: 11 January 2022

1. Cogeneration Association of India (CAI) filed the present Petition on 07 September 2021 under Section 61(h), Section 86(1)(e) and Section 181 of the Electricity Act, 2003 read with Regulations 17 and 18 of the MERC (Grid Interactive Rooftop Renewable Energy Generating Systems) Regulations, 2019 (hereinafter referred as **Rooftop RE Regulations, 2019**) and Regulation 92 of the MERC (Conduct of Business) Regulations, 2004. In present Petition CAI seeks clarifications and/or amendments in Rooftop RE Regulations, 2019.
2. **CAI's main prayers are as follows:**
 - a) *Clarify that Cogen Sugar Factories are 'Eligible Consumers' in terms of the Rooftop RE Regulations and have the right to install RE System on their premises up to 1MW, on net-*

metered basis and operate the same, in addition to and alongside their existing cogeneration plant;

b) Amend the definition of the 'Eligible Consumers' to expressly include Cogen Sugar Factories;

c) Clarify that the Cogen Sugar Factories shall be allowed to connect the RE Generating System at their LT Bus Bar and use the power generated from the RE Generating System to meet its self/captive consumption and sell the surplus to the Discoms, as per the metering and billing arrangement suggested in the present petition;

d) Such other and further prayer(s) as this Hon'ble Commission may deem fit.

3. CAI in its Petition has stated as follows:

3.1. CAI is a pan-India association formed in 2001 to promote cogeneration/captive power plants in Industrial and commercial sectors. The constituent Members of CAI wish to invest in setting up of roof top solar project and therefor CAI needs clarity in terms of operation of cogeneration facility and net-metering in parallel.

3.2. Sugar production is a continuous and power intensive process, which requires continuous flow of steam. Over the years, sugar mills/factories have started using steam to generate power in addition to the use in sugar production. However, during the crushing season, whenever there is a fault in turbine generator of the plant, the sugar factory relies on Distribution Licensee's supply for continuously running its boiler and water pumps for generation of steam. The main objective is sugar production. Thus, traditionally the sugar factories are connected to the works of the Distribution Licensee for the purposes of receiving supply.

3.3. CAI in its Petition seeks clarification broadly on following counts:

a. Whether sugar factories with bagasse-based cogeneration plants (hereinafter referred as Cogen Sugar Factories) are 'Eligible Consumers' within the meaning of Regulation 2.1 (j) of the Rooftop RE Regulations, 2019 and essentially have the same rights as any other category of Eligible Consumers in terms of the said Regulations, more particularly the right to install grid-connected RE Systems/plants on their premises on net-metering basis and operate the same in addition to and alongside the cogeneration plant; and

b. In the event such Cogen Sugar Factories do qualify as Eligible Consumers, the modalities of metering, billing, accounting and settlement to be followed *qua* the RE Generating System and the captive cogeneration plant, respectively.

(A) Rationale for qualification of Cogen Sugar Factories as Eligible Consumer within the provisions of Rooftop RE Regulations,2019:

- 3.4. By relying upon definition of ‘Consumer’ under the Electricity Act 2003, CIA states that a ‘Consumer’ is essentially a person, who is connected to a Distribution Licensee for receipt of electricity. In the present case, the members of CAI are connected to MSEDCL’s system for receiving electricity for their own use.
- 3.5. A sugar mill/factory which manufactures sugar and other by-products requires electricity for the manufacturing process and pays demand charges to the Distribution Licensee throughout the year. Thus, such a sugar manufacturing entity qualifies as a ‘Consumer’ within the meaning of Section 2(15) of the Electricity Act, 2003. Its status as a consumer, is similar to any other industrial and/or commercial establishment, which is connected to a Distribution Licensee’s system and draws power for its use.
- 3.6. Any sugar mill/factory may also install/set-up and operate a bagasse-based cogeneration power plant for captive use/self-consumption in terms of the provisions of the Electricity Act, 2003. Under the principles and enabling provisions of the Electricity Act, 2003 and the regulations framed thereunder, such consumer can enter into an agreement to sale of electricity from its cogeneration facility to the Distribution Licensee(s). Even in this scenario, such sugar mills, continues to be consumer within the meaning of Section 2(15), even after installation and operation of its bagasse-based cogeneration plant. It is pertinent to note that such a Cogen Sugar Factory pays fixed demand charges to the MSEDCL, both during the cane crushing season and off-season. In short, entity/consumer does not cease to be a ‘Consumer’ in terms of the Electricity Act,2003 merely on account of co-generation of electricity.
- 3.7. This position has also been settled by the Commission in its Order dated 28 September 2020 in Case No.106 of 2020 (in the matter of *M/s Lloyds Metals & Energy Ltd vs. MSEDCL*). The Commission in said Order categorically ruled that every plant having co-generation plant using electricity as input for production activity needs to be treated as consumer.
- 3.8. All such cogeneration plants, including bagasse-based cogeneration plants pay 100% of the demand charges applicable towards start-up power qua plant auxiliaries, required for such cogeneration plants. This operational dispensation also highlights the fact that such cogeneration plants are not treated as generators simpliciter, who are otherwise allowed the benefit of paying only 25% of the applicable demand charges.
- 3.9. It is also significant to highlight that, prior to setting-up/installation of their cogeneration

plants almost all Cogen Sugar Factories had executed agreements with Distribution Licensee. Thus, these sugar factories continue to be consumers of MSEDCL.

3.10. The Rooftop RE Regulations, 2019 define a consumer as follows:

“Consumer” means a consumer as defined in the Act;”

The term ‘Eligible Consumer’ as defined under Regulation 2.1(j) of the Rooftop RE Regulations, 2019 is any consumer who intends to use/set-up a Renewable Energy Generating System having capacity of less than 1 MW.

The Regulation 2.1(j) of the Rooftop RE Regulations, 2019 reads as below:

“

*“Eligible Consumer” means a consumer of electricity in the area of supply of the Distribution Licensee who uses or intends to use a Renewable Energy Generating System having a capacity less than 1 MW, installed on a roof-top or any other mounting structure in his premises, **to meet all or part or no part of his own electricity requirement**, and includes a Consumer catering to a common load such as a Housing Society:*

Provided that such Generating System may be owned and/or operated by such Consumer, or by a Distribution Licensee or third party leasing such System to the Consumer:

Provided further that in case of Net Billing Arrangement, the capacity limit of 1 MW shall not apply;”

3.11. Based on a conjoint reading of the above-stated provisions, a consumer will be an ‘Eligible Consumer’ when he uses/intends to use a RE Generating System of a capacity less than 1 MW, located in the said consumer’s premises and such systems could either be self-owned or owned by a third party. Such an eligible consumer is entitled to avail the net metering system for the measurement of the import and export of energy on a real time basis.

3.12. In view of the aforesaid regulatory framework and the legislative intent to promote cogeneration, the Commission may incentivise and promote cogeneration by expressly allowing them to be included within the definition of ‘Eligible Consumers’ under the Rooftop RE Regulations 2019. Nothing under the Electricity Act, 2003 and the Rooftop RE Regulations, 2019 precludes the operation/use of a cogeneration plant and the net-metering system simultaneously by an Eligible Consumer. The regulations contain no provision which prevents the grant of net metering arrangement to consumers who are already operating a cogeneration plant and vice versa.

(B) Modalities for Metering and Billing Mechanism:

- 3.13. Regulation 8 of the Rooftop RE Regulations, 2019 stipulate modalities for the metering infrastructure. The existing meter installed at the establishments of the members of the CAI are compliant with the requirements under Regulations 8.2 to 8.5 of the Rooftop RE Regulations, 2019. CAI prays that Cogen Sugar Factories may be allowed to connect the RE System at their LT Bus Bar and use the power generated from the RE Generating System to meet their self/captive consumption. Such factories may not be required to install a new net meter, if a net meter is already installed or exists, in respect of their cogeneration plant.
- 3.14. Furthermore, CAI proposes that separate generation meters be installed for cogeneration and the RE Generating System. Based on readings of meters at cogeneration plant and solar generation, a final reconciliation can be done on a monthly basis.
- 3.15. Since Cogen Sugar Factories are operating its unit which has its own internal power requirement apart from the activities in the cogeneration plant. Therefore, the aforesaid reconciliation should always account solar power to have been consumed first since the objective of putting such generation set up is to meet the internal requirements. The exports shall firstly be considered to have been made from the cogeneration plant, subject to the maximum generation recorded in the above Cogen generation meter and any balance export after setting off generation in Cogen meter will then be deemed to have been exported by the said RE Generating system.

(C) Supportive Statutory, Regulatory and Policy framework:

- 3.16. While narrating Regulatory framework, CAI referred to provisions of Section 3, Section 61 (h) and Section 86 (1) (e) of the Electricity Act, 2003 along with Clause 5.12 of National Electricity Policy dated 12 February 2005.
- 3.17. On 31 December 2020, the Government of Maharashtra (GoM) has notified the State Renewable Energy Policy, 2020. As per the said policy, a target of 1350 MW is envisaged from bagasse-based cogeneration projects through MoU route at a tariff decided by the Commission. The said policy specifically allows commissioning of solar plants at sugar factories on their remaining land, parking roads as well as roofs without violating the prevailing rules and regulations.
- 3.18. The Electricity (Rights of Consumers) Rules, 2020, makes it apparent that a consumer who has set up a renewable generation facility be called a Prosumer, however, such prosumer still retains all the rights of being a consumer of the Distribution Licensee.

3.19. The Commission can entertain the present Petition in terms of the Regulation 17 (Issue of Orders and Practice Directions) and Regulation 18 (Power to amend) of the Rooftop RE Regulations, 2019. The Commission has the requisite jurisdiction to take cognizance of the issues/concerns of CAI highlighted by way of the present petition.

3.20. It is also noteworthy to mention herein that irrespective of the point of consumption of the said RE generation, the entire quantum as per Rooftop RE Regulations, 2019 goes towards meeting the RPO compliance of the Distribution Licensee. As Distribution Licensees have not been able to meet the RPO (both solar and non-solar), therefore putting up renewable capacity by such consumers will only help the Distribution Licensees to achieve such targets.

3.21. In any event, a typical bagasse-based co-generator will only be able to maximize its Cogen exports into the Distribution Licensee's grid during the off-peak season, which typically would only be for about 5 months (*approximately*).

4. **MSEDCL in its Reply dated 21 October 2021 stated as follows:**

4.1. The Government of Maharashtra has notified the Renewable Energy Policy 2020 on 31 December 2020. The relevant clause related to installation of solar projects by sugar factories is as under:

“
(1) (a) .12 Under this policy, *co-operative as well as private sugar factories, yarn mills, MIDC And other industries can set up solar energy projects on their remaining land, parking roads as well as roofs without violating the prevailing rules, regulations and regulations.*”

4.2. There are three arrangements for installing solar projects under Rooftop RE Regulations, 2019 as below:

- a) Net Metering (below 1 MW)
- b) Net Billing
- c) Grid Connected Renewable Energy Generating Systems connected behind the Consumer's meter, who have not opted either for Net Metering Arrangement or Net Billing Arrangement.

4.3. As per the definition for eligible consumer under Rooftop RE Regulations, 2019, the consumer can install roof top solar projects under net metering arrangement. However, sugar factories are consumer as well as generators.

4.4. The definition for 'Eligible Project' as per the MERC (Terms and Conditions for Determination of Renewable Energy Tariff) Regulations, 2019.

“
*n. (x.) Hybrid RE Project based on RE technologies approved by MNRE, such as Wind-Solar Hybrid, Solar-Biomass Hybrid, **Solar-Co-Generation Hybrid**, Solar Thermal Hybrid, and any other combination of RE technologies, and commissioned after notification of these Regulations.”*

As per the above regulation the sugar factory can install the hybrid project with combination of bagasse-based co-generation project and solar project.

4.5. The Sugar factories are consumers as well as generators. For off-season period they are consumers of MSEDCL and for season period they are generators for MSEDCL. The sugar factories have already installed bagasse-based co-generation projects for their self-use and are having EPA with MSEDCL for sale of surplus power at preferential and the tariff for proposed solar projects are going to be different.

5. CAI in its Rejoinder dated 28 October 2021 stated as follows:

5.1. For sugar factories with existing cogeneration plants are connected to the grid. CAI proposed to operate co-generation unit in parallel with solar rooftop system in following manner:

- i. During season: solar rooftop generation would partially fulfil the captive consumption and only surplus part of cogeneration power would be exported.
- ii. During off-season, there would be no cogeneration and hence the solar rooftops would operate on net-metering basis.

5.2. Apart from reiterating submission, CAI mentioned statistics about gap in purchase of power from Biomass and Bagasse projects with reference to estimates in respective Tariff Orders. By virtue of proposed enablement, there will be negligible impact on Aggregate Revenue Requirement as against the approved in the MYT Order.

5.3. CAI contended that the actual expenditure on Biomass and Bagasse power for FY 2020-21 is significantly lower than the budgeted in the MYT Order dated 30 March 2020. For sufficing the argument, CAI submitted following:

Comparison of Bagasse + Biomass - Budgeted versus actual										
Status	Financial Year	Multi Year Tariff			Actual			Difference		
		MUs	Rs Crore	Tariff	MUs	Rs Crore	Tariff	MUs	Rs Crore	Tariff
Actual	FY 2020-21 until Feb				3,474	2,236	6.43			
Estimated	FY 2020-21 estimated	5,082	3,270	6.43	4,331	2,775	6.41	751	495	0.03

Notes: 1) Estimate of FY 20-21 has been arrived by adding January 21 numbers to the YTD numbers;

2) MYT tariff of Bagasse not available separately

5.4. As per MYT Order dated 30 March 2020, MSEDCL has budgeted to purchase 5,259 MU from Bagasse and Biomass plants in FY 2021-22. If the actual purchase in FY 2020-21 is considered, then MSEDCL will need additional 1,000 MU units in FY 2021-22. In order to cover the shortfall, MSEDCL will require another 380 MW of cogeneration capacity to be commissioned. This assumes that such cogeneration plants will have a 100% PLF and will run for at least 6 months. But the actual season i.e. crushing days of sugar mills in Maharashtra has been far lower than 6 months.

5.5. Even if all 119 sugar factories in Maharashtra with cogeneration plants install 1 MW solar plant each, it will result in additional exports of 99 MUs only i.e., far lower than the deficit of 1,000 MUs. Lastly, it is significant to note that the gap in actual versus budgeted power purchase is even wider if compared the total purchase from non-solar sources.

Non-Solar Purchase - Budgeted versus Actual										
		Multi Year Tariff			Actual			Difference		
Status	Financial Year	MUs	Rs Crore	Tariff	MUs	Rs Crore	Tariff	MUs	Rs Crore	Tariff
Actual	FY 2018-19	14,021	7,417	5.29	11,599	6,595	5.69	2,422	822	-0.40
Actual	FY 2019-20	15,054	7,890	5.24	9,690	5,323	5.49	5,364	2,567	-0.25
Actual	FY 2020-21 until Feb	12,084	5,962	4.93	9,030	4,823	5.34	3,054	1,139	-0.41
Estimated	FY 2020-21 estimated	13,172	6,498	4.93	10,151	5,478	5.40	3,021	1,020	-0.46

Note: Estimate of FY 20-21 has been arrived by adding January 21 numbers to the YTD numbers

6. At the hearing held on 30 November 2020, the Advocates of the Petitioner and Respondent reiterated their submissions.

Commission's Analysis and Rulings

7. In the present Petition, CAI is seeking clarification and/or amendments to the Rooftop RE Regulations, 2019 for enablement of operation of grid connected RE systems more particularly Solar PV in parallel with bagasse-based co-generation system. For the said purpose CAI has contended that the sugar factories with bagasse-based cogeneration plants are 'Eligible Consumers' within the meaning of Regulation 2.1(j) of the Rooftop RE Regulations, 2019 and have the right to install grid-connected RE Systems/plants on their premises on net-metering basis and operate the same in addition to and alongside the cogeneration plant. For enabling such parallel operation of RE System and bagasse-based cogeneration plants, CIA in its Petition and subsequent submission has proposed a methodology which is summarized in earlier part of this Order.

8. MSEDCL in its submission has pointed out that the Cogen Sugar Factories are consumer as well as Generators. For off-season period they are consumers of MSEDCL and for season period they are generators for MSEDCL. It has also pointed out that in terms of MERC (Terms and Conditions for Determination of Renewable Energy Tariff) Regulations, 2019; sugar factory can install the hybrid project with combination of bagasse-based co-generation project and solar project.
9. Considering prayers and arguments made during the proceedings, the Commission frames following issues for its consideration in present matter:
 - (a) Whether Cogen Sugar Factories qualifies within the definition of ‘Eligible Consumer’ in terms of Rooftop RE Regulations,2019?
 - (b) What methodology should be adopted to enable Cogen Sugar Factories to install Solar PV plant in its premises?

The Commission is addressing above issues in the following paragraphs.

10. Issue A: Whether Cogen Sugar Factories qualifies within the definition of ‘Eligible Consumer’ in terms of Rooftop RE Regulations,2019?

- 10.1. The Commission notes that CAI is seeking clarification regarding qualification of Cogen Sugar Factories as ‘Eligible Consumers’ within ambit of Regulation 2.1 (j) of Rooftop RE Regulations,2019. Eligible Consumers are defined as below:

“2.1 ...

(j) “Eligible Consumer” means a consumer of electricity in the area of supply of the Distribution Licensee who uses or intends to use a Renewable Energy Generating System having a capacity less than 1 MW, installed on a roof-top or any other mounting structure in his premises, to meet all or part or no part of his own electricity requirement, and includes a Consumer catering to a common load such as a Housing Society:

Provided that such Generating System may be owned and/or operated by such Consumer, or by a Distribution Licensee or third party leasing such System to the Consumer:

Provided further that in case of Net Billing Arrangement, the capacity limit of 1 MW shall not apply;”

The primary qualification for being ‘Eligible Consumer’ under Rooftop RE Regulations, 2019 is that an entity must be a consumer of Distribution Licensee and it should set up Renewable Energy Generating System within its premises.

10.2. The Commission notes that Sugar Factories are consumers of Distribution Licensee. In case they installed bagasse-based Cogeneration plant, during crushing season when cogeneration plant is generating electricity and after fulfilling its own load requirement, balance electricity is exported to the Grid. Whereas, during off-season when cogeneration plant is shut, Sugar Factories import electricity from the Grid for meeting their load requirement. As Sugar Factories with Cogeneration plants are maintaining their Contract Demand with Distribution Licensee and paying charges for the same, they are consumers of Distribution Licensee. Therefore, they can fulfill the first part of the criteria for being ‘Eligible Consumer’ under Rooftop RE Regulations, 2019.

10.3. For fulfilling second part of criteria for being ‘Eligible Consumer’, such consumer has to install ‘Renewable Energy Generating System’ in its premises. Rooftop RE Regulations 2019 has also defined the ‘Renewable Energy’ as follows:

*“(u) “Renewable Energy” means the grid connected and grid quality electricity generated from Renewable Energy sources, **including a combination of such sources** ”*

Thus, combination of Renewable Energy Sources can also be installed by consumer in its premises to become ‘Eligible Consumer’ under above Regulations.

10.4. In the present case, Sugar Factories already has Bagasse-based cogeneration plant which is Renewable Energy Source installed in its premises. Installation of proposed Solar PV project will make it ‘combination of RE Source’ which is permissible as per definition reproduced above.

10.5. Accordingly, the Commission rules that Sugar Factories with bagasse-based cogenerating plant and proposing to install rooftop Solar PV projects can be considered as ‘Eligible Consumer’ under Rooftop RE Regulations 2019.

10.6. However, it is important to note that consumer’s connection is linked to the premises and hence all generating sources which intended to be connected to the Grid and located in same premises are required to be considered while applying Rooftop RE Regulations 2019. In the present case, existing bagasse-based Cogeneration plant, which is Renewable Energy Source, has to be considered along with rooftop Solar PV plant to be set up under same premises as ‘combination of RE Sources’. In such situation, total generation capacity in the Sugar Factory premises may cross Contract Demand of Sugar Factory. Under Rooftop RE Regulations 2019, generating capacity in the premises is restricted to Contract Demand of consumer. This is because main intent of such Regulations is to enable consumer to setup generating capacities in its premise for self-consumption. In case generating capacities are being setup for selling electricity, then provisions of different Regulations become applicable.

- 10.7. Even if it is considered that such total generation capacity is within Contracted Capacity of Sugar Factory, then also in case such total generating capacity is above 1 MW, then net-billing arrangement will become applicable wherein all generated electricity (cogeneration + solar) has to be sold to Distribution Licensee at rate of Average Power Procurement Cost (APPC) of that licensee. Such arrangement would not be beneficial to Sugar Factories with Cogeneration plants who have EPA with MSEDCL for sale of surplus power at Tariff ranging from Rs. 4.75 to 6.90 per unit, as under net-billing arrangement same power would have to be sold to MSEDCL at APPC rate of Rs. 3.94 per unit.
- 10.8. The Commission notes that present Petition has been filed seeking limited relief of getting clarification about installing rooftop capacity upto 1 MW under net metering Regulations. But in view of Regulatory provisions and its implications as explained above, the Commission is of the opinion that Sugar Factories with bagasse-based cogeneration plants may consider all these issues before exercising the option of installing rooftop Solar PV plants.
- 10.9. Having said this, the Commission is also of the opinion that such proposal of installing rooftop PV plants in the premises of Cogen Sugar Factories is a good initiative benefiting both i.e. Sugar Factories as well as Distribution Licensee and hence needs to be enabled. Hence, although Petition has been filled with limited scope, the Commission in following paragraphs has laid down the methodology for enabling connection of such Solar plants within the available regulatory framework.

11. Issue B: What methodology should be adopted to enable Cogen Sugar Factories to install Solar PV plant in its premises?

- 11.1. As explained in earlier part of this Order, applying Rooftop RE Regulations 2019 to Sugar Factories with cogeneration plant may not work out to be financially beneficial option to the Sugar factories and hence they may consider all the issues before exercising the option of installing rooftop Solar PV plants
- 11.2. The Commission notes that existing bagasse-based co-generation plants of Sugar Factories are governed by MERC (Terms and Conditions for Determination of Renewable Energy Tariff) Regulations, 2019. Same RE Tariff Regulations, 2019 also recognize Hybrid RE projects wherein multiple sources of Renewable Energy can be co-located for injecting energy into the Grid from same interconnection point. Proposed installation of Solar PV project in Sugar Factory's premises, which already has bagasse-based cogeneration plant, and injecting surplus energy from both these Renewable Energy Sources into Grid through single metering point is akin to RE Hybrid Project.
- 11.3. However, RE Tariff Regulations, 2019 stipulate criteria that capacity of one source should be at least 25% of other RE source for being recognised as Hybrid RE projects. Bagasse based

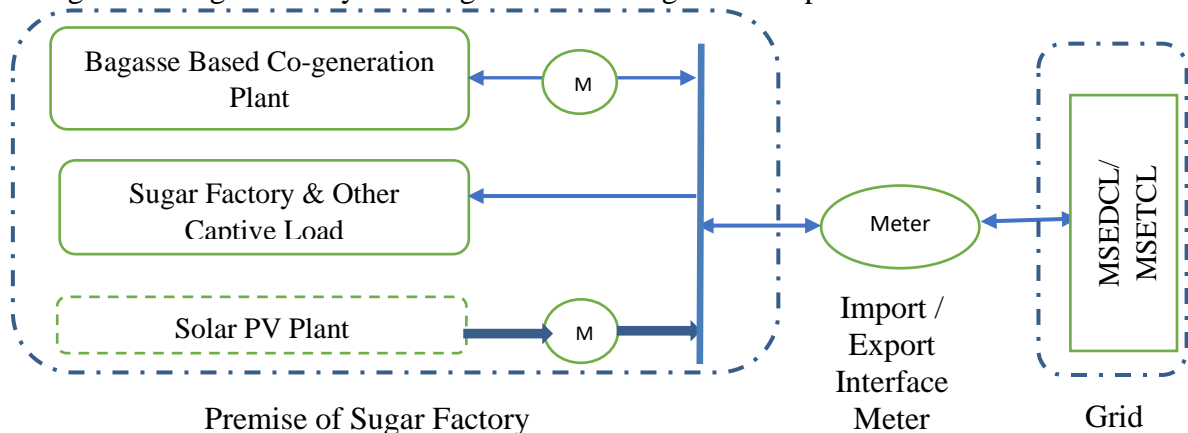
cogeneration projects proposing installation of co-located Solar PV project may not be able to meet such condition (25% capacity) of Hybrid RE project due to limited space available in factory premises for installation of Solar project capacity which is 25% of Bagasse-based co-generation plant. Such difficulties may also arise with other existing RE projects such as Small Hydro, Bio-mass, Wind who wish to install Solar PV projects in the available space. Considering such practical difficulty which may be faced by existing RE projects, the Commission deems it appropriate to use its following enabling powers under RE Tariff Regulations 2019 for relaxing such condition for Hybrid Project:

“77. Power to remove difficulties

If any difficulty arises in giving effect to the provisions of these Regulations, the Commission may, by general or specific Order, make such provisions, not inconsistent with the provisions of the Act, as may appear to be necessary for removing the difficulty”.

Accordingly, the Commission deems it appropriate to relax condition of capacity of one source being minimum 25% of other RE sources for recognizing as Hybrid Project for existing commissioned RE projects. This will enable such existing RE projects to utilize the available space for installation of other RE sources such as Solar PV.

- 11.4. With above relaxation in criteria for Hybrid RE project under MERC RE Tariff Regulations 2019, there will be no limit (minimum or maximum) on capacity of Solar PV project to be installed in the premises of Sugar Factory with bagasse-based co-generation plant. Hence, Sugar Factories need not restrict its Solar PV project capacity to 1 MW but can install higher capacity projects to utilize available space in case all other technical requirements are complied with. With the proposed installation of Solar PV project, schematic single line diagram of Sugar Factory with bagasse-based co-generation plant will be as follows:



- 11.5. With above arrangement both Co-generation plant and Solar plant are injecting energy into the common busbar of Sugar Factory and after self-consumption inject surplus electricity into the Grid through interface meter. When both sources of RE are generating electricity, after

injection into the busbar it would not be possible to identify which source of energy is consumed for captive load. Once such energy from two different RE sources are injected into common busbar it should be considered as Hybrid Source. Hence, methodology proposed by CIA i.e. allow Solar power for self-consumption first, cannot be allowed.

- 11.6. In case Sugar Factories are willing to keep such Solar project off-grid i.e. electricity generated is used for meeting isolated loads (not connected to Grid) with use of battery storage, then such Solar power can be used only for self-consumption and as only Co-generation power is being injected into the Grid, no changes are required in existing arrangement. But grid connected Solar project in combination with bagasse based co-generation project needs to be considered as Hybrid Project only.
- 11.7. In Hybrid project arrangement, Sugar Factories can continue to use energy generated by Hybrid Project for self-consumption and inject surplus energy into the Grid as per provisions of respective EPA.
- 11.8. Having ruled on energy transaction as above, important aspect which remains to be addressed is tariff for such Hybrid RE project. MERC RE Tariff Regulations, 2019 stipulates that tariff for all RE projects is to be decided through competitive bidding process. Hence, post notification of such Regulations, the Commission is not determining generic RE tariff for Solar, Wind, Bagasse-based projects for which Distribution Licensees are able to discover tariff through competitive bidding process. In the recent past, Distribution Licensees have also been able to successfully discover tariff for Wind-Solar Hybrid projects through competitive bidding process. Such bidding documents can be modified to discover tariff for Bagasse Cogeneration – Solar Hybrid project. However, such bidding process would be possible for new projects. In the present case, Bagasse-based cogeneration projects are already commissioned projects having valid EPA and Solar plant will be commissioned anew. Hence, such process of tariff discovery through competitive bidding will not be feasible in present matter.
- 11.9. Therefore, only feasible option that remains is to arrive at weighted average tariff, based on generation from each source of Renewable Energy and tariff for that respective RE Source. In the present case, two sources of energy i.e. bagasse-based cogeneration project and Solar PV project are making it as Hybrid RE Project. Tariff for bagasse-based cogeneration project is already approved from time to time by the Commission and MSEDCL has accordingly entered into EPA with respective plants. Whereas tariff for Solar PV Project which will be commissioned in future is yet to be decided. Following provision of RE Tariff Regulations, 2019 enables use of latest discovered tariff of similar project as tariff for project which cannot undergo competitive bidding process:

“7.3 The tariff for RE Power Projects below threshold limit of eligibility for participating in Competitive Bidding shall be considered equal to the following cases, in order of priority:

(a) Latest Tariff discovered through Competitive Bidding by concerned Distribution Licensee for similar RE project and adopted by the appropriate Commission;

(b) The Tariff discovered through Competitive Bidding for similar RE project by Other Distribution Licensee(s) in the State and adopted by the appropriate Commission;

(c) The Tariff discovered through Competitive Bidding for similar RE project in the Country and adopted by the appropriate Commission.”

Thus, as per above provisions of RE Tariff Regulations 2019, tariff discovered for similar size solar project can be considered as tariff for solar project to be installed by Sugar Factories in their premises. In the present case, considering the size of Solar project to be installed, latest tariff discovered by MSEDCL for Solar projects under Mukhyamntri Saur Krishi Vahini Yojana shall be used as tariff for solar project to be installed in the premises of Cogen Sugar Factory.

11.10. Once tariff for both sources of Renewable Energy are available, weighted average tariff for Hybrid Project is to be computed based on electricity generation from each source during that month. Illustrative example for computation of such weighted average tariff for Hybrid Project is tabulated below:

Sr. No.	Month	RE Source	Generation (Unit)	Tariff (Rs/Unit)	Total Cost of Generation (Rs)	Weighted Average Tariff (Rs/Unit)
a	b	c	d	e	f	$g = f / d$
1	Month-1	Co-generation	100	6.50	650	-
		Solar	20	3.05	61	
		Total Hybrid	120	-	711	
2	Month-2	Co-generation	50	6.50	325	-
		Solar	20	3.05	61	
		Total Hybrid	70	-	386	
3	Month-3	Co-generation	100	6.50	650	-
		Solar	0	3.05	0	
		Total Hybrid	100	-	650	
4	Month-4	Co-generation	0	6.50	0	-
		Solar	20	3.05	61	
		Total Hybrid	20	-	61	

As can be seen from above table, although tariff for individual source is fixed, weighted average tariff for each month will be varying based on generation from each source of Renewable Energy. Thus, effective weighted average tariff for each of the Co-generation

plant with Solar PV will be different. Further, for same plant, weighted average tariff for each month will be different based on quantum of generation from each RE source during that month.

11.11. In view of the above, methodology to be adopted for installing Solar PV projects by Sugar Factories having EPA with MSEDCL for sale of surplus energy from bagasse-based co-generation plant is summarized below:

- a. Sugar Factories having EPA with MSEDCL for bagasse-based cogeneration plants are eligible to install Solar PV project in its premises. There is no restriction on Solar project capacity and Sugar Factories can maximize utilization of available space within their premises, for setting up of Solar project.
- b. Generation Meter should be provided to each source of Renewable Energy as per CEA specification. Post commissioning of Solar Project, such project shall be treated as Hybrid Project.
- c. Sugar Factories are allowed to consume electricity generated from such Hybrid Project for its captive load and sale of surplus electricity to Distribution Licensee.
- d. Sugar Factory and MSEDCL needs to enter into amendment agreement to existing EPA for including capacity of Solar Project to be commissioned and its tariff. Recent discovered lowest Tariff by MSEDCL for similar size solar project shall be considered as Tariff for solar project to be commissioned by the Sugar Factory. Clause for computing weighted average tariff on monthly basis shall also be included in the EPA.
- e. Based on actual generation from each source of Renewable Energy, weighted average tariff for that month should be computed and energy purchased during that month shall be paid at such weighted average tariff.
- f. Weighted average tariff for each month will be different based on contribution of energy generation from each Renewable Energy source in total electricity generated in that month.

11.12. In the opinion of the Commission, above methodology is in the interest of both parties. It enables the Sugar Factories to install Solar PV projects in its premises for utilizing vacant space and at the same time it allows MSEDCL to purchase such additional Renewable Energy for meeting its Renewable Purchase Obligations. Most importantly, there is negligible impact on MSEDCL's power procurement (per unit tariff) in spite of this arrangement. This is because, weighted average tariff being worked out in above methodology is based on EPA rate for bagasse-based Co-generation plant and competitively discovered tariff for solar project. Under the EPA, MSEDCL is obligated to purchase energy from co-generation plant

at EPA rate. Similarly, MSEDCL is entering into contracts for procurement of solar energy at competitively discovered rate. Instead of procuring electricity under two separate contracts for co-generation and Solar, in above methodology, these two sources of RE are being purchased through a single contract at a weighted average tariff.

12. Having ruled as above, the Commission takes this opportunity to express the need for creating awareness about use of Solar PV technology for betterment of farmers. The Government has already launched KUSUM scheme wherein various options of setting-up Solar PV plants by farmers/ group of farmers/ cooperatives/ panchayats/ Farmer Producer Organisations & Water User associations has been envisaged. MSEDCL and Maharashtra Energy Development Agency (MEDA) are implementing these schemes in Maharashtra. By participating in such schemes, farmers not only get steady and secured source of daytime power supply but also have opportunity of availing additional income by selling the power to grid. Option of off grid Solar pumps is also available in this scheme. The Commission expects that Cogeneration Association of India through its member Cogeneration plants should take efforts to create such awareness amongst the farmers in their area. Benefits of this scheme is not limited only to the participating farmers but benefits accrue to Distribution Licensee and the Government also. Such distributed generation not only reduces distribution losses but also avoids potential investment for strengthening upstream network as load is being met from local generation. Further, reduced energy consumption from Distribution Licensee reduces need for cross-subsidy in tariff structure while reducing direct subsidy burden of the Government.
13. Hence, the following Order.

ORDER

- 1. Case No. 129 of 2021 is partly allowed.**
- 2. Sugar factories having bagasse-based cogeneration plant can installed Solar PV projects in its premises as per methodology stated in para 11.11 above.**
- 3. Cogeneration Association of India through its members Cogenerating Plants in coordination with Maharashtra State Electricity Distribution Co. Ltd. to create awareness amongst farmers in the State about benefits of Solar generation under available scheme, and encourage them to participate in these schemes.**

Sd/-
(Mukesh Khullar)
Member

Sd/-
(I.M. Bohari)
Member

Sd/-
(Sanjay Kumar)
Chairperson


(Dr. Rajendra G. Ambekar)
Secretary (I/c)

