

THE ELECTRICITY CONSUMER GRID

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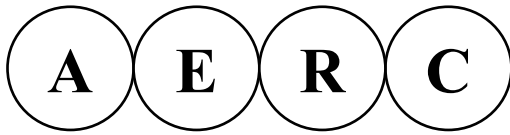
July - September

- *Salient Features of Tariff Order issued on 12th September, 2007 by the AERC for 2007-08*
- *How Do The New Tariffs Affect Your Bill?*
- *Some Facts on Digital Energy Meters*

And More.....



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PREFACE

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Shri Phanidhar Borah

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Shri Madan C. Bhattacharjya

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Shri Rajendra Bahadur

Shri Bhaskar Bora

During FY 2006-07, Assam witnessed some unprecedented shortfall in rain and the electricity sector in Assam which is 70 % dependent on hydro based generation suffered a serious setback in power supply even during off peak hours. The Discoms had to put up with the disgruntled consumers who experienced frequent load shedding. This year, Mother Nature had been benevolent with incessant rainfall in the state and better revenue collections were reported with more sale. The recent spurts of public outcry in the matter of installation of digital meters by the Discoms have somewhat dampened this feel good factor. A short article in question & answer format on digital meters is presented in this issue.

The salient features of the new electricity tariffs which came into effect from 20th September are also incorporated in this volume. AERC has approved rise in tariff of 1 to 2% to various categories of consumers against the demand of 19% filed by the Utilities. There is no increase of tariff for the consumers below poverty line. Average tariff was kept at Rs. 4.42 per unit same with last year's tariff.

The demand for power is increasing fast but the generation capacity has not increased at the same pace. In fact, the gap between demand and supply has been widening over the past few years. Some thoughts are being shared with the readers on utilization of the idle captive/standby capacities of Tea and other industrial houses in overcoming power shortage.

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"Every day you may make progress. Every step may be fruitful. Yet there will stretch out before you an ever-lengthening, ever-ascending, ever-improving path. You know you will never get to the end of the journey. But this, so far from discouraging, only adds to the joy and glory of the climb".
-- Sir Winston Churchill (1874 - 1965).

"Do not believe in anything simply because you have heard it. Do not believe in anything simply because it is spoken and rumored by many. Do not believe in anything simply because it is found written in your religious books. Do not believe in anything merely on the authority of your teachers and elders. Do not believe in traditions because they have been handed down for many generations. But after observation and analysis, when you find that anything agrees with reason and is conducive to the good and benefit of one and all, then accept it and live up to it." – Gautama Buddha

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FROM THE CHAIRPERSON'S DESK

With the commissioning of the Karbi-Langpi Hydroelectric Project which have added to the generation capacity of the state and the good monsoons in the state this year the power supply position have improved to a great extent. The ongoing modernization and proposed replacement/upgradation of generation stations should be completed in a time bound manner for maximization of benefits to the ultimate beneficiary of the state. It is hoped that with the withdrawal of licensing in generation private participation in generation particularly in renewable energy and small hydro projects will be forthcoming and significantly contribute towards improving generation capacity. The transmission capacity of the state has also improved with phased implementation of the ADB funded project during the year and it is expected that grid availability and stability will improve to the desired level after the work is completed. The implementation of the APDRP schemes in the Distribution sector and reported consumer friendly initiatives by Discoms have also made considerable strides in development of this sector. All the implementing agencies have to monitor all the ongoing projects with greater efficiency with a view to achieve the objectives of such investments in time.

In order to reap the benefits of all the ongoing projects to improve the overall system performance, the utilities will have to endeavour to reduce their AT&C losses to the minimum possible.

(J.P. Saikia)

News Briefs

AERC Chairperson Retired

Shri Pranab Kumar Bora Chairperson, Assam Electricity Regulatory Commission retired on 31st July, 2007. In a ceremonial function organized in the Commission office on 31st July, Shri Bora was given a warm farewell. Speaking on the occasion all the officers, consultants and staff members of the Commission recalled his amiable qualities and the contributions made by him. During his short stint with the Commission (a period of thirteen months) from 2.06.2006, the Tariff Order for 2006-07 was released and the Tariff Order for Champamati Small Hydro Electric Project at BTC area was issued. It may be mentioned here that this was the first non conventional energy project proposed to be implemented under public-private partnership. Moreover, some important amendments of the AERC (Supply Code & Related Matters) Regulations were carried out under his guidance. He took great interests in the functioning of the Consumer Advocacy Cell of AERC and offered valuable suggestions for drafting the quarterly issues of the 'Consumer Grid'. The third Consumers' Awareness Meet- highlighting the importance of energy conservation- was organized during his tenure in the Commission.

Consumer Grid wishes Shri Bora a happy and healthy retired life.

Shri J.P Saikia, Member, AERC is presently acting as the officiating Chairperson of the Commission.

Discoms implemented installation of Digital Energy Meters.

(Source: The Assam Tribune, September 13, 2007)

Great confusion is prevailing among the consumers over the installation of the new power meters, which are replacing the old electro-magnetic meters. At places, consumers have even damaged a number of new meters. Several consumer organisations have also demanded clarification from the ASEB and the Government as to why these meters are being installed. They have also questioned the process adopted for selection of the suppliers of these meters.

In the face of the controversy over the selection of the suppliers of the electronic

meters, the Assam State Electricity Board (ASEB) made it clear that there was no shady deal in selecting the suppliers of the electronic meters. The suppliers – L&T, Secure Meters and HPL Socomac – were selected through a transparent method of global bidding in November last. These firms have international collaborations too. The ASEB has claimed that these suppliers were selected out of the 17 parties that had submitted bids for the work. The Asian Development Bank (ADB), which has provided the money for the Accelerated Power Development and Reforms Programme was also satisfied with the process adopted in selecting the firms.

Costlier Captive Power to be tapped to meet shortage

(Source: Business Standard, May 10 2007)

Faced with a power crisis in the country – the peak shortage is at a 10 year high of over 10 percent – the Government is drawing up an urgent plan of action to tap captive power plants (CPPs) or plants set up for “captive” use by a company. This is a sub-optimal and expensive solution, and it is still unclear who bear the additional cost involved. “Captive power is not the best solution but you have to find fixes”, said Power Secretary Anil Razdan on the sidelines of a conference on power shortages. “The country has about 20,000 MW of installed captive power capacity, of 1 MW and above. Though about 15,000 MW of captive capacity is connected to the grid, only about 6 percent of the energy generated actually flows to the grid due to various regulatory issues. The government’s view now, echoed by the Central Electricity Regulatory Commission (CERC), is that “every megawatt counts” and that any power that can be added should be added to the grid. “One megawatt can light up 10,000 houses”, says CERC member Bhanu Bhushan. However, there are issues related to selling of CPP’s surplus power, including government rules and regulations. These, in fact, discourage industries from selling surplus captive power. Further, State Governments’ high levies for cross – subsidies and wheeling make the surplus power generated commercially non-viable for a private power producer to add to the grid.

New evaluation period and process parameters for the APDRP*(Source: Power Line, August 2007)*

The power ministry has decided to revise the evaluation period and process parameters for the Accelerated Power development and Reform Programme (APDRP). The evaluation period has been raised from one year to five years. Utilities accessing APDRP funds are now required to reduce their aggregate technical and commercial (AT&C) losses to 15 percent within five years. They also have to source the entire project cost as loans. However, 50 percent of the cost will be converted into grants if the utilities manage to maintain AT&C losses at 15 percent for five consecutive years. The center also plans to increase the fund availability under the revised APDRP from Rs 60 billion to Rs 145 billion to be spent over the next five years.

China shuts down thermal power plants*(Source: The Power Line, August 2007)*

China shut down small thermal power plants totaling 6950 MW in the first half of 2007. This completes about 70 percent of its goal to close small coal fired generating units totaling 50,000 MW and other thermal plants totaling 7,000 to 10,000 MW during 2006-10. The move is part of the country's aim to reduce per unit gross domestic product energy consumption and discharge of main pollutants by 20 percent and 10 percent respectively by 2010.

Australia has agreed to sell uranium to India*(Source: The Power Line, August 2007)*

Australia has agreed to sell uranium to India for use in nuclear power plants despite India not being a signatory to the non-proliferation treaty on atomic weapons. It is expected to sign a bilateral safeguards agreement with India soon. The deal is likely to include the right to allow Australian inspectors to check the chain of supply of the nuclear fuel to ensure that none is siphoned off into weapons programmes. The agreement may take time to finalise due to opposition from Australia's Labour Party.

Salient Features of Tariff Order issued on 12th September, 2007 by the AERC for 2007-08

- (1) The Assam Electricity Regulatory Commission has approved rise in tariff of 1 to 2% to various categories of consumers against the demand of 19% filed by the Utilities namely Upper Assam Electricity Distribution Company Limited, Lower Assam Electricity Distribution Company Limited and Central Assam Electricity Distribution Company Limited. The new tariff will be effective from 20.09.2007.
- (2) Energy rate for all categories of electricity consumers except Jeevan Dhara category has been increased by 5 paisa without any enhancement of fixed charge.
- (3) There is no increase of tariff for the consumers below poverty line.
- (4) Average tariff was kept at Rs. 4.42 per unit same with last year's tariff.
- (5) Against the sales projection of 2417 MU in 2006-07, the sales projection for 2007-08 is considered at 2905 MU. There will be an increased supply of about 500 MU of energy to the consumers of the State. Due to running of Karbi Langpi Hydro Electric Project, an additional energy of around 400 MU will be made available to the Grid.
- (6) The total T&D loss including Transmission loss has been estimated at 31.15% in 2007-08 which is lower by 2.7% than the previous year.
- (7) A rebate of Rs. 40 per month is given for all consumers who have installed solar water heating systems for meeting their hot water requirements.
- (8) Some concession has been given to domestic category of consumers on connected load by way of taking the higher rating of only one equipment if both Air-conditioner (without heater) and Geysers are installed and used for domestic purpose only.
- (9) Process of Multi Year Tariff has already been started from 2007-08 with a control period of three years.

SUMMARY OF TARIFF SCHEDULE FOR FY 2007-08

The revised tariff is applicable within the state of Assam w.e.f. 20.09.2007 till 31st March 2008 or until replaced by another order of the Commission.

Schedule of Tariff w.e.f. 4-8-2006					
LT GROUP					
Category			Consumption Pattern	Energy Charge	Fixed Charge
No	Name	Connected Load		Rs/kwh	Rs/KW/month
LT-I	Jeevan Dhara	upto 0.5 kW	Upto 30 kWh/month	2.15	15 per connection
LT-II	Domestic-A	upto 5 kW	0-4 kWh/day	2.80	30
			next 4 kwh/day	3.85	30
			balance kwh	4.55	30
LT-III	Domestic-B	above 5 upto 20kw	For all units	4.15	30
LT-IV	Commercial	upto 20 kW	For all units	4.55	110
LT-V	General Purpose	upto 20 kW	For all units	4.00	125
LT-VI	Public Lighting		For all units	4.25	120
LT-VII	Agriculture	upto 7.5 HP	For all units	2.30	30
LT-VIII	Small Industries	Upto 25KVA (20KW)	For all units		
i	Rural			2.35	30
ii	Urban			2.60	40
LT IX	Temporary				Minimum Charge
	Domestic			5.55	75/KW/Day
	Non-Domestic			6.55	120/KW/Day

HT GROUP						
Category			Consumption Pattern	Energy Charge	Fixed Charge	Remarks
No	Name	Connected Load		Rs/kWh	Rs/KW/month	
		KVA	For all units		Rs/KVA/Month	
HT-I	Domestic	Above 25		3.95	30	
HT-II	Commercial	Above 25		4.25	115	
HT-III	Public Water Works			4.10	125	
HT-IV	Bulk Supply	25 & above				
	Educational Inst.			3.80	110	
	Others			4.10	145	
HT-V(A)	HT Small Industries	above 25 & upto 50		2.80	40	
HT-V(B)	HT-I Industries	above 50 & upto 150		3.55	100	TOD Tariff
HT-V(C)	HT-II Industries	above 150				
		Option-1		3.65	140	TOD Tariff
		Option-2		2.95	270	
HT-VI	Tea, Coffee & Rubber			4.00	230	TOD Tariff
		Off-season		4.00	230	
HT-VII	Oil & Coal			4.05	270	TOD Tariff
HT-VIII	HT Irrigation	above 7.5 HP		3.25	40	

TOD tariff**1 T.O.D tariff for HT-I industries**

Description	Energy charge
Time	Rs/kWh

Description	Energy charge
0600 hrs to 1700 hrs (normal)	3.55
1700-2200 hrs (peak)	5.60
2200-0600 hrs (night)	2.90

2 T.O.D tariff for HT-II industries

Description	Energy charge
Time	Rs/kWh
0600-1700 hrs (normal)	3.65
1700-2200 hrs (peak)	4.90
2200-0600 hrs (night)	3.15

3 T.O.D tariff for Tea, Coffee & Rubber (for the whole year)

Description	Energy charge
Time	Rs/kWh
0600-1700 hrs (normal)	4.00
1700-2200 hrs (peak)	5.60
2200-0600 hrs (night)	3.75

4 T.O.D tariff for Oil & Coal

Description	Energy charge
Time	Rs/kWh
0600-1700 hrs (normal)	4.05
1700-2200 hrs (peak)	5.60
2200-0600 hrs (night)	3.90

Note: Details of Schedule of Tariff and other terms and conditions may be collected from the field offices of Discoms and also from our official website www.aerc.gov.in.

HOW DO THE NEW TARIFFS AFFECT YOUR BILL?

The Commission passed Tariff Order for FY 2007-08 on 12.09.2007 and the tariffs takes effect from 20.09.2007. The amount due from consumers for consumption of same unit of power changes with coming of the new tariff. The domestic consumers are also likely to experience change in their bills in a manner shown in the following tables. The connected load and energy consumption figures have been estimated according to the category and slabs to which the consumer belongs.

- 1 For a consumer belonging to Jeevan Dhara having connected load of 0.5 KW and energy consumption of 30units/month, there will be no change in the bill per month.

CATEGORY: JEEVAN DHARA		For consumption of 30 units & Connected Load 0.5 KW	
Tariff 2006-07	Fixed Charge Rs/ connection /month	15	15
	Energy Charge Rs/ KWh	2.15	64.50
Total (Rs) (a)			79.50
Tariff 2007-08	Fixed Charge Rs/ connection /month	15	15
	Energy Charge Rs/ KWh	2.15	64.50
Total (Rs) (b)			79.50
Increase (Rs) (b-a)			0.00

- 2 For a consumer belonging to the Ist slab of the Domestic - A category having connected load of 1 KW and energy consumption of 100 units/month, the bill will be raised by an amount of Rs 5 /-per month i.e. 1.64 %.

CATEGORY: DOMESTIC A			
FOR 1ST SLAB (0-120 UNITS PER MONTH)			For consumption of 100 units & Connected Load of 1 KW
Tariff 2006-07	Fixed Charge Rs/ connection /month	30	30
	Energy Charge Rs/ KWh	2.75	275
Total (Rs) (a)			305
Tariff 2007-08	Fixed Charge Rs/ connection /month	30	30
	Energy Charge Rs/ KWh	2.80	280
Total (Rs) (b)			310
Increase (Rs) (b-a)			5 (1.64%)

- 3 For a consumer belonging to the 2nd slab of the Domestic - A category having connected load of 3 KW and energy consumption of 200 units/month, the bill will be raised by an amount of Rs 16 /-per month i.e. 2.21 %.

CATEGORY: DOMESTIC A			
FOR 2ND SLAB (121-240 UNITS PER MONTH)			For consumption of 200 units & Connected Load of 3 KW
Tariff 2006-07	Fixed Charge Rs/ connection /month	30	90
	Energy Charge Rs/ KWh	3.80	634
Total (Rs) (a)			724
Tariff 2007-08	Fixed Charge Rs/ connection /month	30	90
	Energy Charge Rs/ KWh	3.85	650
Total (Rs) (b)			740
Increase (Rs) (b-a)			16 (2.21%)

- 4 For a consumer belonging to the 3rd slab of the Domestic - A category having connected load of 4 KW and energy consumption of 300 units/month, the bill will be raised by an amount of Rs 15 /-per month i.e. 1.28 %.

CATEGORY: DOMESTIC A			
FOR 3RD SLAB (> 240 UNITS PER MONTH)			For consumption of 300 units & Connected Load of 4KW
Tariff 2006-07	Fixed Charge Rs/ connection /month	30	120
	Energy Charge Rs/ KWh	4.50	1056
Total (Rs) (a)			1176
Tariff 2007-08	Fixed Charge Rs/ connection /month	30	120
	Energy Charge Rs/ KWh	4.55	1071
Total (Rs) (b)			1191
Increase (Rs) (b-a)			15 (1.28%)

- 5 For a consumer belonging to the Domestic - B category having connected load of 6 KW and energy consumption of 400 units/month, the bill will be raised by an amount of Rs Rs 20 /-per month i.e. 1.10 %.

CATEGORY: DOMESTIC B			For consumption of 400 units & Connected Load 6 kW
Tariff 2006-07	Fixed Charge Rs/ connection /month	30	180
	Energy Charge Rs/ KWh	4.10	1640
Total (Rs) (a)			1820
Tariff 2007-08	Fixed Charge Rs/ connection /month	30	180
	Energy Charge Rs/ KWh	4.15	1660
Total (Rs) (b)			1840
Increase (Rs) (b-a)			20 (1.10%)

Overcoming Power Shortages

----Panchamrita Sharma

With surging demand for power becoming the order of the day, power shortages (unmet electricity demand) and load shedding have become regular features. Capacity additions in the power sector have not sufficed the growing demand. Uncertainties of fuel linkages and rising fuel prices impede the benefits of such additions. Besides, capacity additions involve huge capital and a long period to become operational resulting in failure to meet the impending electricity shortages in the near term. Innovative counter shortage measures even if short term, may be opted for by the authorities at the helm of the electricity sector for respite to consumers. An example of such innovation is the effective use of Captive Power Plants (CPP) in Pune to cope with power shortages. According to information, *the CII's Pune chapter in consultation with Maharashtra State Electricity Distribution Company Limited (MSEDCL) submitted a proposal to Maharashtra Electricity Regulatory Commission (MERC) to utilize the surplus captive generating capacity of around 100 MW available with the top 30 companies in its area. The MERC issued an order approving the proposal to mitigate power scarcity after holding public hearings. But since these captive plants were running on liquid fuels, their cost of generation was much higher than the conventional power plants running on coal. Hence, to ensure viability, the difference in costs has to be reimbursed to the captive generating units by levying a reliability surcharge of 42 paise per unit on all the units sold in the area, except sales to customers consuming less than 300 units per month. In return all consumers in Pune were guaranteed zero load shedding.*

The state of Assam too has a peak shortage of about 100 -150 MW during the evening peak hours particularly during the winter months when generation from hydro based power stations (which constitutes around 70% of the power availability of the state) declines due to reduced water level. As a result of this, power has to be procured from producers/traders outside the state at a very high price. It may be noted that in the Availability Based Tariff regime, the rates of electricity are linked to frequency of the grid. When power is available, the prevailing price at which it can be purchased from the grid (Unscheduled Interchange rate) at lowest frequency is Rs 7.45/unit. The cost of supply at

the consumer's end considering T&D loss of at least 25% will be around Rs 10/unit. In today's scenario, when the gap between demand & supply is expanding rapidly in all states in India, excess power is not available for purchase even if the utilities are willing to buy at a higher price. Therefore, the licensees and consumers together may consider utilizing the captive/standby power plants within the state as one of the options to mitigate the acute problem of widening electricity demand supply gap as well as to improve the reliability and efficiency of electricity distribution during the lean season from December to April. Perhaps owing to different degrees of industrialization, T&D losses and consumer mix factors, it is not possible to replicate the Pune example in ditto. However, a proposal in similar lines may be drawn up with the consent of the parties concerned for benefit of all consumers. A model for Assam in this regard with two different scenarios is discussed in short below.

Assam has an estimated captive/standby generation capacity of over 250 MW with the tea, oil and other industrial consumers who utilize captive/standby power when grid power is not available. With a conservative estimation, the captive/standby units may support the grid by generating at least 100 MW power. Under normal circumstances, this surplus captive power capacity remains idle and may be utilized for supporting the system during the peak hours for the five months from December to April when the state faces severe power crisis. The Time of Day (TOD) tariff which is usually applicable for these industrial consumers if power is utilized from grid during the peak hours is Rs 5.60/unit. The variable (fuel) cost of captive/standby generation mostly generated using High Speed Diesel (HSD) is around Rs11/unit. Since the price of power generated in the captive/standby power plants is higher than the grid power, therefore these must be adequately compensated. In the first scenario (Table I), let us consider that the incremental cost of Rs 5.40/ unit (Rs 11 - Rs 5.60) will be borne by the HT category consumers only. Then, an additional charge of Rs 0.50/unit has to be imposed for five months in the tariff for HT consumers to compensate the total incremental cost amounting to approximately Rs 30 Cr estimating a peak and off-peak demand of 300 MW and 200MW respectively for HT consumers and T&D loss of 25%. The peak and off peak charges from grid are considered at Rs 5.60/unit and Rs 4.42/unit respectively.

Table I: Considering HT Consumers Only

	Demand of HT consumers per day MW	MW Available	Hours Run per day	MWh Available	MU	5 Monthly MU	Net 5 monthly Units available for Sale at 25% T&D loss	Energy Charge for peak hours (Rs/unit)	Total monthly energy charge during peak hours (Rs Cr)	Total monthly charge if consumed from grid (Rs Cr)	Additional Cost to be paid (Rs Cr)	Additional Cost to be paid (Rs /unit)
For Peak												
From Grid	300	200	5	1000	1	151	113.25	5.6	63.42	95.13	30.5775	1.8
From CPP		100	5	500	0.5	75.5	56.625	11	62.2875			
						226.5	169.875		125.7075			
For Off Peak												
From Grid	200	200	19	3800	3.8	573.8	430.35	4.42	190.2147	190.2147	0	0
From CPP		0	0	0	0	0	0	0	0			
							430.35		190.2147			
TOTAL MU & Cost (Peak & Off Peak)							600.225		315.9222	285.3447	30.5775	0.5094

In the second scenario (Table II), if we consider that all consumers compensate equally for reliable/assured power supply, then an additional charge of approximately Rs 0.25/unit may be imposed in tariff for 5 months to compensate the total incremental cost of approximately Rs 37 Cr estimating a total peak and off-peak demand of 800 MW and 500 MW respectively and T&D loss of 25%. Both the peak and off peak charges from grid are considered at an average Rs 4.42/unit. However, this additional charge may be imposed upon all consumers when monthly consumption exceeds 120 units. This will provide an incentive to consumers to conserve power and keep their consumption below 120 units. The connectivity charges for off-grid CPPs/standbys, metering charges and expenses to accommodate separate accounting for additional charges to ensure transparency may be considered in the calculations while implementing this concept. Thus, the additional charge for every unit consumed above 120 units, may be fixed at approximately Rs 0.30 per unit. The deficit/surplus arising from this sort of arrangements may be adjusted in the subsequent tariff revisions.

Table II: Considering Both LT & HT Consumers

	Demand per day (MW)	MW Available	Hours Run per day	MWh Available	MU	5 Monthly MU	Net 5 monthly Units available for Sale at 25% T&D loss	Energy Charge for peak hours (Rs/unit)	Total monthly energy charge during peak hours (Rs Cr)	Total monthly charge if consumed from grid (Rs Cr)	Additional Cost to be paid (Rs Cr)	Additional Cost to be paid (Rs /unit)
For Peak												
From Grid	800	700	5	3500	3.5	528.5	396.375	4.42	175.1978	200.226	37.259	0.8225
From CPP		100	5	500	0.5	75.5	56.625	11	62.2875			
							453		237.4853			
For Off Peak												
From Grid	500	500	19	9500	9.5	1434.5	1075.875	4.42	475.5368	475.5368	0	0
From CPP		0	0	0	0	0	0	0	0			
							1075.875		475.5368			
TOTAL MU & Cost (Peak & Off Peak)							1528.875		713.022	675.7628	37.259	0.2437

Considering that captive generation is likely to be more expensive than average power purchase cost of the utilities, cost reflective tariffs for such supply are bound to be higher than the average tariffs of the utilities and likely to be collected from the consumers. Therefore, such an arrangement would primarily suit urban and semi-urban areas, as well as dedicated industrial feeders, where ‘ability to pay higher tariffs’ exists for reliable assured power. However, the same concept can also be suitably adopted for rural areas, if beneficiaries demonstrate willingness to pay appropriate ‘cost reflective tariffs’ or the State Government provides the necessary concession to the consumers by reimbursing the utilities.

By such an approach, the surplus captive capacity lying idle may get fully utilized on commercial terms. Also, it is likely to provide an incentive to consumers to conserve power and avoid paying inflated bills. Private-public partnership can bring about improved efficiency of distribution operations.

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[*Disclaimer: The above views are those of the writer’s only and not the views of the Commission*].

SOME FACTS ON DIGITAL ELECTRIC METERS**1. What are electric meters?**

An electric meter or energy meter is a device that measures the amount of electrical energy supplied to a residence or business. These are customers of an electric company.

2. Why are electric meters necessary?

Electric meters provide the suppliers and users an accurate and reliable means to measure and track the consumption and quality of electricity. Utilities record the values measured by these meters to generate an invoice for the electricity. They may also record other variables including the time when the electricity was used with added features.

3. What are the different types of energy meters?

The different types of energy meters are: Electromagnetic Induction meters, Digital meters / Solid State Electricity meters / Electronic meters, Multiple Tariff (Variable Rate) meters, Prepaid meter, Power Export meters, etc.

4. What are the characteristics of a Solid State / digital meter?

In addition to measuring electricity used, solid state meters can also record other parameters of the load and supply such as maximum demand, power factor and reactive power used etc. They can also include electronic clock mechanisms to compute a value, rather than an amount, of electricity consumed, with the pricing varying of by the time of day, day of week, and seasonally.

5. Why do we need to replace electromagnetic meters with digital meters?

- a. *To minimize the possibilities of pilferage of energy through tampering of meters*
- b. *Have more accurate recording of energy consumption and*
- c. *Have meters, which do not get appreciably affected by mechanical and magnetic disturbances.*

6. How can electricity bills get inflated after replacement of old electromechanical meters by new electronic meters by the utilities?

These may be for the following reasons:

- a. More accurate and sensitive nature of the electronic meters as compared to electromechanical meters. The electromechanical meters, with the passage of time and also by virtue of their design, did not record energy if consumed in very small quantity.*
- b. Electromechanical meters which were installed a few years ago may start running slow due to moving components in the meter getting worn out. Now since electronic meters have replaced old meters and electronic meters are accurate and sensitive, new meters have started recording the actual energy consumption when electricity bills generated by new electronic meters are compared with old electromechanical meters, bills appear inflated.*
- c. There could be an error on the part of meter reader while taking reading.*
- d. Errors in the software used by utilities for computing and generating bills electronically.*
- e. New electronic meter installed at the residence is running fast / defective.*
- f. New meter is working satisfactorily but the wiring to meter is not done properly.*
- g. For none of the reasons as indicated above but for the fact that energy consumed by the consumer is actually high.*

7. What is to be done by the consumer in case of any doubt that the electronic meters are defective?

The consumer may first ensure that the electronic meter is defective by performing a simple test. Switch off all your electrical gadgets in the house (including small indicating lamps) and take the reading in the meter. He may then take a standard lamp of 100 watt:- A 100-watt lamp if put on for one hour would consume 0.1 unit of electrical energy. Therefore, the consumer may let only the 100 watt lamp to run for

one hour (keeping all other electrical appliances / lamps etc. in the house switched off) and then record the meter reading once again. If the difference of reading is 0.1 unit i.e. 0.1 kwh, it means that meter is working satisfactorily. Otherwise, it is running fast or slow. He may also conduct the test with one well calibrated electrical appliance of 1000 Watts for one hour and take the difference in meter reading. If the difference is one unit / 1 kWh then the meter is running properly. A consumer may learn the simple procedure of reading the meter.

In case the meter is defective, the consumer may lodge a complaint with the Junior Engineer / Assistant Engineer in case of LT connection and with the Assistant Executive Engineer / Executive Engineer in case of HT connection. The complaint may be made over the telephone, by post or in person.

8. What are the steps that must be taken by the utilities when any meter related complaint is made by a consumer?

The following steps are to be taken by the utilities on receiving any meter related complaint as per the AERC Guidelines for Redressal of Consumer Grievances and AERC (Distribution Licensees Standard of Performance) regulations:

- i. The officer receiving the complaint must immediately issue a Complaint Number. For postal complaints, the receipt shall be dispatched by the next working day.*
- ii. On receipt of the complaint, the initial inspection shall be done within 7 days of the complaint. The meter inspection shall be carried out on chargeable basis. The amount shall be payable by the consumer in the next energy bill. If the meter is found to be defective, the Distribution Licensee shall immediately undertake replacement as per time limit specified.*
- iii. If on inspection, the Distribution Licensee finds that the meter is not defective and a replacement is not required, but the consumer is not satisfied with the finding, he may pay Meter Testing Charge and have the meter tested in the ASEB/Licensee laboratory in his presence. Alternately, the Distribution Licensee may install a check-meter in the consumer premises to check its accuracy.*
- iv. However, during inspection if it is found that the burning is a result of tampering of*

the meter or attached equipment, or if the seal is found broken, action will be taken against the consumer as per rules.

9. What are the time limits for checking and replacement of meters and what are the provisions for compensation in case of non-compliance by the utilities within the stipulated time?

According to AERC Guidelines for Redressal of Consumer Grievances and AERC (Distribution Licensees Standard of Performance) regulations, the time limits for rendering service by utilities are as follows:

LT Consumers		
Testing, Checking & Calibration for Correctness of Meter		
Nature of Service / Standards	Guaranteed Standards- Maximum time limit for rendering service	Compensation payable to affected person
Urban Area	7 days from lodging of complaint.	Rs 50/- per day for delay beyond 7 days subject to maximum Rs 200/- per consumer.
Rural Area*	15 days from lodging of complaint.	Rs 50/- per day for delay beyond 7 days subject to maximum Rs 200/- per consumer.
Replacement of defective / stopped / Burnt meters		
Urban Area		
Replacement not attributable consumer	7 days	Rs 50/- per day for delay beyond 7 days subject to maximum Rs 200/- per consumer.
Where the cost of the meter is recoverable from the consumer.	15 days after the receipt of payment.	Rs 50/- per day for delay beyond 7 days subject to maximum Rs 200/- per consumer.
Where the consumer is required to supply the metering equipment.	15 days after supply of metering equipment.	Rs 50/- per day for delay beyond 7 days subject to maximum Rs 200/- per consumer.

Rural Area*		
Replacement of not attributable consumer	15 days	Rs 50/- per day for delay beyond 7 days subject to maximum Rs 200/- per consumer.
Where the cost of the meter is recoverable from the consumer.	30 days after the receipt of payment.	Rs 50/- per day for delay beyond 7 days subject to maximum Rs 200/- per consumer.
H.T. Consumers		
Replacement of stopped/defective meter or related equipments	Within 7 days after receipt of complaint provided meter is available with Licensee, otherwise within 3 months in any case.	Rs 200/- per day for delay beyond 7 days subject to maximum Rs 2000/- per consumer.
Where the cost of the meter is recoverable from the consumer.	Within 15 days after the receipt of payment provided meter is available with Licensee, otherwise within 3 months in any case	Rs 200/- per day for delay beyond 15 days subject to maximum Rs 2000/- per consumer.
Where the consumer is required to supply the meter/equipment	30 days after delivery of metering equipment to Licensee's office.	Rs 200/- per day for delay beyond 30 days subject to maximum Rs 2000/- per consumer.

* The liability of compensation shall be applicable to supply of electricity in the urban areas from the month subsequent to the month in which this Regulation comes into effect and in the other areas from such date the Commission may direct by an order issued for the purpose.

10. When does a consumer approach the Consumer Grievance Redressal Forum regarding his meter related complaint?

The consumer should approach the Forum when

- *there is no response from the licensee or*
- *after expiry of the period specified above or*
- *in case the consumer is not satisfied with the decision of the licensee.*

11. When should a consumer approach the Ombudsman?

As per the Regulations, any consumer if aggrieved by the non-redressal of the grievances by the Forum may make a representation to the Ombudsman within 30 days from the date of the decision of the Forum or within 30 days from the date of expiry of the period within which the Forum was required to take decisions and communicate the same to the complainant. As such, the Ombudsman may receive and consider only the representations filed by the complainant for non-redressal of the grievances by the Forum.

Highlights of the Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 :

1. All interface meters, consumer meters and energy accounting and audit meters shall be of static type.
2. The meters not complying with these regulations shall be replaced as per the regulations or direction of the Appropriate Commission or pursuant to the reforms programme of the appropriate Government.
3. Consumer meters shall generally be owned by the licensee.
4. If any consumer elects to purchase a meter, the same may be purchased by him. Meter purchased by the consumer shall be tested, installed and sealed by the licensee. The consumer shall claim the meter purchased by him as his asset only after it is permanently removed from the system of the licensee.
5. All consumer meters shall bear BIS (Bureau of Indian Standard) mark, meet the requirements of these regulations and have additional features as approved by the Appropriate Commission or pursuant to the reforms programme of the Appropriate Government. To facilitate this, the licensee shall provide a list of makes and models of the meters.

6. The consumer meter shall be installed by the licensee either at consumer premises or outside the consumer premises:

Provided that where the licensee installs the meter outside the premises of the consumer, then the licensee shall provide real time display unit at the consumer premises for his information to indicate electricity consumed by the consumer:

Provided further that for the billing purpose, reading of consumer meter and not the display unit shall be taken into account.

7. It shall be the responsibility of the licensee to record the metered data, maintain databases of all the information associated with the consumer meters and verify the correctness of metered data.
8. The Distribution licensee shall put in place a system of quality assurance and testing of meters with the approval of appropriate commission.
9. The licensee shall set up appropriate number of accredited testing laboratories or utilize the services of other accredited testing laboratories. [Accredited test laboratory means a test laboratory accredited by National Accreditation Board for Testing and Calibration Laboratories (NABL)]. The Licensee shall take immediate action to get the accreditations of their existing meter testing laboratories from NABL, if not already done.

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An Interview of AERC Chairperson to Electrical India

An interview of Shri J.P. Saikia, Chairperson, Assam Electricity Regulatory Commission was published in the Annual 2007 issue of "Electrical India", India's oldest magazine on power and electrical products industry. The Chairperson replies to queries on different issues relating to the power sector of Assam. The same interview is being published below:

The Assam Electricity Regulatory Commission was established in February 2001, as per the provisions of the Electricity Regulatory Commission Act 1998, and the appointment of the Chairperson of AERC was made on August 2001. Some of the functions of AERC, besides others, are to determine the tariff for electricity whole sale, bulk, grid or retail as the case may be in the manner prescribed in the Act. J.P.Saikia, Chairperson, AERC speaks to 'Electrical India' on the rules and regulations and other aspects handled by the Commission.

EI: Among the many rules and regulations contained in the Electricity Supply Code and related matters – 2004 amended in 2007, how do you propose to regulate the power purchase by Utilities from generating companies?

Power purchase from Generating Companies is regulated by provision in AERC (Terms and Conditions for determination of Tariff) Regulations, 2005 as amended in 2006 in Section 108, 109 and 110 as follows:

108 Based on the estimated energy sales by the Distribution Licensee and the approved distribution losses for the ensuing year and the transmission losses approved by the Commission for the Transmission Licensee. The approved requirement of electricity to be purchased and sold will be determined by the Commission.

109 109.1 ASEB trader will procure electricity on a leased cost basis in accordance with provisions of the Regulations made by the Commission in this regard.

109.2 ASEB trader shall purchase power from the Generating Companies at

the tariff approved by the Commission.

109.3 The ASEB trader may purchase power from other sources with the approval of the Commission.

110 110.1 Any power purchased by the ASEB trader over and above the requirement of power approved by the Commission or variation in the mix of power purchase in any year shall be considered by the Commission if it is for reasons beyond the reasonable control of the ASEB trader and the resultant financial loss or gain as approved by the Commission shall be adjusted in the next year's tariff.

110.2 Any financial gain or loss on account of power purchased by the ASEB trader in any year over and above the approved level and not covered by the clause above shall be borne by the ASEB trader.

EI: What are the objects and purposes of the Electricity Act in respect of promoting competition efficiency and economy in the activities of the electricity industries?

With de-licensing of Generation activity competition in this sector is forthcoming. Result of competition has become visible in terms of lower tariff, higher availability of power and transmission sector. In distribution sector, the result is not yet visible.

EI: How does the Assam Regulatory Commission's latest regulations affect the distribution licensees and electricity consumers, especially in respect to power thefts?

The regulations in respect of power theft has been incorporated in the AERC (Supply Code and related matters) Regulations, 2004 as amended in 2007. These provisions helped the Licensees in detecting and taking stringent actions against power theft. As a result, T&D losses of Licensees has marginally decreased and the revenue from sale of electricity has increased.

EI: What steps or advice are considered so as to enable licencees and consumers prevent incidents of power theft in a suitable and effective manner?

Consumer's participation is a must in preventing power theft. Consumers in each

locality must be made aware of the losses suffered by them due to power theft and need for taking action against theft by the community as a whole. The NGOs have also an important role to play in motivating and educating the general public in preventing power theft.

EI: Theft usually takes place either at the meters themselves or from electric poles. So what are the rules concerning consumers and the meters provided at their premises? And how can consumers prevent theft at the poles?

The prevention of theft is a joint responsibility of consumers and suppliers. Rules on theft concerning consumers and the meters provided at their premises covered under Section 135 of the Electricity Act, 2003 and Chapter V-A of AERC (Supply Code and related matters) Regulations. Consumers can prevent theft at the poles by forming watchdog committees.

Section 135 of the Electricity Act states that,

Whoever, dishonestly, —

- (a) taps, makes or causes to be made any connection with overhead, underground or under water lines or cables, or service wires, or service facilities of a licensee or supplier, as the case may be; or*
- (b) tampers a meter, installs or uses a tampered meter, current reversing transformer, loop connection or any other device or method which interferes with accurate or proper registration, calibration or metering of electric current or otherwise results in a manner whereby electricity is stolen or wasted; or*
- (c) damages or destroys an electric meter, apparatus, equipment, or wire or causes or allows any of them to be so damaged or destroyed as to interfere with the proper or accurate metering of electricity; or*
- (d) uses electricity through a tampered meter; or*
- (e) uses electricity for the purpose other than for which the usage of electricity was authorised,*

so as to abstract or consume or use electricity shall be punishable with imprisonment for a term which may extend to three years or with fine or with both.

Without prejudice to the provisions of this Act, the licensee or supplier, as the case may be, may, upon detection of such theft of electricity, immediately disconnect the supply of electricity.

EI: What are the apparatus that the Suppliers have objection, to being connected by consumers at their premises?

Not related to the Commission.

EI: To quote ‘The consumer shall not make such use of supply given to him by the supplier as to act prejudicially to the supplier's supply system in any manner whatsoever.’ Will you explain what that means in lay people's language?

In lay people's language, it means that the consumers should not use such device which causes overload, low power factor or introduce harmonics in the network.

EI: What are considered malpractices that are prejudicial to the interests of the electricity supplier, and in contravention of the Electricity Act?

Malpractices are defined in the Section 5.A.3.1 & 5.A.3.2 of AERC (Supply Code and related matters) Regulations, 2004 (First Amendment) 2007 as follows:

5.A.3.1 Malpractice : Contravention of any provision of the Electricity Act, 2003, the Indian Electricity Rules, 1956 or any other law/rule governing the supply and use of electricity, regulating order shall be treated as malpractice, and the consumer indulging in any such malpractice shall be liable under law/rule/order.

5.A.3.2 Subject to the generality of the above, cases mentioned hereunder, shall be generally treated as Malpractice:

- (a) Unauthorised supply of electricity to any service which is disconnected by the Supplier.*
- (b) Exceeding connected load authorised by the Supplier.*
- (c) Addition, alteration and extension of electrical installation in the consumer's premises without permission of the supplier or extension to any*

premises other than the one for which supply was contracted for.

- (d) Non-compliance of orders in force imposing restriction of use of electricity for rational and equitable distribution thereof.*
- (e) Use of electricity for any purpose other than that for which supply is contracted for.*
- (f) Resale of electricity without the permission of the supplier.*
- (g) Theft of electricity as detailed under Section 135(1) of the Electricity Act, 2003.*
- (h) Obstruction to lawful entry of authorised officers/employees of the supplier into the consumer's premises.*
- (i) Interfering and tempering with the meter and metering system, as detailed under Section 135(1) and Section 138 of the Electricity Act, 2003.*

EI: What are the methods of assessment of electricity charges to consumers, in the event of theft?

The method of assessment of electricity charges in the event of theft are defined in Section 126 of the Electricity Act, 2003 and Section 5.A.4 of AERC (Supply Code and related matters) Regulations, 2004 (First Amendment) 2007.

As per Section 5.A.4 of Supply Code, where a consumer is found to be indulging in a Malpractice with regard to use of electricity and use of device to commit theft of electricity, the authorised officer under Section 126 of the Act may without prejudice to any other action that may be taken against such a consumer ask him to pay compensation which shall be assessed as stated here in below:

5.A.4.1 Use of unauthorised Electricity/Load exceeding authorised/connected load : (Metered)

For such nature of malpractice, assessment bill will be made as follows –

$$2 \times M (B-A) \times 12 = \text{Rupees}$$

'A' denotes the authorised load as per agreement.

'B' denotes the total connected load detected at the time of inspection.

'M' means relevant fixed charge /minimum charge on the detected load as per tariff in force. This will be in addition to the normal bill. The excess load will be removed from supplier's mains. However, he may apply for the regularisation of the load.

12 in the formula means 12 months.

In case any damage of transformer or any other appliances of ASEB due to this unauthorised extension of load, the cost will be realised from the consumer in addition to the assessment bill.

5.A.4.2 Resale of Electricity :

In case of detection of resale of electricity by a consumer assessment bill will be raised at 2 times the rate of normal tariff for consumption by the said consumer for 12 months. This will be over & above, the normal electricity bills.

5.A.4.3 Interference with metering system :

If interference with the meter and metering system are detected such consumer will be served with compensation bill as per clause 5.A.4.1 without prejudice to supplier's right to take legal action as per provision of the relevant laws in force.

5.A.4.4 Un metered use of Electricity (Theft of Electricity) :

When a consumer indulges in the theft of electricity, the officer authorised in this behalf by the Government of Assam may without prejudice to its other right, will assess the quantum of electricity loss on the basis of assessed consumption of detected category and connected load for a period of 12 months prior to the date of detection and will be billed at the rate of 2 times of the existing tariff.

5.A.4.5 Use of electricity for any purpose other than that for which supply is connected for :

If at any time the electricity supply is misused for the purpose other than

that for which supply is contracted for and for the purpose for which higher tariff is applicable then the consumer is liable to pay the compensation bill at 2 times of the normal tariff applicable to the purpose for which the electricity is misused for the entire consumption for a period of 12 months. Such amount shall be paid by the consumer within a period of 7 days from the date of issue of the bill failing which power supply to the premises will be disconnected without further notice.

EI: There are several cases of wrong billings e.g. over-billing, or a consumer may be aggrieved by an assessment order. In such events is there any remedy to protect the consumer's interests?

Yes, the consumer can approach the Consumers Grievances Redressal Forum and Ombudsman.

Ombudsman was appointed by the Commission on 07.05.2007. There is a three tier mechanism for resolution of Consumer Grievances, e.g. (1) Licensees' representatives at different levels, (2) Consumer Redressal Forum (Forum) and (3) Ombudsman.

As per the Regulations, any consumer if aggrieved by the non-redressal of the grievances by the Forum may make a representation to the Ombudsman within 30 days from the date of the decision of the Forum or within 30 days from the date of expiry of the period within which the Forum was required to take decisions and communicate the same to the complainant. As such, the Ombudsman may receive and consider only the representations filed by the complainant for non-redressal of the grievances by the Forum.

EI: In the event a consumer can approach a higher authority to address any grievance, how much will he be charged for such action?

No charge is taken for approaching a higher authority to address any grievance.
