Abellon

Ref : ACEL/CERC/21/40

Date 08.10.2021

To,

The Secretary

The Central Electricity Regulatory Commission

3rd & 4th Floor, Chanderlok Building,

36, Janpath, New Delhi – 110001

Subject: **Comments on Draft Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations, 2021 ("Draft DSM Regulations 2021")**

Reference:

a) Central Electricity Regulatory Commission, No L-1/260/2021/CERC dated 07.09.2021 with subject "Draft Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations, 2021"

Dear Sir,

1. On 07.09.2021, CERC issued Draft DSM Regulations 2021 proposing to repeal the existing CERC (Deviation Settlement Mechanism and related matters) Regulations, 2014. The Draft DSM Regulations 2021 are a welcome move which propose to establish a new deviation settlement mechanism keeping in view the changing power market conditions.

2. We, Abellon Cleanenergy Limited ("***Abellon***") is a sustainable energy solutions developer with a vision to be a national leader in clean energy generation and waste management. We are an established group with multiple projects in Waste to Energy ("***WTE***"), Bio-pellets and Solar Power and are now in the process of extending our presence to Compressed Biogas (CBG) and Material Recycling Facility (MRF) areas.

3. Abellon Group has four (04) Agro-residue/ Biomass Waste to energy power plants and is setting up another five (05) Municipal Solid Waste ("***MSW***") to energy power plants in Gujarat — using Biomass/ Refuse Derived Fuel (RDF)/ MSW Incineration Technology meeting Global Standards — which together will process 5600 MT of waste per day, which will account for almost half of Gujarat's waste. In the process, we will generate 107 MW of electricity per day. Abellon's pioneering effort in green concepts and techniques in WTE sector is recognized in its International Green Building Certification (IGBC) Platinum

ABELLON CLEANENERGY AHMEDABAD

Abellon CleanEnergy Limited
Sangeeta complex, Near Parimal Crossing, Ellisbridge, Ahmedabad - 380006. GUJARAT (INDIA) | CIN: U40100GJ2008PLC054425
Ph: +91-79-66776100 | Email: abellon@abelloncleanenergy.com | Web: www.abelloncleanenergy.com

certification for its three MSW to energy power plants at Ahmedabad, Jamnagar and Rajkot, making it the first company to achieve this not only in India but also in Asia.

4. As a pioneering group in renewable energy sector, we are thankful to CERC for recognizing the requirement of giving impetus to generation of power from MSW. MSW based generators thus form a part of 'General Sellers' in the Draft DSM Regulations 2021. We appreciate the new regime which has introduced substantial changes to existing DSM, and following are our comments for CERC's consideration in the table below having serial number 1 to 3 :

S. No.	Proposed CERC Regulation	Abellon's Comments/Remarks
1.	Regulation 3 (m) provides for 'General Seller' meaning a seller in case of a power project based on other than wind or solar resources.	➢ The definition of 'General Seller' excludes only wind and solar power generators. **There is no recognition granted to Biomass based WTE power plants.** However, under the proposed Regulation 8, **only MSW based generators are separately recognized.** The need for recognition MSW based power plants has been elaborated upon in the 'Explanatory Memorandum ("***EM***")' which is a welcome move. However, other WTE based power plants i.e. **Biomass Power Plants (based on farm waste/agriculture residue) other than Bagasse based plant** ought to be included in the explanatory memorandum and the proposed regulations for the following reasons: (a) Generation of power from biomass is also in the nascent stages. We are the first one to establish Biomass power projects in Gujarat. The biomass utilized by WTE plants of ACEL is essential agro-waste/residue. Even agro-waste comes under the category of solid wastes which also by its very nature are heterogeneous. (b) Solid waste to energy plants (both biomass and MSW) are designed and built with the perspective of processing and disposing various types of waste to prevent its open burning/decay. As such, Biomass plants are mandated to quickly process the waste irrespective of the input quality. **The same is also a statutory mandate in terms of Solid Waste Management Rules 2016.** (c) No single type of biomass is available around the year. A blend of different types of biomass is often fed into the plant which makes it heterogeneous in nature. Harvesting season of various types of crops underscores the fact that no single type of biomass is available throughout the year. The following table demonstrating different kinds of biomass throughout the year:

S. No.	Proposed CERC Regulation	Abellon's Comments/Remarks

S. No.	Crop	Sowing time	Harvesting time
1	Groundnut	June	October-November
2	Wheat	October-November	February-March
3	Bajra	June-July	September-October
4	Cotton	May-June	October-December
5	Sugarcane	June-October	October-January
6	Rice	June-July	October-November
7	Pigeon Pea	June-July	November-January
8	Castor	July-August	January-February
9	Maize	November-March	June-September

(d) Heterogeneity is therefore manifested not just because of type of waste, but in variations in a combination of (i) availability of waste; (ii) type of waste; (iii) size/shape of waste; (iv) bulk density; (v) moisture content; (vi) chloride content; (vii) salt content; (viii) inert/sand/silica; (ix) type of ash during combustion; (x) calorific value and (xi) loss of calorific value during storage (decay). In line to above representation were made to NITI Aayog, Ministry of Power and Ministry of New and Renewable Energy with regards to policy and regulatory impediments in WTE Sectors having Ref No ACEL/NITI/21/701 enclosed as **Annexure 1**.

(e) Different types of biomass have different burning properties and therefore when they are fed and mixed, overall combustion process keeps varying. Since multiple types of biomass/waste **must necessarily be**

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S. No.	Proposed CERC Regulation	Abellon's Comments/Remarks
		used, the heterogeneity increases exponentially and the ability to predict quality of fuel decreases proportionately. The power generator **has no control on the predictability of effects of interaction of different types of fuels during combustion** and its impact on boiler and steam generation. (f) Boiler combustion performance is linked with furnace temperature and desired quantity and quality of biomass. Due to blending of different types of biomass fuel, the interaction of such fuel also creates issues in controlling appropriate temperatures. **The ash fusion temperature of a blend of biomass is not predictable.** Due to this high fouling tendency of ash even at lower temperatures on boiler heat transfer area leads to frequency stoppages and cleaning. Between two cleaning cycles there is a gradual loss in heat transfer efficiency of boiler leads to inherent variation in boiler performance. All of this has consequential effect on power generation. (g) Technically, Biomass plants also contain "fuel follow" mode as against "turbine follow" mode i.e. the turbine follows the steam generated from the boiler instead of demanding steam to match the schedule. It is relevant to note that the travel time of the waste on the grate is typically up to 60 minutes and therefore such boilers are slow in responding. Hence, the normal time blocks of 15 minutes as is applicable to thermal plants does not work for Biomass based power plants. Biomass plants also face the issue of tripping in the plants which is also, not within the power developer's control. ➢ In addition, National Tariff Policy provides: *"6.4.1(ii) **Distribution Licensee(s) shall compulsorily procure 100% power produced from all the Waste to Energy plants in the State**, in the ratio of their procurement of power from all sources including their own, at the tariff determined by the Appropriate Commission under Section 62 of the Act."* ➢ The National Action Plan on Climate Change **("NAPCC")** of the GoI, state wise targets provides that state of

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		Gujarat has a target of developing a capacity of 288 MW of biomass power by 2022 ➢ Abellon is seeking to include biomass power plants within the ambit of the exemption granted by this Ld. Commission limited to those plants using farm/agricultural waste. Other biomass plants using Bagasse waste are not included for consideration. Hence, we are seeking grant of exemption from payment of deviation charges by both MSW based power plants and Biomass based power plants using farm/agricultural waste (other than Bagasse based plant). We hereby enclose the representation in the form of power point presentation which were made to the Central Electricity Regulatory Commission are enclosed as **Annexure 2**.
2.	Regulation 8 provides for 'Deviation Charges' for a general seller being a generating station based on municipal solid waste as (a) Over injection- Zero (b) Under Injection- Zero upto 20% Deviation and at normal rate for under injection beyond 20%. In relation to the above, the explanatory memorandum notes the following: *"3.9.3 CEA has recommended exemption for waste to energy projects from payment of deviation charges within a limit of +/-30%.*	The EM has recognized a part of renewable energy generation sector involving MSW based power plants. However, the following is humbly suggested: (a) The exemption limit granted to MSW plants be in accordance with exemption recommended by CEA i.e. +/-30%. Such exemption may be restricted to small MSW power plants of the capacity equal to or less than 15 MW as deviation from schedule in case of power plants having a small capacity may not pose a threat to system operations. (b) The fuel used in the WTE Project is of heterogeneous nature which is why the calorific value of the fuel is variable. Abellon had analysed the fluctuation in the Calorific value of different type of Fuel used in WTE Projects as detailed in Table -1 below. Based on the possible Low and High Calorific Value of the respective fuels Abellon had calculated the Gross Calorific value of the respective fuels, which is concluded to provide average Gross calorific value from -29 to 27 %. Thus based on the findings as per Table -1 it is depicted that the fuel used in WTE projects has variable calorific value which makes it difficult at time to maintain the

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	3.9.4 Ministry of Power has also recommended a special dispensation for waste to energy projects in so far as deviation charge is concerned. In fact, the waste to energy projects should be seen in context of processing and disposal of waste, and their contribution to social and environmental cause. To encourage such projects, the tariff policy also provides for must off-take of energy from WTE plants. *3.9.5 With due regard to the above considerations, the Commission has extended a completely different treatment to the Municipal Solid Waste (MSW) based projects under the proposed DSM Regulations. The charges for deviation for any over-injection by such generators, as also for under-injection up to 20% from schedule, shall be zero. However, if the under-injection is beyond 20%, the normal rate of charges of deviation shall be applicable for such under-injection beyond 20%.* ***The regional entity generators are paid based on schedule.*** *This implies that in the event of under injection they will be able to retain the energy charge paid to them without producing actual energy. In order to ensure that this does not become a perverse incentive, the Commission has extended free band of deviation only up to 20% of schedule, as against CEA's recommendation for exemption up to 30%. The intent is to balance the interests of the MWS projects in terms of ensuring*	schedule generation from the WTE projects thus causing deviation from the schedule generation. Therefore, for the said reason we humbly submits that the commission may increase exempted deviation for under injection from 20 % to 30 % which shall reduce the financial burden on WTE projects whose primary motive is to mitigate the climate change by processing and disposal of waste and contribution to social and environmental cause. **Table 1 : The fluctuation in calorific value.** (c) The EM specifies the following: i. The regional entity generators are paid based on schedule;

Calorific Value / Types of Fuel used in Waste to Energy Projects	Low (Calorific Value) kcal/kg (A)	High (Calorific Value) kcal/kg (B)	Average (Calorific Value) kcal/kg C =(A+B)/2	Range of Low and High Gross Calorific value (GCV) from Average (A-C/C) %	(B-C/C) %
Mixed Municipal Waste	1100	2000	1600	-31%	25%
Refuse Derived Fuel	1800	3200	2500	-28%	28%
Agro-Waste/Biomass	2250	4000	3100	-27%	29%
			Average	**-29%**	**27%**

*[**NOTE:** Data from multiple sources such as state biomass assessment studies, waste assessment studies, Central Electricity Regulatory Commission Orders, State Electricity Regulatory Commission Orders, and third-party reports has been analysed while arriving at the lower, higher, and average GCV for various types of wastes.*

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	recovery of part of the fixed cost (by allowing retention of energy charge up to 20% deviation) while at the same time making sure that system operation is not put to risk due to wide deviation from schedule."	ii. Payment based on schedule implies that in the event of under injection **they will be able to retain the tariff paid to them without producing actual energy**. The exemption limit has been reduced from +/-30% as granted by CEA to +/- 20%. EM specifies that the balancing mechanism of *"ensuring recovery of part of the fixed cost (by allowing retention of energy charge up to 20% deviation) while at the same time making sure that system operation is not put to risk due to wide deviation from schedule." Is to be applicable.* (d) **The exemption limit granted to MSW generators shall be extended to biomass based power plants other than Bagasse based plant).** The biomass WTE plants (other than Bagasse based plant) are at the same footing as the MSW WTE power plants. Both categories of WTE based power plants face similar issues with respect to (i) heterogeneity of waste (ii) sourcing of waste from unorganized sector (iii) new technology for implementation of disposal of such waste (iv) variability in combustion (v) problems associated with non– segregation etc.
3.	Regulation 13 provides for Repeal and Savings clause as being: *(1) Save as otherwise provided in these regulations, the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2014 shall stand repealed from the date of commencement of these Regulations.* *(2) Notwithstanding such repeal, anything done or any action taken or purported to have been done or taken including any procedure, minutes, reports, confirmation*	It is humbly suggested that Regulation 13 (2), Regulation 13(3) may be included in the following manner: *"On commencement of these Regulations, any reference to the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2014 in any of the Regulations, Standards, Codes or Procedures of the Central and State Electricity Regulatory Commission shall be deemed to be **replaced** by Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2021."* The above said suggestion is proposed as many State Electricity Regulatory Commissions (including Gujarat Electricity Regulatory Commission) have adopted the deviation mechanism enacted by CERC in accordance with Section 61 of the Electricity Act, 2003 providing for State Commissions adopting the principle and

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	or declaration of any instrument executed under the repealed regulations shall be deemed to have been done or taken under the relevant provisions of these regulations.	methodology specified by CERC. GERC Grid Code was enacted in 2013 which provided that 'generating stations may deviate within the limits specified in the CERC UI Regulations as amended from time to time'. CERC DSM Regulations were thereafter notified in 2014 repealing CERC UI Regulations 2009. Accordingly, CERC DSM Regulations 2014 were read into the GERC Grid Code 2013 as per Regulation 14 of CERC DSM Regulations 2014. The Draft DSM Regulations 2021 will repeal CERC DSM Regulations 2014 from the date of notification. It is in this view for the purpose of removal of ambiguity and confusion in interpretation of State Grid Codes, it is sought that the repeal clause of the proposed DSM Regulations 2021 i.e. Regulation 13 be modified in the above said manner.

5. The Purpose of DSM is to maintain balance in the Grid. Ld. CERC has, from time to time adopted procedure to curb variation in grid frequency. Ld. CERC has also provided for incentives by way of exempting categories of generators from payment of deviation charges. Ld. CERC by way of the Draft DSM Regulation 2021, has revamped the mechanism for settlement of deviation and has done away with most of the earlier provisions. We are in support of these draft regulations proposed to be enacted.

6. Ld. CERC has taken note of several difficulties faced by MSW based power generators and carved out an exemption for MSW power plants from payment of deviation charges to the extent of +/- 20% deviation. We are grateful for the consideration accorded to MSW plants and are in support of the Draft DSM Regulations 2021.

7. We are hereby submitting the above said comments for kind consideration of this Ld. Commission.

Yours Sincerely

For Abellon Cleanenergy Limited

Enclosures :

- **Annexure 1:** A copy of Abellon letter to NITI Aayog, Ministry of Power and Ministry of New and Renewable Energy with regards to policy and regulatory impediments in WTE Sectors having Ref No ACEL/NITI/21/701 dated 07.01.2021.
- **Annexure 2:** A copy of Abellon Presentation to CERC .

Date: 7thJanuary 2021
Ref.: ACEL/NITI/21/701

To,
Dr. Neelam Patel
Sr. Adviser (Agrictural) ,
NITI Aayog, 'B' Wing, 5th Floor, NITI Aayog, New Delhi 110 001

Subject: Policy & Regulatory Impediments in Waste to Energy Sector

Ref:

1) Virtual meeting on 6th January 2021 at NITI Aayog
2) Letter from Gujarat Biomass Energy Developers Association to NITI Ayogvide ref. no. GBEDA/NITI/20/1119 dated 20th November 2020.
3) Letter from Abellon Clean Energy Limited to Ministry of New and Renew vide dated 7th September 2020
4) Letter from Gujarat Biomass Energy Developers Association to Ministry of New and Renewvide ref. no. GBEDA/MNRE/20/1119-8 dated 20th November 2020.

Respected Madam,
This has reference to meeting and discussion held through virtual meeting on 6th January 2021 (at 11AM) at NITI Aayog New Delhi to discuss the Policy & Regulatory issues w.r.t Waste to Energy Sector.

On behalf of Gujarat Biomass Developers Association and Abellon, we sincerely thank NITI Ayogfor allowing us an opportunity to discuss issues being faced by the Waste to Energy Sector (MSW and agro-waste based projects)

In continuation to our re-presentations, we shall be submitting a detailed note capturing the issues faced in this sector and our recommendations. **However, in the interim we humbly seek your immediate consideration on the request pertaining to exemption of waste to energy plants (municipal solid waste and agro-waste based) from the UI charges being imposed on the projects and exemption from the corresponding DSM mechanism.**

Briefly, the waste to energy plants are presently being subjected to the same penalties as large conventional thermal power plants for deviation from scheduled/predicted electricity generation vs. actual electricity generation. This is an unfair treatment of such

Abellon CleanEnergy Limited
Sangeeta Complex, Near Parimal Crossing, Ellisbridge, Ahmedabad - 380006, Gujarat (India).
Abelloncleanenergy.com | www.abelloncleanenergy.com | Tel : +91-79-66309332, Fax : +91-79-66309334

plants as the primary purpose of waste to energy plants is processing and disposal of waste.

Abellon CleanEnergy Limited
Sangeeta Complex, Near Parimal Crossing, Ellisbridge, Ahmedabad - 380006, Gujarat (India).
Abelloncleanenergy.com | www.abelloncleanenergy.com | Tel : +91-79-66309332, Fax : +91-79-66309334

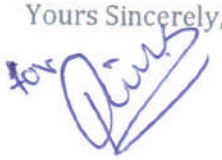
Waste, whether municipal or agro based, is inherently heterogenous, variable and unpredictable - incomparableto coal. As such, the quality, characteristics, and composition of waste is beyond reasonable control of the entity mandated to process and dispose waste and accordingly should not be treated in line with conventional power plants from a regulatory context.

The present treatment of waste to energy plants in line with conventional power plants is a threat to the operations of existing plants and sustainability of waste to energy plants under development. While the Government of Delhi has exempted waste to energy plants from the UI/DSM mechanism, there is no uniformity across India in such consideration.

We are attaching a brief note detailing the aforementionedspecificissue and our request as Enclosure A.Also we are attaching the representations made by the Company/Association to Ministry of New and Renewable Energy for your ready reference as Enclosure B.

We once again thank you for your valuable time and consideration. We look forward to your kind consideration and recommendation to Ministry of Power, Ministry of New and Renewable Energy, FOR, CERC, SERCsfor exemption to be granted to waste to energy plants across India in this regard.

Thanking You,
Yours Sincerely,



For **Abellon Clean Energy Limited**

Enclosure: As detailed above.

CC:

1. The Additional Secretary (Thermal)
   Ministry of Power,
   4th Floor,Shram Shakti Bhavan, Rafi Marg,
   New Delhi, Delhi 110001

2. The Joint Secretary
   (Waste to Energy & Biomass Power)
   Ministry of New and Renewable Energy,
   14, CGO Complex, Lodhi Road,
   New Delhi 110003

Regulatory Rationalization: Exemption to Waste to Energy Plants from DSM and Commercial Implication of UI

Background:

- **Waste to energy projects *(municipal solid waste or agro-waste based)*, though renewable energy, are being set-up in larger public and environmental interest *primarily to process and dispose waste*** in line with objectives of *Swacch Bharat Mission*, avoid open burning of waste, and avoidance of local and global pollutants.

- **Wind and solar resources are harnessed to *maximize renewable energy generation*.** Wind and solar sources are considered *intermittent* in nature as they are not available 24/7. i.e., available only certain time of day and have been treated differently from a policy and regulatory perspective when compared to conventional power (coal, gas based). The differential consideration for solar and wind includes exemption from conventional Deviation Settlement Methodology (DSM). The DSM, broadly mandates that a plant is liable for commercial implications if it does not generate electricity as per predicted schedule.

- **Waste, unlike wind/solar, is not time dependent but based on *fuel* which is available 24/7**. Electricity regulators on this ground have consider energy generated from waste to energy plants as firm and kept such plants under conventional DSM mechanism without considering *variability* aspects in the fuel and *impact on generation.* From a regulatory perspective it is expected that waste to energy plants can predict generation, schedule their generation, and generate as per schedule.

- Even though the waste is available 24/7, the *quality* of fuel is not predictable and incomparable with coal/gas. Consequently power generation from waste is inherently *prone to variations.*

- Presently, waste to energy plants, even though only 10 – 15 MW in capacity and operating on heterogenous and unpredictable fuel (waste) are being treated like large scale conventional thermal plants that operate on near homogenous and predictable fuel (coal/gas) under DSM.

- Waste to energy plants are being subjected to the same penalties for deviations in scheduled electricity generation vs. actual electricity generation as applicable to conventional power plants **Such penalties are not only creating operational and commercial issues for existing projects and are a threat to development of future waste to energy projects.**

- ***The waste to energy plants may kindly be exempted from the conventional DSM mechanism and from UI penalties/charges as deviations in generation of electricity are a manifestation of the inherent heterogenous and variable nature of waste which is not in control of developer.***

1. Power Generation and UI/DSM

- Power generation from conventional plants is regulated in interest of providing stable and efficient supply of electricity into grid.
- CERC introduced the Availability Based Tariff or "ABT" mechanism in 2000 to promote, *inter-alia*, grid stability and efficiency of generation considering the operations of large-scale conventional power plants. ABT, as applicable to conventional power plants allows such plants to recover a Capacity Charge (*for its availability*), Energy Charge (*for its fuel cost*) and required to pay UI charge for deviations *(difference between scheduled and actual generation)*
- Under provisions of UI/DSM generators need to declare/schedule (in 15 min time-block intervals) the predicted energy generation and consumers (DISCOMs etc) need to declare their energy consumption on a day-ahead basis.
- UI/DSM is a *commercial mechanism* that imposes penalty & incentives for deviations from schedules (under/over injection of electricity into grid by generators or under/over drawl by consumers) to achieve stable grid operations.

2. RE Power and UI/DSM

- Wind and solar energy have been kept outside of the conventional UI/DSM mechanism considering *intermittency* of power generation.
- Waste to energy plants, being small scale and with different operational context *(waste processing vs. electricity generation)* from conventional power plants are being treated unfairly as far as UI/DSM and recovery of fixed costs:
    - While, on one hand waste based plants are being subjected to the same UI/DSM charges for deviation from scheduled energy vs. actual generation as large conventional power plants, on the other hand, while conventional power plants are able to recover a % of their fixed cost at various levels of "Availability" no such provision is made available to waste energy plants in their specific context i.e., recovery of fixed cost for waste processed even if energy schedule is lower than the schedulable availability.

      For example, if a waste to energy plant with a **waste processing capacity of 1000 TPD** and **electricity generation installed capacity of 15 MWh** processes and disposes 1000 tons of waste on a day, i.e., 100% of *waste processing capacity*, but is able to schedule say only 7.5 MWh (*due to poor quality of waste), i.e, 50% of installed capacity of electricity generation* for the day, it leads to a situation where there is under-recovery of fixed cost while it is also subjected to UI charges for difference between schedule and generation.

      Tariff *(fixed cost + variable cost)* for waste to energy plants is determined on basis of normative schedule of say around 80% PLF on basis of electricity. If the plant achieves a PLF of say 60% of *schedulable* capacity but processes 100% of the waste, it would have incurred 100% of fixed cost but recovered only 60% of it. This is an unfair approach in context of waste to energy. "Capacity" in context of waste to energy therefore has to be seen in terms of "waste processed" as well.

- Consequently, while waste to energy plants are kept under ABT and are subjected to conventional UI/DSM mechanism, presently do not have an equitable process to account for variations from the normative values as available for even conventional power plants as available in MYT regulations. This amounts to unjust and unfair treatment of WTE plants that are being subjected to the same UI/DSM treatment but do not have any process / methodology defined to fairly recover costs being incurred.

Comparison of Regulatory Consideration for Conventional vs. WTE

	Conventional	WTE
Availability Based Compensation	**Yes**	No
Adjustment of Variable Charges Allowed	**Yes**	No
Adjustment of Uncontrollable Factors Allowed	**Yes**	No
Process of adjustment/true-up annually	**Yes**	No
UI Charges for Deviation	**Standard UI/DSM**	**Standard UI/DSM**

3. Variability in Waste to Energy

- Solid waste to energy plants (*agro-waste, municipal solid waste, RDF based*) are designed and built with the perspective of processing and disposing various types of waste to prevent its open burning/decay. As such, waste to energy plants are mandated to process the waste irrespective of the input or waste quality.

- Agro-waste and Municipal Solid Waste are both forms of "Solid Waste" defined under Solid Waste Management Rules 2016:

> *"**solid waste"** means and includes solid or semi-solid domestic waste, sanitary waste, commercial waste, institutional waste, catering and market waste and other non residential wastes, street sweepings, silt removed or collected from the surface drains, **horticulture waste, agriculture and dairy waste**, treated bio-medical waste excluding industrial waste, bio-medical waste and e-waste, battery waste, radio-active waste generated…"*

- The SWM Rules 2016 also mandate blending of RDF in existing industrial units using fuel:

> ***18. Duties of the industrial units** located within one hundred km from the refused derived fuel and waste to energy plants based on solid waste- All industrial units using fuel and located within one hundred km from a solid waste based refused derived fuel plant shall make arrangements within six months from the date of notification of these rules to **replace at least five percent of their fuel requirement by refused derived fuel** so produced"*

- Agro-waste is not uniform and varying – there are multiple types of agro-waste and each with its peculiarities – size, moisture, ash, inert etc. No single type of biomass is available around the year. Therefore a blend of different types of agro-waste and other waste is often fed which makes it heterogeneous as well. Hon'ble GERC appointed TERI to undertake biomass availability and pricing in Gujarat and the report submitted by TERI to GERC outlines the harvesting season of various types of crops in Gujarat which underscores the fact that no single type of biomass is available throughout the year.

S. No.	Crop	Sowing time	Harvesting time
1	Groundnut	June	October–November
2	Wheat	October–November	February–March
3	Bajra	June–July	September–October
4	Cotton	May–June	October–December
5	Sugarcane	June–October	October–January
6	Rice	June–July	October–November
7	Pigeon Pea	June–July	November–January
8	Castor	July–August	January–February
9	Maize	November-March	June- September

Table Source: Almanac of the major crops in Gujarat from TERI report on biomass availability in Gujarat dated 09.02.2018

- Since multiple types of biomass/waste must necessarily be used, the heterogeneity increases exponentially and the ability to predict quality of fuel decreases proportionately. As such effects of interaction of different types of fuels during combustion is highly predictable and it manifests itself in variations in steam generation and power generation.

- Heterogeneity, is therefore manifested not just because of type of waste, but in variations in a combination of:
    a. Availability of waste
    b. Type of waste
    c. Size/shape of waste
    d. Bulk density
    e. Moisture content
    f. Chloride content
    g. Salt content
    h. Inert/Sand/Silica
    i. Type of ash during combustion
    j. Calorific value
    k. Loss of calorific value during storage (decay)

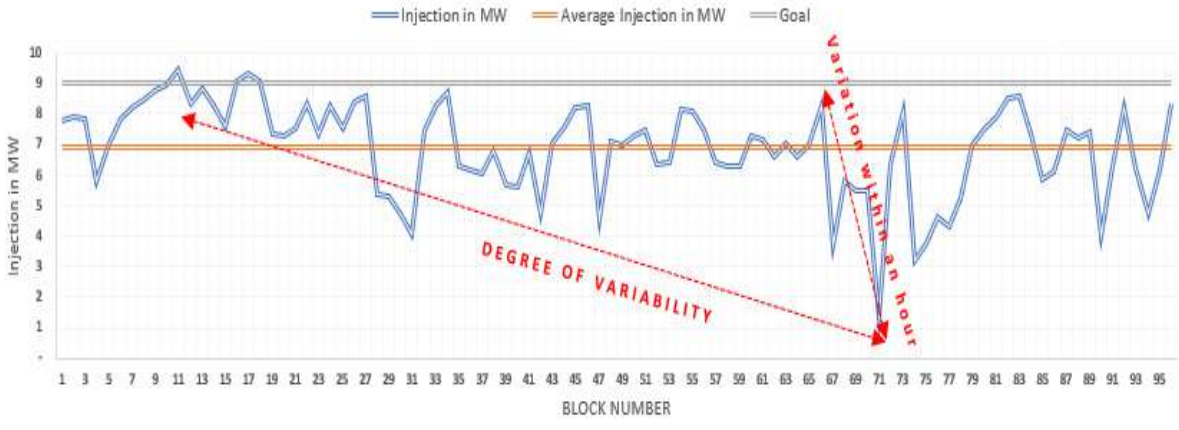
Table: Agro-Waste & Municipal Solid Waste: Heterogenous, Variable, Unpredictable

Sr. No	Parameter	Agro-Waste	Municipal Solid Waste
1	**Type**	**Solid waste**	**Solid waste**
2	**Source**	**Multiple unorganized farm sources + other rural waste**	**Multiple households, commercial establishments, gardens**
3	**Composition**	**Varying composition** *(varying composition of different types of residues – no single type is uniformly available around the year. RDF also being mixed to comply with SWM Rules 2016)*	**Varying composition** *(varying composition of food, paper, plastic, metal, rags, inert)*
4	Characteristics	**Heterogenous mix**	**Heterogenous mix**
5	Bulk Density (Kg/M3)	10 to 200 kg/m3	10 – 400 kg/m3
6	Moisture (%)	10%– 30%	25% – 45%
7	Calorific Value (Kcal/kg)	2300 - 3800	1200 – 2200

Example of Typical Generation and Variation

The graph below is a typical generation graph across 96 time-blocks in a day of a waste to energy plant operating on heterogenous waste mix:

- Scheduled energy: 9 MWh
- Average generation: 7 MWh
- Peak generation in day: 9.2 MWh
- Low generation in day: 1 MWh
- Variation with respect to peak/low: 90%
- Variation within one hour: 85% (peak 8.2 MWh, low of 1.2 MWh)



- There is a continuous variation in generation in every 15-min block.

- The plant processed and disposed 100% of the requisite quantum of waste with the expectation to generate 9 MWh, however, due to variable nature of the fuel and consequential impacts, the average generation was only 7 MWh.

- The plant had to incur UI/DSM charges for the 2 MWh difference in schedule vs. generation (under-injection). *Note that variability would have been manifested regardless of what the schedule was as generation would still not be predictable.*

4. Scheduling of Power & Cost Recovery

- In the present regulatory context, recovery of both fixed cost and variable cost for waste to energy plants is linked to the *scheduled energy (*predicted energy generation) only. *This is in stark contrast to the cost recovery consideration of conventional power plants where fixed cost is recovered regardless of whether energy is scheduled or not.*

- It becomes a necessary burden on the waste to energy plant to schedule as per the normative parameters considered by the regulators regardless of the waste quality. This leads to a situation where there are uncontrollable deviations and UI charges. These get construed as gaming and subject to further penal provisions.

- If the waste to energy plants do not schedule to the full capacity, it would not be able to recover its fixed cost it is incurring to process and dispose the waste which is the primary purpose of such plants. Electricity generation is incidental to the primary objective.

- Recovery of costs that is linked to schedulable capacity of the waste to energy plant is not only inequitable compared to conventional power plants but is also not congruent with the operational context and purpose of the waste to energy plants.

5. Forum of Indian Regulators Recommendation

- The Forum of Indian Regulators ("FOIR"), a body constituted under Section 166 of the Electricity Act, 2003 has observed in its report titled "Recommendations regarding implementation of ABT in Intra-State Systems" that the ABT mechanism is not an appropriate or practical mechanism for the waste to energy power projects which have unpredictable power supply capabilities. The relevant extract of the said report of the FOIR is extracted hereinbelow for ease of reference: -

> *"24. A.B.T. is basically meant for large power plants whose capacity is assigned to one or more beneficiaries on a 24 - hour, long-term basis. It presumes that the plant operator is able to declare the plant availability on day-ahead basis, and is then able to supply power as per the schedule advised by his beneficiaries.* ***As such, A.B.T. is not an appropriate/practicable mechanism for captive/co-generation, or for non-conventional sources of energy (wind, solar, biomass, mini-hydel,etc.), which are mostly unpredictable regarding their power supply capability****. For example,*

payment of capacity charge in A.B.T. is dependent on MW availability declaration. If a figure cannot be committed for the whole of the next day, capacity charge itself cannot be determined. Further, the ***actual generation could vary widely, from the given schedule*** *(e.g. due to changes in wind speed), and* ***a plant could run up huge UI liability****."*

6. Government of Delhi & DERC Decision

- Delhi has highest number of WTE plants in country.
- DERC, in compliance with directions from Ministry of Power and Government of Delhi, has exempted existing and new plants from ABT considering the operational challenges.

  Relevant extract from DERC Order dated 21.01.2019 is as under:

  The Commission has examined the issue pertaining to various charges under open access and relaxation of the Deviation Settlement Mechanism for intra state scheduling purposes of waste to energy ***pursuant to Ministry of Power meeting dated 15.11.2018 & Department of Power, GoNCT of Delhi meeting dated 07.01.2019 and considers it appropriate that the purpose of Waste to energy is to dispose off the waste and divert from dump with the objective of protecting environment. Such plants would also aid the objectives of Swachh Bharat Mission***

  "For generation projects based on Waste to Energy sources in the National Capital Territory of Delhi shall be exempted from following:-
  ……
  (ii) Any commercial/financial implication in case of deviation from the scheduled power under Deviation Settlement Mechanism from the date of the commissioning of the project and the actual generation shall be treated as scheduled generation; "

  While Delhi has exempted waste to energy plants from DSM/UI, such consideration has not been uniformly applied to the sector and across various States / CERC / SERC.

7. Request

1) Immediate: Exemption from Commercial Implication of Deviations / UI Charges

- Waste to energy *(municipal solid waste, RDF, agro-waste)* may kindly be immediately exempted from the conventional DSM mechanism and applicability of UI charges/penalties.

2) Equitable Methodology for Fixed Cost Recovery:

- An equitable methodology to be evolved such that the fixed cost of the waste to energy plants is recovered with respect to the processing and disposal of waste and independent of the electricity generated or scheduled.

ANNEXURES

Annexure – Government Focus, Industry Response and Impact

NATIONAL CONTEXT	GOVT. ACTIONS	INDUSTRY RESPONSE	IMPACT
1970 - 2000  **ENERGY CRISIS & ELECTRICITY DEMAND-SUPPLY GAP, REFORMS.**	**Exploring locally available energy sources** • CASE >> DNES >> MNES • National Program on Promotion of Biomass Power/ • Bagasse Based Cogeneration	• Bagasse for co-generation • Bagasse based biomass power plants	• Successful utilization of local resources. • Stable and predictable operational performance. • **Bagasse becomes reference for biomass.**
2000-2014  **ADDRESSING CLIMATE CHANGE (GLOBAL ISSUES)**	**Promotion of renewable energy sources** • Electricity Act 2003 & National Electricity Policy 2005 • MNES >> MNRE • National Action Plan on Climate Change	• Capacity addition in biomass power, wind and solar. • Development of biomass plants based on 1-2 types of biomass.	• Stable operational performance. However, plants achieve low PLF due to seasonality. • Sourcing tied to industrial agro-waste (e.g. ground nut shells) Significant price increase. Tariff unviable. • **Plants shut/NPA.**
2014 onwards  **WASTE PROCESSING & DISPOSAL AND AVOIDANCE OF OPEN BURNING (LOCAL ISSUES)**	**Swachh Bharat Mission & waste disposal** • Ministry of Power notifies policy on biomass utilization • NGT takes cognizance of open burning of waste and impact on environment and public health	• Revival of biomass plants for processing and disposal of multiple types of waste/residues not being utilized and openly burnt. • Setting-up of MSW to energy plants	• **Successfully processing and disposing waste but variations in electricity generation.**

-

(a) **1990–2000** - The 1990s marked the **beginning of the biomass sector** in India. The sector was promoted by the Government during this period in the backdrop of the crippling energy crisis and the widening gap between the demand of electricity and its supply. The emphasis during this period was on resource utilization at sugar mills *i.e.* co-generation from bagasse with an aim to become energy self-reliant. As a result, **bagasse-based cogeneration** became the *de-facto* reference for biomass-based power generation from a regulatory standpoint.

(b) **2000- 2014**: During this period, many other **selective *mono-fuel*** based biomass plants, such as those based on rice husk or ground nut shell were set up. The development of such biomass-based plants was part of a greater push by the Government to address climate change. The context of such plants become the basis for key regulatory considerations applicable to the biomass sector in general. However, the limited utilization of waste by biomass-based power plants, led to the issue of open burning of agricultural wastes generated in rural and urban areas. Such open burning of the waste undermined the efforts to control air pollution and mitigate greenhouse gas emissions.

It is crucial to note that many currently prevailing regulatory considerations for biomass/waste to energy plants were framed by CERC and SERCs during this period. i.e. in context where biomass-based plants were using selective mono-fuel*).*

(c) **2014 onwards:** Marked a **paradigm shift** in the context of the biomass-based power generation sector. With the launch of the ***Swachch Bharat Mission*** in 2014**, the focus has been on the processing and disposal of all waste in larger environmental and public health interes**t. Consequently, waste based plants are being revived and set-up the overarching objective of **ensuring processing and disposal of waste** with **electricity generation as a by-product**. Waste based power plants are being set-up for processing and disposing a mix of waste *regardless of the quality of waste*. The waste being processed now, is i*nherently variable and heterogenous* and the *variability* of waste has a consequential impact on the technical and commercial parameters of plant operations.

Solid waste to energy plants *(biomass, municipal solid waste, RDF based*) are being operated in line with the Government mandate of ensuring processing and disposing various types of waste to prevent its open burning/decay. Thus, there is a need consider contextually relevant regulatory amendments and policy provisions to support agro-waste plants as well.

Annexure - Operational Mode and Challenges of Waste to Energy Plants

1) Different types of waste have different burning properties and therefore when they are fed in mixed together overall combustion process keeps varying. This is purely on account size, bulk density, moisture presence and heat value available in each biomass. This throws challenges in maintaining stable load in boiler. For stable load in boiler along with other parameters, furnace temperature and furnace draft required to be stable within range. For these one need to have control fuel feeding with desire quantity of heat in it and with correct quantity air injection etc.

2) Boiler generates steam which gets expanded into steam turbine. Steam turbine rotates alternator and alternator generate electricity at grid frequency so that power evacuation can take place. There are three parameters of steam on which performance of steam turbine is directly linked. These are steam pressure, steam temperature and steam qty. Any variation in these three-parameters of steam leads to variation in power generation.

3) For steam turbine operator it is important that all power generation takes place at grid frequency otherwise entire power block will go on home load and no power evacuation can take place. Thus injecting power in grid with grid frequency is most important .Thus plant operator need to keep varying power generation based grid frequency. Generally for 50 Hz alternator must rotate at 1500 rpm (revolution per minutes).

4) If steam quantity and pressure/temperature into steam turbine keep changing, then for same power generation level same speed at alternator cannot be maintained since it varies frequency of power. If frequency of power generation does not match with grid frequency, then plant go in home load with drastic throw of load and with multiple cascading negative impact on plant. Thus, only option left with steam turbine operator is to reduce power generation and keep matching grid power frequency.

5) To evacuate scheduled power, boiler need to supply adequate quantity of steam with desire quality to steam turbine. This is real challenge for entire operating team

6) Boiler combustion performance is linked with furnace temperature and draft, quantity of biomass feed with desire quality.

7) Quality refer to size of fuel, bulk density of fuel, moisture presence in fuel, flowability of fuel, heat value content in fuel, Chemical composition of fuel both organic and inorganic etc. Boiler operator cannot control too many variables on real time basis therefore his dependency goes on fuel burning profile and preparation of fuel.

8) Since the burning profile of various types of waste varies and when they are fed in mixed then resultant real time burning profile need to monitor with quantity of air, furnace draft, emission limits etc. This make boiler unstable. Apart from this effect of

moisture & size of mixed fuel have negative impact on overall combustion of biomass into boiler.

9) In case of single source of waste, for example quality of cotton stalk coming from different fields varies on account of quality of water used for irrigation , use of agro chemical/pesticides and time elapsed between harvesting and feeding into boiler. In nutshell combustion different waste keeps throwing continuous challenges than using prepared high Gross Calorific Value coal.

10) In coal power plant quality and quantity of coal is predictable before its usage .Moreover it has higher bulk density and have better grindability index thus one can even prepare powder like fuel before feeding into power boiler .This gives more certainty on combustion performance into boiler and therefore predictable generation of steam in quantity and with desire quality Thus one can increase and or decrease fuel feed with use of artificial intelligence system to maintain constant power generation from steam turbine .In nutshell in coal based power plant steam turbine take feedback from grid and draw steam from boiler for desire power generation the boiler keeps drawing coal fuel based on need of steam and so on. This is known as “turbine follow mode” This is totally reversed while running waste based power plant where the turbine adjusts the power depending on the available steam from the boiler rather than demanding more steam from the boiler. Since the generation of steam is dependent on the fuel, the biomass plant operates in a “fuel follow” or “boiler follow mode”

11) Due to blending of different types waste, the interaction of such fuel also creates issues in being able to control appropriate temperatures. The ash fusion temperature of a blend of waste is not predictable. Due to this high fouling tendency of ash even at lower temperatures on boiler heat transfer area leads to frequency stoppages and cleaning. Between two cleaning cycles there is a gradual loss in heat transfer efficiency of boiler leads to inherent variation in boiler performance.

DELHI ELECTRICITY REGULATORY COMMISSION

Viniyamak Bhawan, C-Block, Shivalik, Malviya Nagar, New Delhi-110 017.

No. F.9 (164)/DERC/DS/2015-16/C.F 5110

Sub: Exemption of various charges under open access and relaxation of the Deviation Settlement Mechanism for intra state scheduling purposes of waste to energy Projects.

ORDER

(Date of Order: - 21.01.2019)

1. The Commission has examined the issue pertaining to various charges under open access and relaxation of the Deviation Settlement Mechanism for intra state scheduling purposes of waste to energy pursuant to Ministry of Power meeting dated 15.11.2018 & Department of Power, GoNCT of Delhi meeting dated 07.01.2019 and considers it appropriate that the purpose of Waste to energy is to dispose off the waste and divert from dump with the objective of protecting environment. Such plants would also aid the objectives of Swachh Bharat Mission as well as Namami Gange Mission through conversion of waste to energy. Moreover the quantum of waste to energy generated is minimal and has extremely limited operational precedence. Therefore, the Commission in exercise of powers vested under section 86 of the Electricity Act 2003 (36 of 2003) and all powers enabling it in that behalf, has decided as follows:-

   "For generation projects based on Waste to Energy sources in the National Capital Territory of Delhi shall be exempted from following:-

   (i) Wheeling Charges, Transmission Charges, Regulatory Asset Surcharge, Pension Trust Surcharge and Cross Subsidy Surcharge on sale of electricity within NCT of Delhi under Open Access Regulations;

   (ii) Any commercial/financial implication in case of deviation from the scheduled power under Deviation Settlement Mechanism from the date of the commissioning of the project and the actual generation shall be treated as scheduled generation;

Provided that the above exemptions shall be applicable for the useful life of the existing and future projects commissioned or Power Purchase Agreement signed on or before 31st March, 2022:

Provided further that the existing waste to energy projects having entered into a Power Purchase Agreement for sale of electricity with the distribution licensee at a tariff determined under section 62 or adopted under section 63 of the Act by the Commission shall not be eligible for availing the benefit under open access for availing cross subsidy surcharge and other charges as mentioned above in case of premature termination of the Power Purchase Agreement with a view to avail the benefits of exemption of cross subsidy surcharges etc."

2. Ordered Accordingly.

Sd/-

(Justice S S Chauhan)
Chairperson

ANNEXURE-I

3873
03/12/2018

No. 11/146/2017-Th-I
Government of India
Ministry of Power

Shram Shakti Bhawan, Rafi Marg,
New Delhi, Dated: 29th November, 2018.

MEETING NOTICE

Subject: Minutes of the meeting taken by Secretary (Power) on 15.11.2018 (3:00 PM) at Shram Shakti Bhawan on tariff issues of Waste to Energy plants – Regarding.

The undersigned is directed to forward herewith a copy of the minutes of the meeting taken by Secretary (Power), GoI on 15.11.2018 (3:00 PM) at Shram Shakti Bhawan on tariff issues of Waste to Energy plants for information and necessary action.

Encl: As above.

29/11/18

(Chandan Kumar)
Section Officer (Thermal)
Telefax: 23719710

1. Chief Secretary, Govt. of NCT of Delhi, Delhi Secretariat, IP Estate, New Delhi – 110002, Email: csdelhi@nic.in.
2. Chairperson, Central Electricity Authority, Sewa Bhawan, R.K.Puram, New Delhi.
3. Secretary, CERC, 3 rd & 4 th Floor, Chanderlok Building, 36, Janpath, New Delhi- 110001
4. Chairman, Delhi Electricity Regulatory Commission 'Viniyamak Bhavan', C-Block Shivalik, Malviya Nagar New Delhi -110017. Email: chairman@derc.gov.in.
5. Commissioner, North Delhi Municipal Corporation, Dr. S.P.M. Civic Centre, Minto Road, New Delhi – 100002. Email: commissioner-ndmc@mcd.gov.in, Phone: 23225402
6. Commissioner, South Delhi Municipal Corporation, Dr. S.P.M. Civic Centre, Minto Road, New Delhi – 110002. Email:- Commissioner-Sdmc@mcd.gov.in, Phone: 23225901
7. Commissioner, East Delhi Municipal Corporation, 419, Udyog Sadan Patparganj Industrial Area, New Delhi – 110092 Email: commissioner-edmc@mcd.gov.in, Phone: 22144122.
8. CEO, North Delhi Power Limited (NDPL), NDPL House, Hudson Lines Kingsway Camp Delhi - 110 009, Fax: 011 27468042
9. CEO, BSES Yamuna Power Limited (BYPL), Feroze Gandhi Marg, Lajpat Nagar III, Lajpat Nagar, New Delhi 110024,
10. CEO, BSES Rajdhani Power Limited (BRPL) Feroze Gandhi Marg, Lajpat Nagar-III, Lajpat Nagar, New Delhi, Delhi 110024,
11. Chairman, New Delhi Municipal Council (NDMC), Palika Kendra Parliament Street, New Delhi-110001. Email: chairperson@ndmc.gov.in
12. CMD, NTPC Ltd., Scope Complex, Lodhi Road, New Delhi.
13. MD, Ramky, Enviro Engineers Limited, 13th, Floors, Ramky Grandiose, Ramky Towers, Gachibowli, Hyderabad.

6/12/18 SECRETARY

Seen. 5.12.18.

7028 6/12/18

6/12/18

JDETF) 07/12/18

14. [illegible], CES, 4 floor, Dr. Gopabdas Bhawan, 28, Barakhamba Road, Connaught Place, New Delhi - 110001
15. CEO, JINDAL, Timarpur- Okhala Waste Management Company Ltd. , Old NDMC Compost Plant, Behind CRRI, Mathura Road, Delhi - 25
16. CEO & MD, Tata Power, NDPL House, Hudson House, Kingsway Camp, Delhi

Copy to: PPS to Secy (P)/PPS to AS (SNS) / PS to JS (Th)/PS to Chief Engineer (OM & RR)/PA to Director (Th), MoP

Minutes of the meeting taken by Secretary (Power) on 15.11.2018 (3:00 PM) at Shram Shakti Bhawan on tariff issues of Waste to Energy plants.

A meeting was taken by Secretary (Power) on 15.11.2018 in Committee Room, M/o Power S.S. Bhawan, New Delhi to discuss the tariff issues of Waste to Energy (WTE) plants. List of the participants attached at Annexure.

2. JS (Thermal) welcomed all the participants & apprised Secretary (Power) that during the meeting taken by Principal Secretary to Hon'ble Prime Minister on 18.09.18 regarding "assess the progress of action taken on decisions/ recommendations to combat air pollution in Delhi/ NCR" the issue of tariff leading to reduced off-take of electricity from WTE plants was flagged and it was decided that Ministry of Power would convene a meeting with all the stakeholders and resolve the issues and accordingly this meeting has been convened.

3. During the discussions of the meeting it was noted that there are three plants in and around Delhi as under:

a. Okhla plat operated by Jindal, 21 MW with capacity of handling 1950 TPD of MSW
b. Ghazipur plant operated by ILFS, 12 MW with capacity handling 1300 TPD of MSW
c. Bawana plant operated by Ramkey, 24 MW with capacity of handling 2000 TPD of MSW

3.1 The WTE plants at 3a and 3b have been awarded on the basis of bid out tariff for 49% of the plant capacity for a 25 year PPA. The balance 51% capacity not under the PPAs, is available with the projects for sale in the open market. The promoters raised issues of recovery of project cost in the tariff (for bid out portion) on account of change in the operating conditions after 2008, with introduction of Solid Waste Management (SWM) Rules 2016, new emissions norms by MoEF, compliance with orders of NGT, non-extension of Kyoto Protocol / collapse of CDM market for CERs (carbon credits) etc. Consequently, the projects have to incur significantly higher cost from what was envisaged at the time of bidding and resulting in reduced recovery of the incurred costs.

3.2 The WTE plant at 3c is awarded under tariff regulated mechanism and tariff is fixed by DERC. The Developer raised the issue of scheduling by the grid. On account of intermittent supply of power against the generation schedule, mainly on account of the supply pattern of the MSW, it was requested by the project authorities that penalties may be rationalised on the lines of reduced penalties solar/wind projects.

3.1 The project promoters suggested that Government may help in waive the 'cross subsidy' charges and other transmission related charges for WTE plants.

4. Secretary (Power) opined that the two plants having the 49% tied up capacity under PPA, the promoters may seek remedies available under the PPA provisions. He further asked developers (M/s. Jindal and M/s. ILFS) to have the provisions of PPA examined to see if event of "change in law" can be availed due to change in conditions post bid.

4.1 For the remaining 51% part which may be sold in the open market, the regulator (DERC) may examine for waiver/ reduction in various charges including cross subsidy, open access, CTU & wheeling charges.

4.2 Further, DERC may consider for extending the relaxation / widening of the Deviation Settlement Mechanism (DSM) window for intra-state scheduling purpose from the WTE plants.

5. Secretary (Power) further asked NTPC to prepare a policy paper for future waste to energy plants.

Meeting ended with the vote of thanks to the chair.

Annexure-I

Sl. No.	Name / Designation	Organization
Ministry of Power		
1	Shri Ajay Kumar Bhalla	Secretary (Power), ...In Chair
2	Shri Sanjiv Nandan Sahai	Additional Secretary
3	Smt. Archana Agrawal	Joint Secretary (Th.)
4	Shri Ghanshyam Prasad	Chief Engineer (R&R)
5	Shri S.K. Kassi	Director (Th.)
6	Smt. Anita Saini	Under Secretary (Th.)
Central Electricity Authority		
7	Dr. Somit Das Gupta	Member (E&C)
CERC		
8	Shri Ravindra Kadam	Advisor, CERC
DERC		
9	Abhishek Moza	Dy. Secretary, DERC
SDMC		
10	Shri Puneet Kumar Goel	Commissioner, SDMC
11	Shri Ajay Agrawal	SDMC
12	Shri R.K. Sharma	CE, SDMC
EDMC		
13	Shri Pradeep Khandelwal	CE, EDMC
14	Shri Arun Kumar	SE, EDMC
Delhi Govt.		
15	Shri A.K. Jha	Delhi Govt.
NTPC		
16	Shri Gurdeep Singh	CMD, NTPC
17	Shri A.K. Gupta	Director (Comm.), NTPC
18	Shri Mohit Bhargava	GM, NTPC
19	Shri Amit Kulshrestha	GM, NTPC
20	Shri Manoj Mathur	NTPC
21	Shri A.K. Verma	NTPC
22	Manish Kumar Malviya	NTPC

Ramky

23	Shri B. Prasad Reddy	Ramky
24	Shri K. Appi Reddy	Ramky

Jindal

25	Shri Umesh Chopra	Jindal
26	Shri Sandip Dutt	Jindal
27	Shri Umesh Chopra	Jindal

ILFS

28	Shri Haziq Beg	ILFS India
29	Shri Iype George	ILFS Gazipur WTE
30	Shri Deepak Agarwal	IL&FS Environment ILFS

BYPL

31	Shri Shekhar Saklani	Sr. Mgr. (BYPL), Reliance
32	Shri Sunil Kakkar	BYPL, Reliance
33	Shri Sanjay Srivastava	BYPL, Reliance

Tata Power

34	Shri Sumit Sachdev	Sr. Mgr. (BYPL), Reliance

35	Shri Mahender Singh	

STATE LOAD DESPATCH CENTRE (DELHI)

Office of Manager (Energy Accounting), SLDC
SLDC Building, Minto Road, New Delhi-110002
Ph: 23211207, Fax: 23221012, 23221059, website – www.delhisldc.org

No. F./DTL/207/18-19/Mgr.(EA)/SLDC/ 1111 **Dated : 27.03.2019**

Subject : Minutes of the Meeting held in SLDC on 29.01.2019 at 03:00 p.m. to discuss the various issues regarding implementation of DERC order date 21.01.2019 for Waste to energy plants.

The Minutes of the Meeting held in SLDC on 29.01.2019 at 03:00 p.m. to discuss the various issues regarding implementation of DERC order date 21.01.2019 for Waste to energy plants are enclosed for ready reference and further necessary action please.

Yours Faithfully

27.03.19

(Sonali Garg)
Manager (Energy accounting), SLDC

Encl:- As above

Copy for favour of Kind information to:-

1. Secretary, DERC
2. OSD to secretary Power
3. Director (Oprn), DTL
4. ED(T) (SLDC)
5. ED(Engg), DERC
6. DGM(SO),SLDC
7. DGM(EA),SLDC

STATE LOAD DESPATCH CENTRE (DELHI)

Office of Manager (Energy Accounting), SLDC
SLDC Building, Minto Road, New Delhi-110002
Ph: 23211207, Fax: 23221012, 23221059, website – www.delhisldc.org

Subject: **Minutes of the Meeting held in SLDC on 29.01.2019 at 03:00 p.m. to discuss the various issues regarding implementation of DERC order dated 21.01.2019 for Waste to energy plants (WTE).**

The list of the participants is enclosed as Annexure.

SLDC gave a presentation highlighting the issues regarding implementation of DERC order dated 21.01.2019 regarding WTE plants.

The crux of DERC order dated 21.01.2019 is as under:

a) Exempt the 'Waste to Energy Plant' from various charges for sale of Power under Open Access.
b) Relaxation under Deviation Settlement Mechanism from the date of commissioning.

Discussions were held regarding implementation of aforesaid order and following issues were addressed:

1. Date of implementation of DERC order dated 21.01.2019:

As per the Clause 1.(ii) of DERC order regarding relaxation in DSM w.e.f. date of commissioning which is reproduced as under-

"Any commercial/ financial implication in case of deviation from the scheduled power under Deviation Settlement Mechanism from the date of the commissioning of the project and the actual generation shall be treated as scheduled generation.

Provided that the above exemptions shall be applicable for the useful life of the existing and future projects commissioned or Power Purchase Agreement signed on or before 31st March, 2022."

In this regard, stakeholder's gave their views which are reproduced as under:

BRPL View:

"The applicability of the said DERC order is not mentioned in the order. Therefore it is requested that order should be made applicable prospectively on the new transactions applied by Waste to Energy (WTE) plants."

EDWPCL View:

"As per clause 1(ii) of DERC's Order dated 21.01.2019, any commercial/ financial implication in case of deviation from the scheduled power under Deviation Settlement Mechanism from the date of the commissioning of the project and the actual generation shall be treated as scheduled generation; hence the penalty imposed by SLDC under DSM from COD till date on EDWPCL needs to be waived off."

TPDDL View:

"TPDDL agreed with Delhi SLDC comments that retrospective implementation of order would not be possible as EDWPCL and TOWMCL power has already been scheduled under short term open access."

Deliberations and decisions:

As per DERC order, all the existing WTE of Delhi are eligible for DSM waiver from COD. However, SLDC informed that retrospective implementation of above said order would not be possible as EDWPCL and TOWMCL power has already been scheduled under short term open access as these transactions cannot be reversed. Further, the transactions for February 2019 were also approved before the said DERC order. SLDC was of the view that the above order shall be implemented w.e.f. 1st March 2019 and it was decided accordingly.

However, in case of MSW BAWANA, power is fully allocated to Discoms under LTA, so above clause would be implemented from the date of commissioning of the project, as mentioned in order.

In view of the above, SLDC will issue the DSM accounts of EDWPCL and TOWMCL till Feb'2019.

2. Settlement of Actual Generation as Schedule generation for relaxation under DSM:

Exemption of WTE plants under DSM was initially made for 2 years from the date of COD of the plants and was applicable only on the energy supplied to Delhi Discoms.

As per IEGC, DSM suspension is applicable only for the power sale under long term and medium term. However there is no provision of DSM suspension for short term open access. However, as per DERC order dated 21.01.2019, DSM has to be waived off for all the transactions.

In this regard, stakeholder's views are reproduced here under:

BRPL View:

"In this regard BRPL submitted that Delhi SLDC shall prepare DSM account of WTE plants to figure out the variation in generation of WTE plants. This is required to analyze the operational and financial (DSM / ADSM / Sustained deviation charges) impact on the discoms and the impact shall be allowed as a part of additional revenue requirement to the discoms."

BYPL View:

a) *"Deviations for the energy supplied under STOA or Intra-STOA was being treated under DSM mechanism by Delhi SLDC. The reason of two different types of treatment was that the day ahead schedule under STOA transactions cannot be revised as per the applicable CERC/ DERC regulations.*

b) *However, after the order of Hon'ble DERC dated 21.01.2019, the treatment of WTE energy scheduled to the consumers/ beneficiaries other than Delhi Discoms has created contradiction b/w the regulation 14 of the CERC Open access regulation and DERC DSM*

regulations on WTE plants as one does not allow the change in schedule on Day ahead basis and other is providing the flexibility on variations on schedules on day ahead basis.

c) *Exemption on DSM for Open access transactions will create the accounting issues and Operational issues which have commercial implications on Delhi Discoms. In case of BYPL, EDWPCL is a WTE plant which is supplying 49 % power to BYPL and 51% power is being sold through Open access route by the plant."*

TPDDL View:

"Any DSM liability that the DISCOMs incur due to deviation in the actual generation of the Waste to Energy plants should be allowed as a part of ARR of the DISCOMS.

However, Preparation of DSM account is further necessary to assess the amount of deviation that a Waste to Energy plant undergoes. This shall help in analyzing the financial and operational impact of deviation. Non-availability of such data shall result in no check on the deviation by these plants and may affect the health of the grid, especially considering the variability in renewable power which is going to increase with increasing RPO."

Deliberations and Decisions:

If DSM has to be waived off for all the transactions, then following accounting methodologies shall be applicable:

For EDWPCL:

After replacing the schedule by actual generation 49% power would be booked to BYPL. The remaining 51% of power could be allocated to Open Access consumers.

Case 1: 51% of Generation < Open Access Schedule

In this case Schedule of OA consumers would be revised as per actual in pro rata basis resulting schedule of OA consumers would be less than quantum approved in Format-II. However, in this case, the commercial settlement on account of

above, would be settled bilaterally between buyer and seller.

Case 2: **51% of Generation > Open Access Schedule**

In this case Schedule of OA consumers would remain unchanged. Further, if DSM is not applicable to WTE, then it was decide to obtain the clarifications from DERC. Till then, the surplus power of plant would be treated as grid powers.

Case 3: **Generation is negative**

In this case wherein generator is drawing power from grid, Schedule of OA consumers would be revised to zero, as negative schedule cannot be given to OA consumers. Further, if DSM is not applicable to WTE, then it was decided to obtain the clarifications from DERC. Till then, it would be treated as grid power. However, in this case, the commercial settlement on account of above , would be settled bilaterally between buyer and seller.

For TOWMCL:

After replacing the schedule by actual generation 50% (Subjected to 60 MUs per year) power would be booked to BRPL. The remaining 50% of power could be allocated to Open Access consumers.

Case 1: **50% of Generation < Open Access Schedule**

In this case Schedule of OA consumers would be revised as per actual in pro rata basis resulting schedule of OA consumers would be less than quantum approved in Format-II. However, in this case, the commercial settlement on account of above , would be settled bilaterally between buyer and seller.

Case 2: **50% of Generation > Open Access Schedule**

In this case Schedule of OA consumers would remain unchanged. The excess

generation would be booked to BRPL as per PPA dated 27.02.2011, wherein it was mentioned that TOWMCL shall supply minimum of 50% of generation on daily basis to BRPL subject to minimum 60 MUs per year at first.

Case 3: Generation is negative

In this case wherein generator is drawing power from grid, Schedule of OA consumers would be revised to zero, as negative schedule cannot be given to OA consumers. Further, if DSM is not applicable to WTE, then it was decide to take the clarification from DERC. Till then, it would be adjusted in BRPL. However, in this case, the commercial settlement on account of above, would be settled bilaterally between buyer and seller.

3. Settlement in case of power sale through short term open access to outside Delhi/Exchange:

If power is sold to outside the Delhi/ Exchange, then it is not possible to treat actual generation as scheduled generation, so DSM waiver would not be applicable. Also, transmission charges and other open access charges will be applicable as per CERC open access regulations on such transactions.

4. Operational issues:

With the enforcement of CERC (Deviation Settlement Mechanism and related matters) (Fourth Amendment) Regulations, 2018, all the utilities shall have to change sign of their deviation from schedule, at least once, after every 6 time blocks. Violation will lead to severe penalties of 20% for each individual violation.

At present, total WTE capacity in Delhi is 52 MW. After waiver off the DSM penalty on this capacity as per the DERC order 21.01.2019, will lead to difficulties in managing the sign reversal of Delhi as a whole.

In view of the above, all the WTE plants are advised to adhere to their schedule provided on day ahead/ real time basis.

SLDC informed that there will be a consistent delay in issuance of Monthly SEA of open access consumers for the time taken in replacing schedule value with actual.

ANNEXURE

DELHI TRANSCO LTD.

STATE LOAD DESPATCH CENTRE

LIST OF OFFICERS ATTENDED THE MEETING HELD ON 29.01.2019 AT CONFERENCE HALL, SLDC REGARDING IMPLEMENTATION OF DERC ORDER DATED 21.01.2019 PERTAINS TO WASTE TO ENERGY PLANT

SNO.	NAME OF THE OFFICERS	DESIGNATION	COMPANY	PHONE NO.	EMAIL
1	HARJIWAN VYAS	ED(T) SLDC	SLDC	9999533631	Harjiwan.vyas@gmail.com
2	GAURAV ARORA	SR. MANAGER	TATA POWER DDL	9971393897	Gaurav.arora@tatapower-ddl.com
3	KARTIKEY TRIPATHI	SR, EXE	TATA POWER DDL	9717197421	Kartikey-tripathi @tatpowerddl.com
4	ANAS RASHED	ENGINEER	EROS GRAND	971884890	asas@gmail.com
5	PRAKHAR	EXECUTIVE	TOWMCL	7571003772	Prakhar00392@gmail.com
6	NEELESH GUPTA	DIRECTOR	TOWMCL	9873930842	Neelesh.gi[ta@jindalecoplis.com
7	KAUSHAL RASTOGI	AM	TOWMCL	9899787599	Kaushal.rastogi@jiindalocoplis.com
8	SRAJAN BHARGAVA	GM	BRPL	9350110085	Srajan.bhargava@reliance.com
9	MANAV A GUPTA	ENGG.	BRPL	9868070907	Manav.gupta@relianceada.com
10	PRADEEP AGGARWAL	DGM	BRPL	9313554167	Pradeep.aggarwal@relianceada.com
11	DILIP PANDEY	DGM	BYPL	9313081167	Dilip.pandey@relenceada.com
12	SUMMET SALHOTRA	AVP	EDWPCL	9937199825	Sumeet.salhotra@ilfsindia.com
13	PRADEEP KATIYAR	DGM	SO,SLDC	9999533676	Pradeepkatiyar03@yahoo.co.in
14	B L GUJAR	DGM	EA,SLDC	9999533985	Bl.gujar@dtl.gov.in
15	SONALI GARG	MANAGER	EA,SLDC	9999533898	Sonali.garg1@gmail.com
16	DEEPAK SHARMA	ATT MG.	EA ,SLDC	9999533008	deepaksldc@gmail.com

Parth Desai - Abellon

Subject: FW: Submissions by Abellon on Bioenergy/WTE Sector
Attachments: Detailed Note for MNRE.pdf; Enclosures 1 to 14_A.pdf; Enclosures.zip

From: Tarun Rokadiya - Abellon
Sent: 07 September 2020 17:41
To: 'secy-mnre@nic.in' <secy-mnre@nic.in>; 'd.jagdale@gov.in' <d.jagdale@gov.in>; 'aseemk201-cgo@gov.in' <aseemk201-cgo@gov.in>; 'aniruddha.k@gov.in' <aniruddha.k@gov.in>; 'vijay.mnre@gov.in' <vijay.mnre@gov.in>
Cc: Kirit Kanjaria - Claris <kirit@claris.in>; Aditya Handa - Abellon <aditya@abellon.com>; Amit Gosiya - Claris <amit.g@claris.in>
Subject: Submissions by Abellon on Bioenergy/WTE Sector

To,
Hon'ble Joint Secretary,
Ministry of New and Renewable Energy

7th September, 2020

Respected Sir,

At the outset, we highly appreciate various initiatives being undertaken by Hon'ble MNRE and the support being extended to the industry. In particular, we are delighted to learn about the focused efforts on bioenergy under the chairmanship of Hon'ble Secretary, MNRE. We are confident that it shall facilitate in de-bottlenecking the sector and enable it in reaching its full potential and realizing the goals under *Swacch Bharat Mission.*

Abellon, established in 2009, has evolved to become an integrated waste processing and waste to energy company with focus on electricity generation from waste (biomass and MSW), CBG, and pellets. Our present installed capacity is 45 MW and set to expand to over 100 MW which shall enable processing and disposing over 40% of waste generated per day in Gujarat.

We thank you for the opportunity given to us during the monthly meeting on bioenergy on **Thursday, 3rd September, 2020** to present on key concern areas in the sector. As directed, we are making a detailed submission along with supporting documents/enclosures in this email for your kind consideration.

We are looking forward to further discussing the enclosed points with your good office and working towards the much needed facilitation in this regard.

PS: The enclosures are attached in two ways – a) all compiled in one PDF with bookmarks, b) Individual enclosures compiled in a zip format. We would greatly appreciate a line of confirmation upon receipt of the documents.

Thanking You.

Sincerely,

Tarun Rokadiya | Sr.GM – Business Development
Abellon Cleanenergy Limited
Tel: +91-79-66776100 | M: +919925001701

Facilitation Request to MNRE for WTE/Biomass Sector

Abellon Clean Energy

Key points for consideration:

1) Further clarifications/directives on Covid as Force Majeure
2) Clarification/Rationalization of CFA
3) Biomass/WTE Plants to use any solid waste of Renewable Nature
4) Relaxation/relief from DSM/ UI mechanism

1. Further Directives/Clarification on Covid as Force Majeure

Background

- MNRE, vide notification dated 13.08.2020 has declared Covid as a *Force Majeure* event and given directives for a blanket extension of 5 months plus any case to case extension. Enclosed herewith as **Enclosure 1.**
- This has brought much needed relief under PPAs /Concession Agreements for the WTE projects under development.

Issues:

a. **Continuing Delays due to International Travel Restrictions:**

- WTE projects are importing key equipment from Europe and other parts of the world. However, due to present international travel restriction in place, travel plans for purposes of inspection of equipment and installation are getting delayed. This is impacting further progress of projects and planned milestones.

b. **Uncertainty on Applicable Tariff for Projects:**

- Though the DISCOMS are willing to extend the COD of the project in line with extension notified by MNRE, there is continuing uncertainty on the applicable tariff.

- The tariff for projects under development is in reference to control period of SERC tariff orders. The PPAs for the project state that in case the project is not commissioned within a specific control period, of the SERC tariff order, the tariff applicable to the project shall be lower of the tariff as per PPA or tariff determined for subsequent control period.

  Relevant extract from WTE PPA:
  Clause 5.1 at Page 13.

  "Above tariff shall apply for the projects commissioned on or before 31st March 2021. In case, commissioning of the Project is delayed beyond 31st March 2021, GUVNL shall pay the tariff as determined by Hon'ble GERC for MSW Projects effective on the date of commissioning of MSW power project or above mentioned tariff, whichever is lower".

  Relevant extract from Gujarat Waste to Energy Tariff Order 2017 (**Enclosure 4**) is as under:

  Para 26 at Page 33.

  "In view of the above observations, we decide that the Control Period specified in the para 2.4.1 of Order No. 04 of 2016 dated 10.11.2016 is to be considered as from the date of the Order i.e. 10.11.2016 to 31.3.2021. "

- Consequently, even if COD is extended as per MNRE directives, DISCOMs are presently challenging applicable tariff or unwilling to accept that the tariff should remain unchanged.

c. **Uncertainty on Applicable Benefits of Policy**:

- Some States have notified State specific WTE policies in which benefits of policies are applicable if the projects are commissioned in the policy period.
- PPA's for WTE projects have been signed in reference to State level policies (ex. GJ WTE Policy 2016) which is valid till March 2021.
- Even if COD is extended, but falls out of State policies/enabling framework, it creates long-term issues/uncertainties for the project.

Relevant extract from Gujarat Waste to Energy Policy 2016 issued on 28.03.2016 (**Enclosure 3**) is as under:

Clause 3 Page 2.

"3. Operative Period.

This policy will come into effect from date of its notification and shall remain in operation for a period of 5 years.

Projects based on generation of energy from MSW that are commissioned during he Operative Period shall become eligible for the benefits and incentives declared under this Policy…."

In absence of certainty on applicable tariff and benefits of policy, project developers and lenders continue to face uncertainty and anxiety even though COD is extended.

Request:

The following is requested from MNRE in view of the above constraints and uncertainties:

1) MNRE may kindly issue further directives that blanket extension for projects that have international dependency to be made applicable till international travel restrictions are lifted by Government of India.

2) MNRE may kindly issue further clarifications that there should not be any downward revision of tariff for projects that have been delayed due to COVID, i.e., the applicable tariff should be as if the projects would have been commissioned in the period if they were not delayed due to Covid.

3) MNRE may kindly RE policies in States should be extended by at least the period considered by MNRE, or a longer period.

2. Clarification and Rationalization of CFA

Background:

- MNRE has recently announced a revised Capital Financial Assistance (CFA) Program to encourage the WTE sector which is still in nascent stages of development. Enclosed herewith as **Enclosure 5.**
- Development of more WTE / waste processing projects is ultimately in larger consumer interest.
- As per the MNRE notification and guideline, the CFA, if availed, shall be disbursed in the loan account with the lender and not be disbursed to the project developer, i.e, it shall be used to off-set the outstanding debt.
- The CFA is to be disbursed after a period of 3 months from achieving COD.
- The SERC in Gujarat has determined tariff without considering any subsidy/benefit to the project and the PPAs for the projects have been signed in reference to such a tariff.

Issues:

a. **DISCOMs Intent to Take Immediate Benefit of CFA is Discouraging**

- The PPAs for WTE projects signed in reference to the generic tariff state that if any benefit is availed from Central/State Govt, it shall be passed on to DISCOM.

Relevant extract from Power Purchase Agreement of Waste to Energy Plant with Gujarat Urja Vikas Nigam Limited (**Enclosure 2**) is as under:

Clause 5.1 at Page 12 and Page 13.

"In case the Power Producers avails any benefits/ support/ assistance from Central Government/State Government/ UDD/ ULB/ Municipal Corporation / any other agency at any time during the term of this agreement, the same shall be passed on to GUVNL.".

Relevant extract from Gujarat Waste to Energy Tariff Order 2016 (**Enclosure 11**) is as under:

Para 2.4.2(o) at Page 29.

"If any benefit/support/assistance is received by the project developer from Central Government/State Government/ULB/UDD/Municipal Corporations/any other agency, the same shall be passed on to the purchaser of electricity. The project developer or distribution licensee shall approach to the Commission for re-determination of the tariff."

- Consequently, it is the DISCOMs intent that the CFA is to be credited to DISCOM upon receipt of such subsidy, or the tariff notified by the SERC is to be revised downward and PPA amended accordingly.

- DISCOMs taking benefit of subsidy does not support growth of WTE sector – the CFA would then just be pass through – no incentive for developer to apply for CFA

Request:

Since, the CFA is meant to catalyze development of WTE sector and projects rather than subsidize DISCOMs, appropriate directions/clarifications may kindly be issued by MNRE which may not conflict with existing PPA:

1) The CFA, if availed from Central Government, should be governed by the Central guidelines issued, i.e., CFA is to be disbursed into the loan account with the lender only and not to DISCOM.

2) Since the benefit is being availed from Central Government to support objectives of *Swacch Bharat Mission* and Renewable Energy in a public interest project, the benefit of the CFA may be passed on the DISCOM/consumers in the following manner:

   - The tariff revision by SERC to be effected after a period of 5 years from receipt of CFA considering project-specific operational parameters, i.e., actual operating parameters and not the normative parameters.

   - However, if the Selected Developer or its holding company demonstrates that the indirect benefit due to the CFA has been re-invested in a new WTE or waste processing project of equivalent investment in India within 5 years from availing the CFA, there should not be a revision in tariff in the current project as the CFA would have been deemed to have been utilized for additional capacity building in waste processing and disposal/WTE which benefits consumers at large.

3. Biomass/WTE Plants to be Allowed to use any waste of Renewable Nature

Background:

- Processing and disposal of all forms of waste – biomass, wet waste, municipal waste, plastic waste, is being encouraged through various rules, policies, and orders:

  - **Solid Waste Management Rules 2016** ***(SWM rules mandate using RDF)***

    Relevant extract from Solid Waste Management Rules 2016 (**Enclosure 6)** is as under:

    *"**solid waste"** means and includes solid or semi-solid domestic waste, sanitary waste, commercial waste, institutional waste, catering and market waste and other non residential wastes, street sweepings, silt removed or collected from the surface drains, horticulture waste, agriculture and dairy waste, treated bio-medical waste excluding industrial waste, bio-medical waste and e-waste, battery waste, radio-active waste generated in the area under the local authorities and other entities mentioned in rule 2;*

    *"**18. Duties of the industrial units** located within one hundred km from the refused derived fuel and waste to energy plants based on solid waste- All industrial units using fuel and located within one hundred km from a solid waste based refused derived fuel plant shall make arrangements within six months from the date of notification of these rules to replace at least five percent of their fuel requirement by refused derived fuel so produced"*

  - **Plastic Waste Management Rules 2016** ***(WTE recognized for plastic waste disposal)***

    Relevant extract from Plastic Waste Management Rules 2016 (**Enclosure 7**) is as under:

    "5. Plastic waste management.- (1) The plastic waste management by the urban local bodies in their respective jurisdiction shall be as under: -
    …….
    *(b) local bodies shall encourage the use of plastic waste (preferably the plastic waste which cannot be further recycled) for road construction as per Indian Road Congress guidelines or **energy recovery** or waste to oil etc …."*

  - **National Biofuel Policy 2018** ***(renewable resources use for biofuel)***

    Relevant extract from National Biomass Policy 2018 (**Enclosure 8**) is as under:
    Para 3.1 at Page 15

"i. 'Biofuels' are fuels produced from renewable resources and used in place of or in blend with, diesel, petrol or other fossil fuels for transport, stationary, portable and other applications;

ii. Renewable resources are the biodegradable fraction of products, wastes and residues from agriculture, forestry, tree based oil other non-edible oils and related industries as well as the biodegradable fraction of industrial and municipal wastes."

Para 5.12 at Page 18
"5.12.1 Taskforce on Waste to Energy created by NITI Aayog has estimated generation of 62 MMT of Municipal Solid Waste (MSW) annually in India. This waste has a huge potential of producing drop-in fuels and generate power including Refused Derived fuel, biogas/electricity and compost to support agriculture.

- MNRE recognizes *various type of waste as "Renewable Nature"* and allows mixing as such for purposes of eligibility under CFA

  Eligibility Criteria in CFA, Para 3.1 (v)
  "Projects based on combustion of Waste of Renewable Nature shall be eligible for CFA. For combustion-based projects, mixing of other waste of renewable nature may be permitted."

- Though there is said to be surplus biomass, there is seasonality of availability – linked to cropping cycles etc. The fuel intermittence causes the biomass plants to operate at low PLF and operate below capacities.

- MSW is available in abundance and throughout the year. Setting-up of WTE plants requires at least 500 TPD of waste to have economic viability. However, CPCB data estimates that more than 60% of MSW generated in India is being generated in Tier 2 and 3 cities with quantum ranging from 25 TPD – 300 TPD. Such quantum of waste is too small for WTE plants. MSW from Tier 2 and 3 cities needs to be aggregated along with any other form of available solid waste to set-up "cluster based WTE plants"

- To encourage processing and disposal of all types of waste across various geographies, an "any waste" to energy model needs to be encouraged so that all waste to energy plants may freely utilize any combination of solid waste – biomass, MSW, RDF, plastic waste etc to maximize the processing and disposal of all types of solid waste. This will also lead to enhanced asset utilization and de-risk fuel supply issues.

Issues:

a. Project Eligibility/Qualification Criteria Not Waste Agnostic

- While MNRE recognizes energy generation from various types of waste to be renewable in nature, there is a siloed approach of State regulators or absence of enabling directives in line with MNRE.
- State regulators restrict usage of the type of waste. For example, biomass to power plant may utilize only biomass etc. This conflicts with the SWM Rules 2016 where usage of RDF is being mandated.
- There is threat of non-compliance if biomass plants use RDF or WTE plants use biomass.

Request:

To maximize the potential of waste utilization across biomass/WTE plants, MNRE may kindly issue appropriate notification/guideline:

1) Use of Renewable Resources to be allowed across all existing and new biomass/WTE/CBG/Gasifiers at the discretion of the project developer. Compliance of environmental norms to be governed by CPCB/SPCB as the case may be. Mixing of different types of waste does not change the renewable nature of the project.

   Renewable Resources to be defined as:

   "Renewable resources are wastes and residues from agriculture, forestry, tree-based oil other non-edible oils and related industries as well as industrial and municipal wastes"

Benefits:

- Encourages development of cluster-based "any waste" model
- Catalyzes the biomass, WTE, and biofuel sector
- Supports development of WTE in clusters where sufficient MSW/biomass may not be available – co-blend with any other available waste.

4. Relief/Relaxation from Deviation Settlement / UI Penalties

Background:

- Biomass/WTE projects are being set-up in larger public and environmental interest primarily to process and dispose waste in line with objectives of Swacch Bharat Mission, avoid open burning of waste, and avoidance of local and global pollutants.

- Solid wastes are heterogenous in nature and unpredictable in physical and chemical composition. The solid wastes vary in size, shape, density, moisture, inert content, corrosive elements etc. Further there are daily and seasonal variations. Solid waste is incomparable to coal.

- Biomass plants that are multi-fuel based, i.e, utilizing a varying blend of waste, have significantly different challenges and operating profile compared to plants where predominantly a single type of fuel such as rice husk, bagasse, or juliflora is utilized.

- The Biomass/WTE plants need to *process and dispose the waste regardless of the quality of waste.* The farmers cannot be mandated to provide a specific quality of agro-waste nor does the municipal corporation have any control on the municipal waste being generated by the constituents of the city.

- Further more, greater emphasis is on complying with stringent environment rules and regulations while processing and disposing the waste. To meet the requisite environmental norms *(maintaining certain boiler temperature, complete processing of waste, less unburnt material in ash)* it becomes necessary to vary process parameters which also results in variation in the electricity generation.

- There is significant inherent variation in generation of electricity from such plants on account of the nature of biomass/waste and fundamental operational differences compared to conventional power plants. Biomass/WTE plants are slow responding and cannot increase or decrease steam generation like conventional thermal plants. *A detailed explanatory note on waste is enclosed as* ***Enclosure 9.***

- Biomass/wte plants are prone to more frequent trippings due to corrosive/abrasive nature of waste.

- SERC/CERC have kept biomass/WTE plants under the "Deviation Settlement Mechanism" i.e, the plants are mandated to predict and declare a schedule of generation in 15 min time blocks and generate accordingly. Any deviation in generation (largely under-injection) from declared schedule attracts penal provisions under the UI/DSM mechanism as applicable to conventional thermal plants.

  Relevant extract from Gujarat Biomass Tariff Order 2018 (**Enclosure 10**) is as under:

Para 2.4.1.(e) at page 10 of Biomass tariff Order 2018:

"The Commission noted that generation from biomass based power projects and bagasse based co-generation projects is predictable and can be scheduled on day ahead basis. The Commission decides that the provisions of the GERC (Terms and Conditions of Intra-State Open Access) Regulations, 2011 as well as GERC ABT orders shall be applicable to such projects. The exemption from scheduling requirements for the smaller capacity biomass based power projects having installed capacities up to 4 MW has been kept considering their smaller size and difficulties of monitoring by the SLDC. Relaxation from scheduling the generation cannot be extended to the biomass based power projects and bagasse based co-generation projects up to 10 MW capacity due to the reasons stated above. "

Relevant extract from Gujarat Waste to Energy Tariff Order 2018 (**Enclosure 11**) is as under:
Para 2.4.1.d at page 12 of WTE tariff Order 2018

The Commission is of the opinion that the generation from MSW to energy projects is predictable and hence, can be scheduled in accordance with the intra-state ABT guidelines. Gujarat Waste to Energy Policy 2016 also specified that the projects based on MSW shall give their forecast and schedule for day to day operation. The Commission also noted that the sector is new and the state has no operational experience of MSW to energy plants. The Commission decides to relax the provisions of intra state ABT orders for the MSW to energy projects commissioned during the control period of this order. The MSW to energy project developer should forecast their generation to the load despatcher as per the standard provision under the intra-state ABT orders of the Commission, however there will be no commercial impact in case of deviation from the scheduled power for a period of one year from the date of the commissioning of the project. Thereafter, the commercial implications of ABT order shall be applicable to such projects.

Issues:

a. Conventional DSM/UI Not Technically Feasible for Biomass/WTE

- Though the biomass/WTE are *fuel* based plants, due to the inherent variations in fuel (solid waste) which are not in any reasonable control of developer, it is not technically appropriate to apply the same principles of DSM/UI as applicable to conventional thermal plants.
- The deviation penalties range up to Rs. 8/KWh are significant and causing financial stress.
- The biomass/WTE plants are small capacity (up to 15 MW) and not comparable to large conventional power plants.
- CERC/ SERCs have only recently (2018 onwards) introduced a separate methodology for forecasting and scheduling for Wind/Solar. The WTE

sector is still in nascent stages and should not be treated in the same manner as conventional power plants.

b. Constant Threat of Non-Compliance and Penal Provisions/Coercive Action from DISCOM/ SLDC / Regulators

- The inherent and significant deviations in generation of electricity from biomass/WTE plants are being construed as deliberate and being subjected to further scrutiny by DISCOM/SLDC/SERC.

- DISCOM/SLDCs are also alleging the deviations to be an act of gaming/fraud and threatening coercive action.

- The negative/coercive action (PPA termination/gaming allegations) by DISCOMs/SLDC/Regulators on biomass/WTE plants in the Country is an overhang on the industry and shaking up investor/developer confidence.

  Relevant extract from the notice sent by Gujarat State Load Despatch Centre (**Enclosure 12**) is as under:

  Any UNDER injection against schedule will be viewed as non-compliance of SLDC instructions and further, SLDC may be compelled to take EMERGENCY MEASURES for grid security. Further SLDC will pass on the penalty attracted at regional periphery, if any to the company.

Request:

In view of the difficulties being faced and threat to operation, we request MNRE

1) MNRE may kindly issue guidance to States/SERC to make suitable changes to ABT/DSM mechanism taking into consideration the specific challenges of WTE/biomass projects.

2) MNRE may kindly take-up inter-ministerial coordination with MoP / CEA / FOR / CERC / SERCs to come up with a methodology and approach for scheduling and forecasting for biomass/WTE in consultation with industry.

Supporting References:

1) Delhi has highest number of WTE plants in country. DERC has exempted existing and new plants from ABT considering the operational challenges.

   Relevant extract from DERC Order dated 21.01.2019 (**Enclosure 13**) is as under:

   "For generation projects based on Waste to Energy sources in the National Capital Territory of Delhi shall be exempted from following:-

   ……

(ii) Any commercial/financial implication in case of deviation from the scheduled power under Deviation Settlement Mechanism from the date of the commissioning of the project and the actual generation shall be treated as scheduled generation; "

2) The Forum of Indian Regulators, while introducing the Availability Based Tariff regime in India had documented that the ABT/DSM/UI mechanism would not be appropriate for RE including biomass/WTE.

Relevant extract from Forum of Indian Regulators report: RECOMMENDATIONS REGARDING IMPLEMENTATION OF AVAILABILITY BASED TARIFF (A.B.T.) IN INTRA-STATE SYSTEMS (**Enclosure 14**) is as under:

Para 24 at page 14
"A.B.T. is basically meant for large power plants whose capacity is assigned to one or more beneficiaries on a 24 - hour, long-term basis. It presumes that the plant operator is able to declare the plant availability on day-ahead basis, and is then able to supply power as per the schedule advised by his beneficiaries. As such, A.B.T. is not an appropriate/practicable mechanism for captive/co-generation, or for non-conventional sources of energy (wind, solar, biomass, mini-hydel, etc.), which are mostly unpredictable regarding their power supply capability. For example, payment of capacity charge in A.B.T. is dependent on MW availability declaration. If a figure cannot be committed for the whole of the next day, capacity charge itself cannot be determined. Further, the actual generation could vary widely, from the given schedule (e.g. due to changes in wind speed), and a plant could run up huge UI liability."

Enclosures

Enclosures (attached in email as separate documents)

1. MNRE Notification dated 13.08.2020
2. Relevant pages from Waste to Energy Power Purchase Agreement with Gujarat Urja Vikas Nigam Limited
3. Gujarat Waste to Energy Policy 2016 issued on 28.03.2016
4. Gujarat Waste to Energy Tariff Order 2017
5. MNRE Guidelines on CFA 28.02.2020
6. Solid Waste Management Rules 2016
7. Plastic Waste Management Rules 2016
8. National Biomass Policy 2018
9. A detailed explanatory note on Biomass/Waste and its impact on generation
10. Gujarat Biomass Tariff Order 2018
11. Gujarat Waste to Energy Tariff Order 2016
12. Sample Notices sent by Gujarat State Load Despatch Centre
13. DERC Order dated 21.01.2019
14. Forum of Indian Regulators report: RECOMMENDATIONS REGARDING IMPLEMENTATION OF AVAILABILITY BASED TARIFF (A.B.T.) IN INTRA-STATE SYSTEMS

GUJARAT BIOMASS ENERGY DEVELOPERS ASSOCIATION
10th Floor, Sangeeta Complex, Near Parimal Crossing, Ellisbridge, Ahmedabad- 380006. India.
Email: gjbiomass.association@gmail.com

20th November 2020

Ref: GBEDA/MNRE/20/1119-8

To,

The Secretary,
Ministry of New and Renewable Energy, Government of India
Block-14, CGO Complex, Lodhi Road,
New Delhi-110 003, India

Subject: Policy & Regulatory Impediments in Waste to Energy Sector

Respected Sir,

We, Gujarat Biomass Energy Developers Association ("Association") represent interests of renewable energy generators operating in the State of Gujarat. The members of the Association are biomass based waste to energy power plant generators having installed capacity of 45 MW and municipal solid waste to energy developers who are in the process of setting-up plants with installed capacity of more than 65 MW and exploring opportunities at pan-India level as well. The plants shall cumulatively process and dispose over 50% of waste generated in Gujarat – adding significant institutional capacity in context of waste management at State and National level.

The waste to energy projects are addressing critical waste processing and disposal challenges in line with objectives of *Swacch Bharat Mission* as well as preventing air pollution (*especially PM2.5)* which is a rising cause of concern in India.

While waste to energy is being promoted at Centre and State level in line with the mission objectives and mandates, there are presently policy and regulatory gaps that have not taken into consideration the primary purpose and objective of such plants, i.e., *processing and disposal of waste.* Unfortunately, waste to energy plants are being subjected to unjust penal provisions at par with large-scale conventional (coal and gas) based power plants where the primary purpose is *generation and stable supply of electricity*. Consequently, from a regulatory and policy perspective, there is inequitable treatment of waste to energy plants in comparison to conventional power and even renewable power such as wind/solar.

GUJARAT BIOMASS ENERGY DEVELOPERS ASSOCIATION
10th Floor, Sangeeta Complex, Near Parimal Crossing, Ellisbridge, Ahmedabad- 380006. India.
Email: gjbiomass.association@gmail.com

The inequitable consideration is manifesting in the form of significant commercial and operational issues which is threatening the sustainability of the waste to energy sector.

We are attaching a brief note for your kind consideration covering the background, issues, and proposed solutions as Enclosure A.

In view of the above, we humbly request your office to allow us an opportunity to make a presentation to detail out the facts and the issues beings faced in this sector and also request for inter-Ministerial/Department discussion for resolving the regulatory and policy impediments.

While the waste to energy sector has been *enabled*, it also needs to be *sustained* not only to protect interests of the stakeholders *(developers, financial institutions, municipal corporations*) but also the larger public and environmental interest and ultimately fulfilling objectives of *Swacch Bharat Mission.*

We sincerely look forward for your kind consideration in this regard and needed co-ordination with other Ministries/Departments.

Yours Sincerely,

FOR, GUJARAT BIOMASS ENERGY DEVELOPERS ASSOCIATION

AUTHORISED SIGNATORY

For, The Secretary
Gujarat Biomass Energy Developers Association

Enclosure: Note on Regulatory Gaps, Implications and Request.

Abellon CleanEnergy

A PROMISE TO CLEAN INDIA…

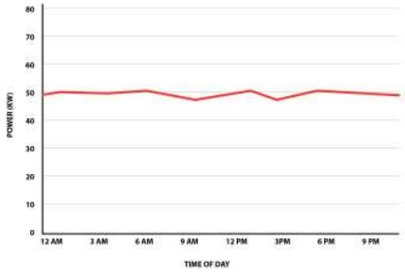
WTE Policy & Regulatory Issues and Request

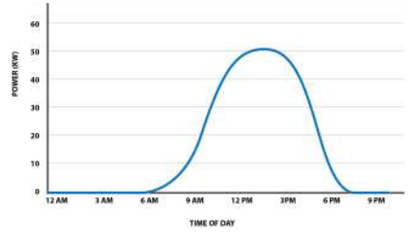
Evolving National Context, Govt Action, Industry Response, & Impact

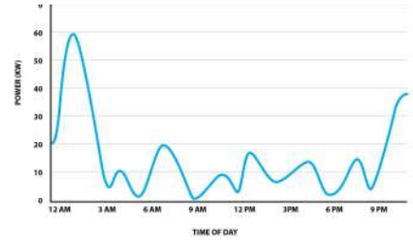
NATIONAL CONTEXT	GOVT. ACTIONS	INDUSTRY RESPONSE	IMPACT
1970 - 2000  **ENERGY CRISIS & ELECTRICITY DEMAND-SUPPLY GAP, REFORMS.**	**Exploring locally available energy sources** • CASE >> DNES >> MNES • National Program on Promotion of Biomass Power/ • Bagasse Based Cogeneration	• Bagasse for co-generation • Bagasse based biomass power plants	• Successful utilization of local resources. • Stable and predictable operational performance. • **Bagasse becomes reference for biomass.**
2000-2014  **ADDRESSING CLIMATE CHANGE (GLOBAL ISSUES)**	**Promotion of renewable energy sources** • Electricity Act 2003 & National Electricity Policy 2005 • MNES >> MNRE • National Action Plan on Climate Change	• Capacity addition in biomass power, wind and solar. • Development of biomass plants based on 1-2 types of biomass.	• Stable operational performance. However, plants achieve low PLF due to seasonality. • Sourcing tied to industrial agro-waste (e.g. ground nut shells) Significant price increase. Tariff unviable. • **Plants shut/NPA.**
2014 onwards  **WASTE PROCESSING & DISPOSAL AND AVOIDANCE OF OPEN BURNING (LOCAL ISSUES)**	**Swachh Bharat Mission & waste disposal** • Ministry of Power notifies policy on biomass utilization • NGT takes cognizance of open burning of waste and impact on environment and public health	• Revival of biomass plants for processing and disposal of multiple types of waste/residues not being utilized and openly burnt. • Setting-up of MSW to energy plants	• **Successfully processing and disposing waste but variations in electricity generation.**

Context Setting: Purpose of Power Plants

Generation Pattern







	Conventional	Solar/Wind	WTE
Purpose	**Predictable Supply of electricity**	**Renewable electricity**	**Processing & disposal of waste**
Availability	24/7	Time of Day	24/7
Fuel	Homogeneous coal/gas	-	Heterogenous waste
***Variability* in Generation**	Very low - low	Low - High	High

Solid Waste Characteristics

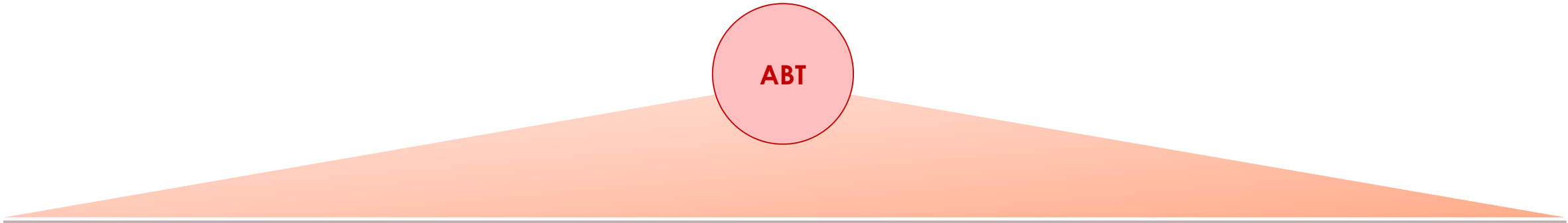
Sr. No	Parameter	Municipal Solid Waste
1	**Type**	Solid waste
2	**Source**	Multiple households, commercial establishments, gardens
3	**Composition**	Varying composition *(varying composition of food, paper, plastic, metal, rags, inert)*
4	**Characteristics**	Heterogenous mix
5	**Bulk Density (Kg/M3)**	10 – 400 kg/m3
6	**Moisture (%)**	25% – 45%
7	**Calorific Value (Kcal/kg)**	1200 – 2200
8	**Ash (Sand/Silica) (%)**	15 – 30%

Solid waste is heterogenous and highly variable

Regulatory Provisions: Availability Based Tariff

Conventional Power Plants & Regulatory Provisions

- Power generation from ***conventional plants*** is regulated in interest of **providing stable and efficient supply of electricity into grid**.
- CERC introduced the Availability Based Tariff or "ABT" mechanism in 2000 to promote, *inter-alia*, grid stability and efficiency of generation considering the operations of large-scale conventional power plants.



ABT is essentially a *commercial mechanism* which has the following three commercial components applicable to conventional power plants:

1. Capacity Charge	2. Energy Charge	3. UI Charge
Fixed Cost (*recoverable for plant availability*)	Variable Cost (recoverable for fuel cost incurred)	Difference between scheduled and actual generation

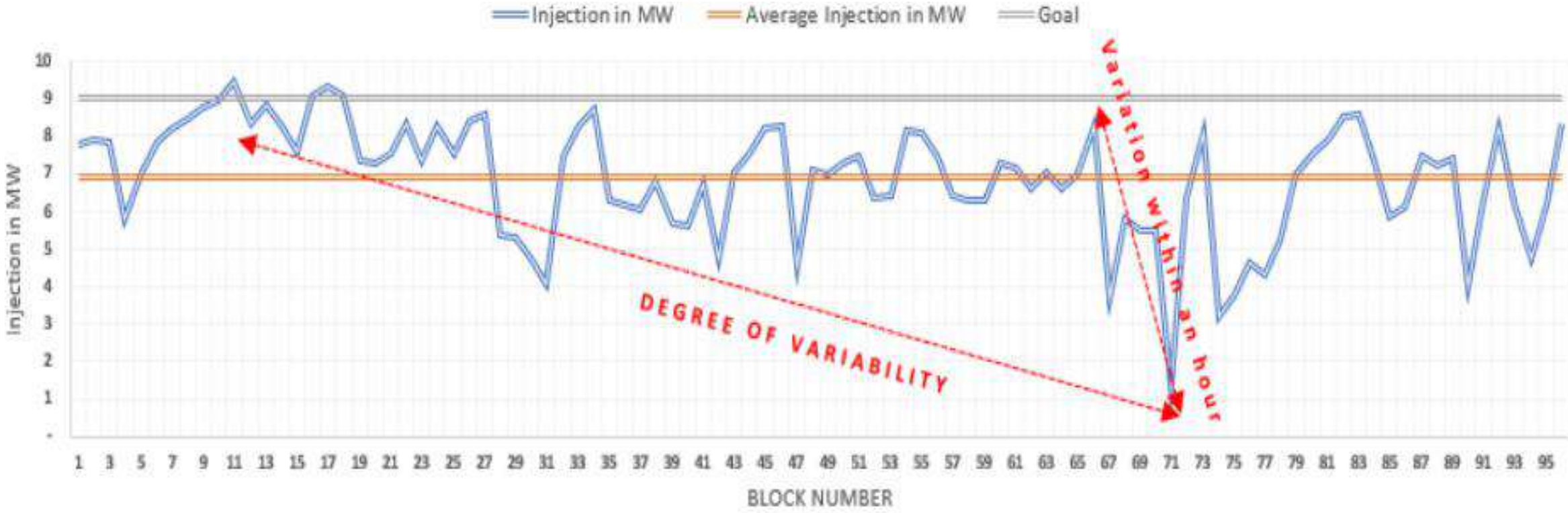
ABT is fundamentally designed to optimize electricity generation while appropriately compensating generators for fixed costs.

Variability & Impact in WTE

- Waste is a heterogenous mix of various types of material.
- Available 24/7 but highly unpredictable = High variability in generation
- Primary mandate to process & dispose regardless of quality of waste.
- **WTE are inequitably treated under ABT.**
- **Variability and its impact are not accounted for.**

Variability & Impact in WTE

An illustrative chart of actual variability in a WTE plant



- The plant processed and disposed 100% of the requisite quantum of waste with the expectation to generate 9 MWh, however, due to variable nature of the fuel and consequential impacts, the average generation was only 7 MWh.
- The plant incurred losses as it had to pay for UI/DSM charges for the 2 MWh difference in schedule vs. generation (under-injection) due to uncontrollable factors
- ***Note that variability would have been manifested regardless of what the schedule was as generation would still not be predictable***

Cost Recovery Regulatory Gap in WTE

Though WTE Plants are under ABT, they do not have equitable provisions for cost recovery as Conventional Power Plants

Conventional Power Plants			Waste to Energy Power Plants		
Components of ABT	**Regulatory Consideration**	**Governing Regulation**	**Governing Regulation**	**Regulatory Consideration**	**Components of ABT**
Fixed Charge	**Based on Availability**	**MYT Regulations** *(Normative Parameters + Process for Adjustment)*	**Tariff Orders** *(Normative Parameters)*	**Based on Scheduled Energy**	**Fixed Charge**
Variable Charge	**Based on Scheduled Energy**				**Variable Charge**
Energy Charges Adjustment	Yes		No		
Fuel Variability Adjustment	Yes		No		
Revenue Adjustment/ARR	Yes		No		
UI Charge	**Scheduled vs. Actual Generation**	**CERC DSM Regulations**	**Scheduled vs. Actual Generation**		**UI Charge**

No Regulatory Consideration

DSM/UI Exemption for WTE in India

Sr. No.	States	Year of Regulation/Order	WTE Installed Capacity	Exemption Granted
1	Delhi	2019	52 MW	All WTE Plants
2	Madhya Pradesh	2013	11.5 MW	All WTE Plants
3	Uttar Pradesh	2019	-	All WTE Plants

MoP and GoNCT Meeting & DERC Order for WTE Projects

ORDER

(Date of Order: - 21.01.2019)

1. The Commission has examined the issue pertaining to various charges under open access and relaxation of the Deviation Settlement Mechanism for intra state scheduling purposes of waste to energy pursuant to Ministry of Power meeting dated 15.11.2018 & Department of Power, GoNCT of Delhi meeting dated 07.01.2019 and considers it appropriate that the purpose of Waste to energy is to dispose off the waste and divert from dump with the objective of protecting environment. Such plants would also aid the objectives of Swachh Bharat Mission as well as Namami Gange Mission through conversion of waste to energy. Moreover the quantum of waste to energy generated is minimal

"For generation projects based on Waste to Energy sources in the National Capital Territory of Delhi shall be exempted from following:-

(i) Wheeling Charges, Transmission Charges, Regulatory Asset Surcharge, Pension Trust Surcharge and Cross Subsidy Surcharge on sale of electricity within NCT of Delhi under Open Access Regulations;

(ii) Any commercial/financial implication in case of deviation from the scheduled power under Deviation Settlement Mechanism from the date of the commissioning of the project and the actual generation shall be treated as scheduled generation;

Provided that the above exemptions shall be applicable for the useful life of the existing and future projects commissioned or Power Purchase Agreement signed on or before 31st March, 2022:

ABT's Limitation Recognized by FOIR for Renewables

Forum of Indian Regulators Recommendation on ABT

FOIR Recognized that Recovery of Fixed Charge (Capacity Charge) basis scheduled energy not appropriate for Waste to Energy

FOIR Report on "RECOMMENDATIONS REGARDING IMPLEMENTATION OF AVAILABILITY BASED TARIFF (A.B.T.) IN INTRA-STATE SYSTEMS"

- *"A.B.T. is basically meant for large power plants whose capacity is assigned to one or more beneficiaries on a 24 - hour, long-term basis. It presumes that the plant operator is able to declare the plant availability on day-ahead basis, and is then able to supply power as perthe schedule advised by his beneficiaries.* ***As such, A.B.T. is not an appropriate/practicable mechanism for captive/co-generation, or for non-conventional sources of energy (wind, solar, biomass, mini-hydel, etc.), which are mostly unpredictable regarding their power supply capability. For example, payment of capacity charge in A.B.T. is dependent on MW availability declaration. If a figure cannot be committed for the whole of the next day, capacity charge itself cannot be determined. Further, the actual generation could vary widely, from the given schedule (e.g. due to changes in wind speed), and a plant could run up huge UI liability.*** *"*

Submission & Request

1) **Immediate: Exemption from Commercial Implication of DSM/UI**

   WTE plants shall provide schedule, however, to be paid on actual generation basis. **No commercial implication of deviations from schedule.**

2) **Long-term: Fixed Cost Recovery: Linked to Waste Processing**

   WTE projects should be able to recover fixed cost to the extent the plant is available to process and dispose waste and the % of waste processed in reference to waste processing capacity. i.e, **de-link the fixed cost recovery from energy generation / scheduling**.

स्वच्छ भारत

एक कदम स्वच्छता की ओर

You must be the **CHANGE**

You Want to See in the World

(M K Gandhi)

Thank You *Join us in making India a Clean & Healthy Nation*