Karnataka Electricity Regulatory Commission

Methodology of TOD Settlement Procedure in the State of Karnataka

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The Commission has notified the GEOA Regulations on 19.01.2023. Regulation 11, specifies that the charges shall be determined by the Commission considering the methodology specified by Forum of Regulators (FoR), for Green Energy OA.

The FoR has finalised the methodology for the various OA charges during September, 2022. Among other things, the FoR has specified the implementation of ToD for settlement of energy injected/drawn. Subsequently, the Commission has issued an Order dated 08.06.2023 wherein the Commission has decided as follows:

> *"**Implementation of Time of Day (TOD) settlement of energy injected/drawn:** In order to have a common methodology for calculation of all the open access charges, Rule 12 of the Electricity (Promoting Renewable Energy Through Green Energy Open Access) Rules, 2022 had mandated the Forum of Regulators (FoR) to prepare a model regulation on methodology for calculation of open access charges, as well as banking charges within a period of four months from the date of commencement of the rules. The Rule also specifies that while framing the methodology, the FoR shall ensure that various permissible charges are not onerous and shall meet the prudent cost of the distribution licensee in order to fulfil the objective of promoting the procurement of green energy by Green Energy Open Access Consumers.*
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> *Accordingly, the Commission under Rule 11 of the KERC GEOA Regulations, 2022, has specified that it shall consider the methodology while computing the charges for Green Energy Open Access as specified by FoR under Rule 12 of the 'Electricity (Promoting Renewable Energy through Green Energy Open Access) Rules, 2022' (as amended from time to time).*
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> *In accordance with the Rules, FoR in its Model Regulation on Methodology for calculation of Open Access charges and Banking charges for Green Energy Open Access Consumers, has specified that the energy banked during peak TOD slots shall be permitted to draw during peak as well as off-peak TOD slot. However, the energy banked during off-peak TOD slots shall be permitted to draw during off-peak TOD slot by only paying the banking charges and from off peak TOD slot to peak TOD slot by paying additional charges as may be specified by Appropriate Commission in addition to the banking charges.*
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> *Thus, the Commission in line with the methodology developed by FoR as specified under the Rules, decides to implement ToD settlement of energy injected/drawn. The Commission in its Regulations, has already specified the Banking Charges in kind @ 8% of the banked energy in line with the FoR methodology. However, the KERC GEOA Regulations are silent about the additional banking charges to be paid for drawal of energy during peak hours which was injected during off-peak hours. Thus, the Commission in line with the methodology developed by FoR, holds that 2% of the banked energy in kind in addition to the 8% banking charges should be charged for drawal of off-peak energy during peak hours. The ToD slots shall be as specified in the Tariff Orders issued from time to time and shall be applicable to LT consumer(s)*

also who seeks open access under the KERC GEOA Regulations. The morning peak slot shall be from 6:00hrs. to 10:00 hrs. and the evening peak slot shall be from 18:00 hrs to 22:00hrs, unless it is modified."

Accordingly, the Commission directed the office to draft procedures for implementation of ToD in the State of Karnataka, keeping in view the ToD settlement procedures issued by other States and the methodology set out by FoR for determination of charges under Green Energy OA. Accordingly, a draft 'Discussion Paper on TOD Settlement Procedure' was issued and objections/suggestions/views were invited from stakeholders and interested persons. During the Public Hearing KPTCL/SLDC has submitted that the table illustrated in the discussion paper depicts an ideal situation where the energy transaction is done on one to one basis. However, in practical situations, one consumer sources energy from multiple generators at the same time and similarly, one generator sells power to multiple consumers. Accordingly, SLDC requested the Commission to provide an example illustrating the ToD settlement of energy involving multiple consumers and/or multiple generators under different regimes (old regime and under GEOA). In this regard, it is pertinent to note that slot-wise generation schedule/wheeling schedule/consumption schedule of all the generators/consumers is a precursor for effective implementation of the TOD settlement procedure. As such, implementation of AMR facilities is necessary for effective implementation of the TOD settlement procedure.

With regard to computation of banked energy, the Commission in its Order dated 29.03.2023, in Rithwik Energy Generation Private Limited and Others versus Karnataka Power Transmission Corporation Limited and Anothers, has specified the following:

"b. Till such time automatic reading and billing take place, the following shall be adopted:

i. Each month, at the injection point, the authorised representative of the ESCOM where the energy is injected and the authorised representative of the company shall read or download the meter data, on the metering date i.e., the midnight of the last day of the calendar month and sign a joint statement indicating the previous month reading and the current month reading of the various parameters and compute the energy and reactive power imported as recorded by the import meter and the energy and reactive power injected as recorded by the export meter, in addition to any parameter required for billing purpose. The joint statement shall not be signed by any other official other than the authorised representatives.

ii. Along with the joint statement the generator shall submit an allocation statement duly signed by the authorised representative of the company,

allocating the entire energy injected during the month to its consumers (indicating the RR Number and the ESCOM) under WBA.

iii. *The joint statement and the allocation statement shall be sent by email by second day of every calendar month to avoid delay in billing, to the nodal agency and the billing section of the ESCOMs where the open access consumers are situated, by the authorised representative of the injection ESCOM and the original copy of the joint statement and allocation statement could be sent later for record purpose.*

iv. *At the consumer end the jurisdictional engineer shall read or download the meter data, on the metering date i.e., the midnight of the last day of the calendar month and sign a statement indicating the previous month reading and the current month reading of the various parameters and compute the energy and reactive power consumed by the consumer, in addition to any parameter required for billing purpose and send it to the billing section by second day of the calendar month.*

v. *If the net energy injected by the Generator under WBA, is more than the total quantum of energy consumed by the Open Access consumer, the entire consumption of such Open Access consumer should be treated as "wheeled energy". The balance quantum of energy remaining, after wheeling, has to be treated as "banked energy".*

vi. *If the net energy injected by the Generator under WBA, plus the banked energy, if any, is less than the total consumption of energy of the Open Access consumer, the excess energy consumed is to be billed as per the tariff applicable to the said "Non-Exclusive Consumer" or the "Exclusive Consumer", as the case may be, and such excess energy consumed is deemed to be supplied by the "Consumption Point" ESCOM.*

vii. *The billing section shall prepare the bill after deducting the consumption by the consumer from various open access sources like IEX, Wheeling etc., and send it to the concerned consumers by the 5th day of the calendar month."*

Thus, above procedure shall be followed for slot-wise consumption, till AMR is put in place. Accordingly, if the net energy sourced through open access under GEOA regime in any slot from third party/ captive/Power exchanges is more than the total quantum of energy consumed by the Open Access consumer, the entire consumption of such Open Access consumer should be treated as "wheeled energy". The balance quantum of energy remaining, after wheeling, has to be treated as "banked energy". Computation of banking charges and settlement of banked energy considering the energy consumed by the consumers under different OA regimes shall be done considering the regulations and charges under the respective regimes.

As regards offset of energy banked in one slot (peak or off-peak) and drawn during both off-peak and peak hours, the banked energy should be first offset

with the energy drawal in the same slot and the remaining energy should be considered for offsetting in the other slot.

The Commission in its Tariff Orders, has clearly specified the peak and off-peak ToD slots applicable to all HT consumers (the normal slots to be treated as off-peak slots for the purpose of computation of banking charges). However, the GEOA Rules issued by MoP specifies that LT consumers having contract demand of 100 kW and above can opt for Open Access and as such, the ToD slots shall be applicable to such consumers also for settlement of energy and charges. Thus, considering the ToD slots specified in the tariff Order, an illustration is enunciated below to depict the monthly settlement of energy and daily settlement of charges thereof.

Table-1 (in kWh)

Day		6am-10am (Peak)	10am-6pm (Off-peak)	6pm-10pm (Peak)	10pm-6am (Off-peak)	Total
Day 1	Injection	100	120	100	130	450
	Drawal	120	100	100	100	420
	Banking	-20	20	0	30	30
Day 2	Injection	125	90	120	120	455
	Drawal	90	120	100	120	430
	Banking	35	-30	20	0	25
Day 3	Injection	90	120	100	100	410
	Drawal	125	90	120	110	445
	Banking	-35	30	-20	-10	-35
TOTAL	Injection	315	330	320	350	1315
	Drawal	335	310	320	330	1295
	Banking	-20	20	0	20	20

Table-2: Computation of Banking Charges on a daily basis (in kWh)

Day	Total Banking during peak	Total Banking during Off-peak	Total Charges: Off-Peak to off peak or peak to off-peak (in kind)	Total charges to be paid (in kind)
Day 1	0	+20+30=50	50*0.08=4	4.0
Day 2	35+20=55	0	55*0.08=4.4	4.4
Day 3	0	30	30*0.08=2.4	2.4
Total	55	80	135*0.08=10.08	10.80

Note: Where there is net drawal from grid banked energy is zero

Thus, at 8% banking charges, for the 135 kWh, the banking charges will be 10.80 kWh. In the above example, it is observed that at the end of three days there is a net drawal of 20kWh during peak time and 40kWh banked during the off peak. Thus, out of the 40kWh, 20kWh is accounted to be drawn during the peak period. Therefore, additional 2% charges have to be paid on 20kWh, which works out to 0.4 units. Thus, the total banking charges will be 11.2 kWh (10.80+0.4). Therefore, RECs shall be issued on the total units banked less the banking charges in kind.

(Suppose in the above example, the net drawal was 20 units during peak time and net banked energy during off-peak time was 10 units, then the additional 2% charges should be levied on 10 units. Similarly, if the net drawal was 20 units during peak time and net banked energy during off-peak time was 20 units, then the additional 2% charges should be levied on 20 units).

It is to be noted that at the end of the month if there is net drawal during peak hours, the same has to be first set off against the net banked energy (if any) at the end of the month during off-peak hours and to the extent of such energy set off additional 2% charges has to be levied.

The above approach shall be followed for settlement of banked energy.

Secretary

for **Karnataka Electricity Regulatory Commission**