

THE ELECTRICITY CONSUMER GRID

A quarterly information bulletin

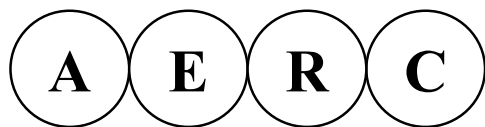
July – September, 2006

Special Issue on Tariff

- ☞ *Schedule of Tariff 2006-07*
 - ☞ *Important Parameters for Tariff Determination – A Brief Discussion*
 - ☞ *Two Part Tariff Structure*
 - ☞ *An introduction to ABT*
- And More.....*



Consumer Advocacy Cell, Assam Electricity Regulatory Commission, ASEB Complex, Dwarandhar, Six Mile, Guwahati-781 022, Phone: (0361) 2234442, email: aerc_ghy@hotmail.com



PREFACE

Chairperson

Shri Pranab Kumar Bora

Member

Shri Jadab Prasad Saikia

Member

Shri Himadri Dutta

Secretary

Smti Neelima Dewri Dutta

Joint Director (Tariff)

Shri Manoj Kumar Adhikary

Deputy Director (Engg)

Shri Anuj Goswami

Adviser (Law)

Shri Abani Kumar Thakur

Consultant

(Consumer Advocacy)

Ms. Panchamrita Sharma

P.S. to Chairperson

Shri Jiban Chandra Lahkar

Consultant

(Outside)

Shri Phanidhar Borah

Superintendent

Shri Madan C. Bhattacharjya

Accountant

Shri Golok Chandra Deka

Data Entry Operators

Shri Rajendra Bahadur

Shri BhaskarJyoti Borah

The Tariff Order for 2006-07 was passed on 28th July, 2006 and the new electricity tariffs came into effect from 4th August. This volume of the Consumer Grid is a tariff special issue which carries a summary of the new tariff structure for different categories of consumers along with some other aspects related to electricity tariffs. This is an effort from the Consumer Advocacy Cell to enlighten the consumers on tariff related matters, mostly on the features incorporated in the latest Tariff Order. The Tariff Order 2006-07 is also available for purchase at the Commission's office and in the official website of the Commission. However, for convenience and benefit of consumers, an attempt is made to present some of the different facets of tariff determination in a simple manner in this volume. That is why publication of this volume of the Consumer Grid got delayed.

Electricity tariff is a vast and complex subject. It is not possible to cover all aspects of this subject in this issue. Therefore we intend to continue giving tariff related inputs to our readers in subsequent issues of the Consumer Grid along with other important information.

This year Asom has witnessed some unprecedented shortfall in rain which affected the farmers most and they are facing grave uncertainty regarding their crops. The situation has brought to the forefront the importance of irrigation facilities to overcome such crisis. That electricity is an efficient and cost effective source of fuel for irrigation purpose gets highlighted and it is hoped this segment will receive greater attention from the planners.

Inside.....

- ❖ *From the Chairpersons' Desk*
- ❖ *News Briefs*
- ❖ *Salient Features of Tariff Order 2006-07*
- ❖ *Schedule of Tariff for 2006-07*
- ❖ *How do the new tariffs affect your bill?*
- ❖ *Important Parameters for Tariff Determination – A Brief Discussion*
- ❖ *Two Part Tariff Structure.*
- ❖ *Implementation Status of various schemes under Investment Plan of APGCL for the year 2006-07.*
- ❖ *An introduction to ABT*

“Study as if you were to live forever, live as if you were to die tomorrow.”

----- **Shiv Khera**

“Nothing is less productive than to make more efficient what should not be done at all”----- **Peter Drucker.**

FROM THE CHAIRPERSON'S DESK

Energy is the lifeline of modern societies. Ensuring lifeline energy to the entire population of the state at affordable cost and to make it available for all developmental infrastructures is a task that no modern state can ignore. In the background of resource constraints it is a formidable task, yet the pace of the endeavour should never be allowed to slacken.

For good and effective regulation, the regulators require a good quality and reliable information base to begin with. At the same time, for successful implementation of the regulations, a regulator also requires the support and goodwill of the consumers. I hope that the Consumer-Commission partnership through the Consumer Advocacy Cell of AERC will provide impetus to the power sector development in the state. Informed consumer inputs can provide important feedbacks and suggestions to the Commission and facilitate more efficient decision making.

The Tariff Order for 2006-07 has been passed. In this Order, the Commission has taken an initiative of stepping towards Cost of Supply (CoS) approach as a tool in the tariff exercise. The Order also indicates the required complementary changes for introduction of Availability Based Tariff (ABT) at the State level between Discoms and Generators. The Commission also issued directions to the Licensees to improve their generation, transmission and distribution functions and directs formation of Load Research Cells within the Discoms for gathering data to facilitate proper decision making and support to the regulatory functions. Although new initiatives were made in the Order, the Commission tried to avoid, to the extent possible, any adverse impact on any stakeholder in the process, especially on the larger segments of consumers of electricity.

I look forward to receive cooperation of all concerned in this regard



(P.K. Bora)

News Briefs

New Chairperson joined the Commission

Shri Pranab Kumar Bora (IAS, Retired) joined the Commission as its Chairperson with effect from 02.06.2006. Shri Bora was a former Chief Secretary to the Government of Assam. The Chairperson was administered oath of office and secrecy on 2nd June 2006 by Shri Pradyut Bordoloi, Minister Power, Government of Assam in presence of Shri J.P. Saikia Member AERC, Shri H. Dutta Member AERC, Shri S.K. Srivastav IAS Principal Secretary, Power (Elect) Department, Government of Assam, Shri S.C. Das, Chairman ASEB, Shri J.P. Meena Commissioner & Secretary IAS Power (Elect) Department, Government of Assam, Shri P.K. Barthakur IAS M.D. LAEDCL & UAEDCL, Shri U.K. Goswami M.D. CAEDCL, Shri P. Basumatary Member ASEB and other senior officials of ASEB.

The Members, officers and staff of the AERC offered a hearty welcome to the new Chairperson of the Commission.

Consumer Grid conveys its best wishes to Shri Bora on his new assignment.

Tariff Order for FY 2006-07 released

The Tariff Order 2006-07 was passed on 28th July, 2006. The Annual Revenue Requirement to be recovered through tariff during 2006-07 is estimated at Rs 1069 Cr against sale of 2417 MU. An overall increase of 3.25% was effected in this Tariff Order. Details regarding new tariffs are available in this issue of the Consumer Grid.

Bongaigaon Power Station to Boost Capacity

The National Thermal Power Corporation (NTPC) has now agreed to enhance the capacity of its coal based Bongaigaon Power Station by 250 MW. Earlier, its proposed capacity was 500 MW. With the latest decision of the NTPC to enhance its capacity, the Bongaigaon Power Station will be the largest thermal power station in the North East region. Announcing this at a press conference here this morning, Power Minister of the State Pradyut Bordoloi said that Chairman-cum Managing Director (CMD)) of the NTPC

Sankaralingam had said at a meeting at New Delhi recently that the capacity of the power station would be enhanced to 750 MW. By the end of this month, the NTPC will approach the Pollution Control Board, Assam (PCBA) for a no-objection certificate for the purpose, the project is expected to be completed within the next three years, Bordoloi said.

Earlier the State Government had placed a request with the Central Government to provide the State with a mega power project, he said. (Source: The Assam Tribune. July 6, 2006)

Prospects of New Power Stations in North East.

In reply to a question by Shri Karnendu Bhattacharjee at the Parliament, the Union Power Minister said that the North East has estimated hydro potential of 31,857 MW at 60 percent load factor, which is about 38 percent of the total assessed hydro potential in the country.

The Central Electricity Authority (CEA) has prepared a shelf of four schemes aggregating to 2,724 MW for 11th Plan and 36 schemes aggregating to 23,223 MW for the 12th Plan, the minister said.

The 100 MW Karbi Langpi Project is the only hydro project that is targeted for completion during the Tenth Plan. The project that was approved in 1979 is estimated to cost Rs. 557.42 crore.

Some of the projects in the pipeline and expected to be completed during 11th Plan period included 84 MW Myntdu Project of Meghalaya, 600 MW Kameng, 2000 MW Subansiri Lower. The projects that have been put under hold included 60 MW Tuirial in Mizoram and 90 MW Loktak in Manipur, the minister said.

Meanwhile, the NE had a peak shortage of 18.1 percent and energy shortage of 6.1 percent during the month of July. The per capita consumption of electricity of NE during 2004-2005 was 218.92 kwh, against the all India per capita consumption of 612.5 kwh and the world average per capita consumption of 2,429 kwh in 2003. (Source: The Assam Tribune, August 22, 2006)

Cost escalation in Tuirial hydro project:

The Standing Committee in charge of determining the responsibility for undue delay and cost overrun reported so far in implementation of the NEEPCO's 60 MW Tuirial hydro electric power in the state of Mizoram. The project was accorded investment clearance by the CCEA in 1998 at an estimated implementation cost of Rs 368 crore. The developer was required to complete the project in 8 years from the receipt of the CCEA approval. However, following suggestions from its appointed consultant, the developer made key changes in the design initially approved by the CEA for the project. This in turn led to a sharp revision in the cost estimate approved by the CCEA while investment clearance for the project. In this context, the committee has asked the CEA why so many changes were necessitated in the design soon after it granted its techno-economic approval for the project. Meanwhile, further implementation work at the project was suspended by the developer in 2004 in the face of agitation launched by locals claiming higher compensation for acquired land. In the meeting, the committee sought further clarifications from NEEPCO for finalizing its report. (Source: The Energy Line, July 23, 2006)

DTL Panacea For Avoiding Wasteful Expenditure:

On the issue of launching a campaign on avoiding wasteful expenditure of electricity, Director (O), Delhi Transco Ltd. (DTL) recently gave a presentation on managing the peak load by replacement of fluorescent tubes with chokes / incandescent lights with CFLs. During presentation, he intimated that there are about 25 lakhs domestic consumers in Delhi. If one crore fluorescent tubes and/or 60 watt incandescent lamps are replaced by 15 watt CFLs, the peak load will reduce in the range of 400 to 450 MW and with this, Delhi's shortage during peak hours will become almost zero. The pay back period with this investment at UI rate would be 100 days only and with power rate of Rs.2.30/unit, it comes to 160 days. The consumers will have benefit of saving of Rs.100-120/month in their electricity bills. He advised constituents to pursue with their state governments for reduction of VAT on CFLs so that the rates are decreased and CFLs become affordable to consumers. He also advised use of 2800 K- 3200 K CFL in place of 6500 K CFL. Director (O), DTL suggested that Distribution companies may take up some initiative scheme to give free CFL to the consumers who are paying regular electricity bills in the

past three billing cycles in place of extending financial rebate. (Source: The Energy Line, July 16, 2006)

Similar initiatives may be taken up in Asom for energy conservation.

Arunachal now wants to hand over Siyom, Siang hydro projects to private developers

In a reversal of its earlier decision, the state of Arunachal Pradesh now plans to allot the 1000 MW Siyom and 1600 MW Siang Lower hydro electric power projects to private developers through a nomination route. The state had earlier assured to hand over development of these projects to NHPC while commissioning preparation of their detailed project reports (DPRs). On that understanding, the public sector hydro major agreed to undertake preparation of DPRs. (Source: The Energy Line, June 28, 2006)

Manipur refuses to forgo free power entitlement from Tipaimukh HEP

The state of Manipur has rejected the North Eastern Electric Power Corporation Limited's (NEEPCO) plea that the state should forgo its usual 12% free power entitlement from the 1500 MW Tipaimukh hydroelectric project to make it commercially viable. The developer was forced to make this plea after the PIB refused to accord its approval for the project and instead asked NEEPCO to explore the possibility of further slashing the project cost. The PIB argued that electricity tariff of Rs 3.07 worked out at the existing project cost was on the higher side and could render the project economically unviable. Meanwhile, following the Manipur's categorical refusal to forgo its share of free power from the project, the developer has started evaluating alternate means of cutting down on the estimated project cost and bringing down electricity tariff for the project. (Source: The Energy Line, June 1, 2006)

Salient Features of Tariff Order 2006-07

1. Increase of estimated ARR from Rs 965 Cr during 2005-06 to Rs 1069 Cr in 2006-07.
2. Out of the increased expenditure, Rs 70 Cr is expected to be recovered through increase of estimated sale from 2203 MU during 2005-06 to 2417 MU during 2006-07 at the tariff rates of 2005-06 and reduction of T&D loss from 35% to 32% during the period
3. An estimated revenue gap of Rs 35 Cr is expected to be recovered by adjustment of retail Tariff for different categories with an overall increase of 3.25%.
4. Separation of functional cost for different activities like generation, transmission and distribution have been attempted in this Order for rationalization of tariff for different categories of consumers
5. Transmission charge, wheeling charge, SLDC charge have been separately notified in this tariff order to facilitate intra state open access.
6. Cross subsidy surcharge has also been worked out for convenience to open access consumers.
7. The Order also attempts to move towards the estimated cost of supply to different classes of consumers as per the provisions of the Electricity Act 2003 and guidelines of the National Tariff Policy notified by the Government of India.

SUMMARY OF TARIFF SCHEDULE FOR FY 2006-07

The revised tariff is applicable within the state of Assam w.e.f. 4.08.2006 till 31st March 2007 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	2.75	30
			next 4 kwh/day	3.80	30
			balance kwh	4.50	30
LT-III	Domestic-B	above 5 upto 20kw	For all units	4.10	30
LT-IV	Commercial	upto 20 kW	For all units	4.50	110
LT-V	General Purpose	upto 20 kW	For all units	3.95	125
LT-VI	Public Lighting		For all units	4.20	120
LT-VII	Agriculture	upto 7.5 HP	For all units	2.25	30
LT-VIII	Small Industries	Upto 25KVA (20KW)	For all units		
i	Rural			2.30	30
ii	Urban			2.55	40
LT IX	Temporary				Minimum Charge
	Domestic			5.50	75/KW/Day
	Non-Domestic			6.50	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		3.90	30	
HT-II	Commercial	Above 25		4.20	115	
HT-III	Public Water Works			4.05	125	
HT-IV	Bulk Supply	25 & above				
	Educational Inst.			3.75	110	
	Others			4.05	145	
HT-V(A)	HT Small Industries	above 25 & upto 50		2.75	40	
HT-V(B)	HT-I Industries	above 50 & upto 150		3.50	100	TOD Tariff
HT-V(C)	HT-II Industries	above 150				
		Option-1		3.60	140	TOD Tariff
		Option-2		2.90	270	
HT-VI	Tea, Coffee & Rubber			3.95	230	TOD Tariff
		Off-season		3.95	230	
HT-VII	Oil & Coal			4.00	270	TOD Tariff
HT-VIII	HT Irrigation	above 7.5 HP		3.20	40	

TOD tariff

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

Description	Energy charge
Time	Rs/kWh
0600 hrs to 1700 hrs (normal)	3.50
1700-2200 hrs (peak)	5.50
2200-0600 hrs (night)	2.85

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

Description	Energy charge
Time	Rs/kWh
0600-1700 hrs (normal)	3.60
1700-2200 hrs (peak)	4.80
2200-0600 hrs (night)	3.10

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

Description	Energy charge
Time	Rs/kWh
0600-1700 hrs (normal)	3.95
1700-2200 hrs (peak)	5.50
2200-0600 hrs (night)	3.70

4 T.O.D tariff for Oil & Coal

Description	Energy charge
Time	Rs/kWh
0600-1700 hrs (normal)	4.00
1700-2200 hrs (peak)	5.50
2200-0600 hrs (night)	3.85

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

HOW DO THE NEW TARIFFS AFFECT YOUR BILL?

The Commission passed Tariff Order for FY 2006-07 on 28.07.2006 and the tariffs takes effect from 4th August 2006. The amount due from consumers for consumption of same unit of power may change with coming of the new tariff. The domestic consumers are also likely to experience similarly 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, the bill will be raised by an amount of Rs 4.50/-per month.

CATEGORY: JEEVAN DHARA		For consumption of 30 units & Connected Load 0.5 KW	
Tariff 2005-06	Fixed Charge Rs/ connection /month	15	15
	Energy Charge Rs/ KWh	2.00	60
Total (Rs) (a)			75
Tariff 2006-07	Fixed Charge Rs/ connection /month	15	15
	Energy Charge Rs/ KWh	2.15	64.50
Total (Rs) (b)			79.50
Increase (Rs) (b-a)			4.50

- 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 15 /-per month i.e. 5.2 %.

CATEGORY: DOMESTIC A			
FOR 1ST SLAB (0-120 UNITS PER MONTH)			For consumption of 100 units & Connected Load of 1 KW
Tariff 2005-06	Fixed Charge Rs/ connection /month	15	15
	Energy Charge Rs/ KWh	2.75	275
Total (Rs) (a)			290
Tariff 2006-07	Fixed Charge Rs/ connection /month	30	30
	Energy Charge Rs/ KWh	2.75	275
Total (Rs) (b)			305
Increase (Rs) (b-a)			15 (5.2%)

- 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. 2.3 %.

CATEGORY: DOMESTIC A			
FOR 2ND SLAB (121-240 UNITS PER MONTH)			For consumption of 200 units & Connected Load of 3 KW
Tariff 2005-06	Fixed Charge Rs/ connection /month	30	90
	Energy Charge Rs/ KWh	3.60	618
Total (Rs) (a)			708
Tariff 2006-07	Fixed Charge Rs/ connection /month	30	90
	Energy Charge Rs/ KWh	3.80	634
Total (Rs) (b)			724
Increase (Rs) (b-a)			16 (2.3%)

- 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 36 /-per month i.e. 3.2 %.

CATEGORY: DOMESTIC A			
FOR 3RD SLAB (> 240 UNITS PER MONTH)			For consumption of 300 units & Connected Load of 4KW
Tariff 2005-06	Fixed Charge Rs/ connection /month	30	120
	Energy Charge Rs/ KWh	4.30	1020
Total (Rs) (a)			1140
Tariff 2006-07	Fixed Charge Rs/ connection /month	30	120
	Energy Charge Rs/ KWh	4.50	1056
Total (Rs) (b)			1176
Increase (Rs) (b-a)			36 (3.2%)

- 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 80 /-per month i.e. 4.6 %.

CATEGORY: DOMESTIC B			
			For consumption of 400 units & Connected Load 6 kW
Tariff 2005-06	Fixed Charge Rs/ connection /month	30	180
	Energy Charge Rs/ KWh	3.90	1560
Total (Rs) (a)			1740
Tariff 2006-07	Fixed Charge Rs/ connection /month	30	180
	Energy Charge Rs/ KWh	4.10	1640
Total (Rs) (b)			1820
Increase (Rs) (b-a)			80 (4.6%)

IMPORTANT PARAMETERS FOR TARIFF DETERMINATION**– A Brief Discussion**

While determining tariff, the Assam Electricity Regulatory Commission (AERC) has taken the following documents as basic guidelines.

- i. The Tariff Policy notified by the Government of India as per Section 3 of the Electricity Act 2003.
- ii. The Assam Electricity Regulatory Commission (Terms and conditions for determination of Tariff) Regulations, 2006 notified on 24th May, 2006 while deciding tariff and other tariff related Regulations of the Commission.
- iii. Previous Tariff Orders of the Commission.
- iv. Directions by the State Government, if any, as per Section 108 of the Electricity Act 2003.

The Commission has taken into consideration the following factors while determining the tariff for FY 2006-07.

1. COST OF SUPPLY & CROSS SUBSIDY

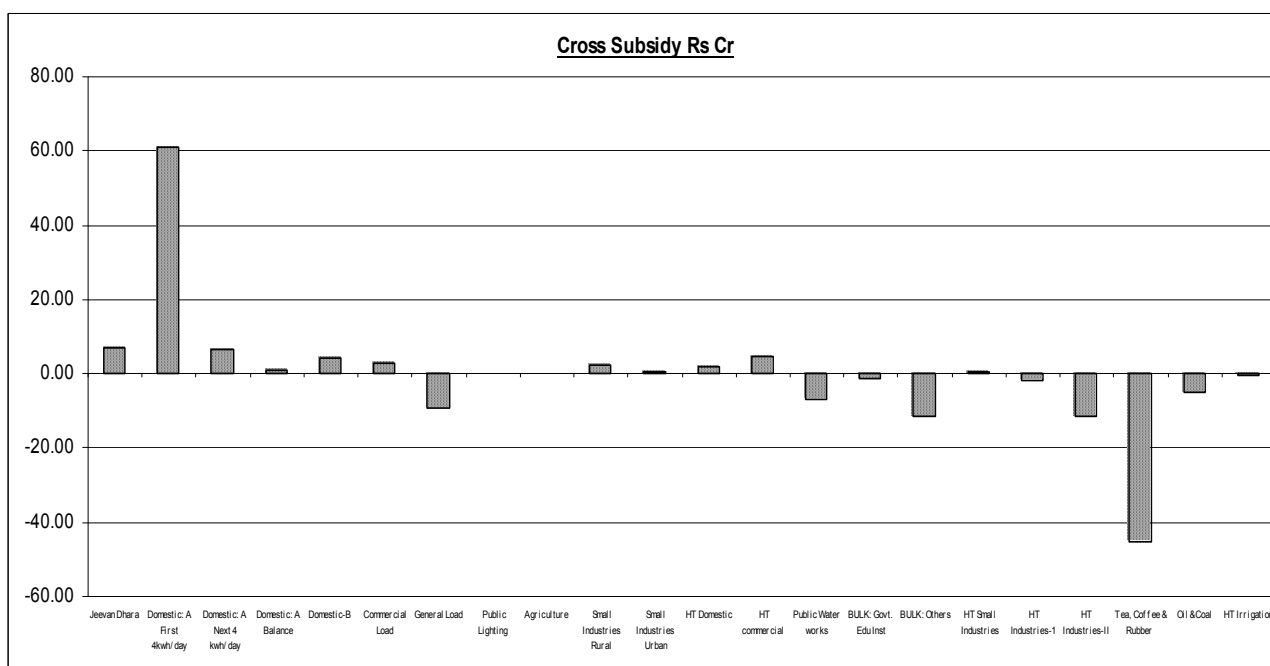
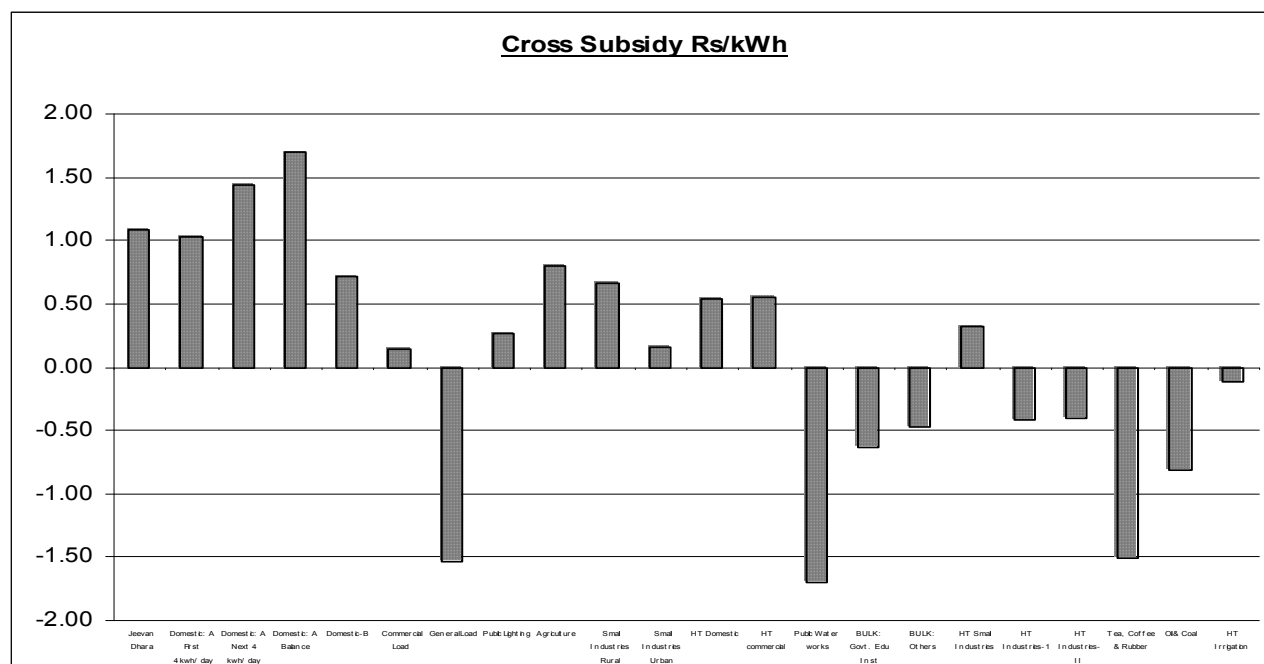
The determination of cost of supply of electricity is an important ingredient in the tariff determination process and is thus an essential issue for discussion among Electricity Regulatory Commissions and suppliers of electricity. The tariff for electricity can be ideally decided among different categories of consumers only after the cost of providing that service is established. Further, with the introduction of The Electricity Act 2003, the consideration of capacity to pay is no longer valid for tariff fixation. Section 61(g) of this Act prescribes that the tariff should progressively reflect the Cost of Supply of Electricity and contains a directive for reducing and gradually eliminating the cross subsidy within a period to be specified by the SERCs. The existing tariff structure in the Indian states reveals that the tariffs are below the average cost of supply for some consumer categories and significantly higher than the average cost for the other categories. By the new Electricity Act, suitable steps must be taken to reduce the cross subsidy. At the same time

there is urgent need for recovering the cost of supply from the consumers to ensure fiscal sustainability of the SEBs. But in doing so, it should be ensured that the process does not result in tariff shocks to any class of consumers.

The National Tariff Policy notified by Government of India has mandated the requirement of fixing tariff as per cost of supply to consumers. However, the policy envisages a gradual reduction of cross subsidy with a trajectory so as to bring the tariffs within $\pm 20\%$ of the average cost of supply by 2011-12. Now, for determination of tariff, one of the most important tasks for the Commission is to decide what method will be used to determine the level of cross subsidy. Most of the SERCs have applied the average Cost of Supply model to arrive at the cost of supply to various categories of consumers.

The AERC Tariff Order 2006-07 incorporates some of the features of the Cost of Supply Study conducted by the Commissions' staff. As a first step, the study tried to identify cost attributable to serve each category of consumers. Thereafter, the existing cross subsidy data for different categories of consumers was arrived at based on these estimated costs of supply. Then, as per guidelines of National Tariff Policy, the Commission attempted to bring down the percentage band of cross subsidy from the existing level for each category. This however can be achieved by adjustment of tariff among the different categories to fill up the revenue gap. The Commission while stressing the need to reduce the level of cross subsidy, also tried to avoid tariff shock while calculating and designing the retail tariffs to the extent possible.

The chart gives an idea about the estimated level of cross subsidies among various categories as shown in Tariff Order 2006-07. The categories below zero i.e. 0.00 indicate contribution towards cross- subsidy.



2. Subsidy by State Government under Section 65

The tariff for each category of consumers provisionally determined as per provision of the Act as well as the amount of cross subsidy and estimated resultant gap in the revenue requirement is to be communicated to the State Government for direction, if any. If the

State Government intends to grant of any subsidy to any consumer or class of consumers in the tariff determined by the State Commission, the State Government shall pay, in advance, the amount to compensate the person (Discoms) by the grant of subsidy in the manner the State Commission may direct.

Since the Government of Assam intimated that no subsidy will be provided for FY 2006-07 to any category of consumer, no provision for subsidy was made in the calculations for determination of retail tariff in the latest Tariff Order of the Commission.

3. Segregation of Costs to facilitate Open Access

Open Access of electricity means that a large individual consumer/group of consumers get together (bulk consumers) and chooses to purchase power either directly from the Generation Company or intermediaries such as traders or distribution companies. This choice will induce competition, and hence, help drive down power costs and improve services. Section 42 (2) of the Electricity Act 2003 mandates the State Commission to introduce Open Access in such phases and subject to such conditions and other operational constraints as may be specified within one year of the appointed date. The Commission has notified the AERC Open Access regulations to facilitate open access in the state in a phased manner. In order to introduce open access facility to consumers and generators it is essential to segregate the cost of supply in a number of functional cost elements of generation fixed charge, fuel charge, transmission charge, distribution and consumer charge. This is necessary so that a consumer is charged only for that portion of the facility and service actually utilized by him/her.

In the Tariff Order 2006-07, the Commission has asked the utilities to submit future tariff petitions in a manner where the retail tariff claim reflected the different aspects of cost causation so that cost can be recovered in a more transparent manner. This Order has also notified the open access surcharge for supply to different categories of consumers.

4. Connected Load and Contract Demand

a. Connected Load : In AERC Supply Code Regulations, “Connected load” is defined as *“aggregate of manufacturer’s rated capacities of all energy consuming devices, connected with the distribution licensee mains in the consumer installation and which can be simultaneously used; this shall be expressed in KW, KVA or HP units and shall be determined as per procedure laid down by the licensee with the approval of the Commission as specified in this regulation”* In a two part tariff regime which is now in implementation for recovery of revenue, the fixed component of tariff is mostly attributed to the connected load of a consumer. For all LT categories, the connected load is considered for calculation of fixed charge component of tariff.

b. Contract Demand : The ‘Contract demand’ is defined as *“the demand contracted in the electricity supply agreement with the licensee. Contract demand shall be determined within the limit specified in the tariff order.”* For HT categories of consumer the fixed charges are levied as “Demand Charge”. In a relatively large consumer installation where electricity is utilized for different purposes of lighting, factory, office etc, there is likelihood that the consumer installation may not impose demand on the system simultaneously. The ratio between the maximum demand it imposed on the system in (KVA) by a consumer with that of connected load (KVA) is termed as demand factor. This factor is different for different consumers depending on utilization of electricity. Due to this factor most of the utilities allow a flexible range of demand with respect to connected load.

In Tariff Order 2004-05, the Commission reviewed the arrangement and change was made in this regard. Prior to this order the minimum contracted demand for recovery of demand charge was 80% of connected load and the consumer can draw upto 100% without any penal charge. In this Order, the minimum contracted load was scaled down to 70% of connected load and the drawal range changed to 70% to 105%. However, a condition was imposed for mandatory annual agreement among the consumer and licensee to maintain the contracted demand within the range. In case, a consumer exceeded the contracted demand he is liable to pay penal charge at twice the rate of Demand Charge in applicable tariff even if his actual demand remained within his

connected load. In absence of agreement, the contracted demand is considered at 100% of connected load.

In the process of Tariff Order 2006-07, the Commission reviewed the matter. From different feedbacks received it was observed that this issue mostly concerns those categories of consumers whose connected load is higher due to presence of spare/standby equipments meant to support the system in need. For other mainstream industries this should not be a major concern as almost all of them draw actual power within the stipulated contracted band. The Commission decided to continue with the arrangements for the present except for Tea, Coffee & Rubber category.

5. Tariff for Seasonal Consumers:

At present Tea, Coffee & Rubber category consumers are considered as seasonal consumers. This category of consumers had insisted to lower the minimum contracted demand level of 70% of connected load in KVA. Reasons cited in favour of their claim were that they need to maintain some spare capacity in their installations for manufacturing tea and for irrigation purpose during winter months which means that they keep a higher connected load than their actual requirement. The seasonal period is normally considered for 8 months and off-seasonal period for 4 months. As per present arrangements, the consumer should declare their requirement of power demand for seasonal months on or before 31st August each year, within the stipulated range of 70% to 105% of their connected load and off-seasonal demand at a minimum of 30% of seasonal demand. From the records made available it is found that while most of the consumers barring few, contracted their seasonal demand at 70% of connected load, the same consumers however opted for higher than minimum stipulated 30% of seasonal contract demand in the off-seasonal period. The off-seasonal actual contracted demand is approx 40% of seasonal contracted demand as derived from the records. In addition there are instances where many consumers of this group also draw power more than the agreed declared demand and pay penalty charges.

Considering all aspects, the Commission decided in Tariff Order 2006-07 that for seasonal consumer Tea, Coffee & Rubber Category, the stipulated range of contracted

demand shall be at 65% to 105% of connected load in KVA during seasonal period and at 40% of seasonal demand for off-seasonal period. The Commission is in favour of further reviewing the matter based of data of actual demand created by this category during different seasons in the future. For this purpose, the Load Research Cell of each Discom (proposed in the Tariff Order 2006-07) will monitor the actual demand created by this category of consumers at least from representative samples and submit the same to the Commission in form of a quarterly report.

6. Time Of Day (TOD) Tariff:

Time Of Day or TOD tariff means that different tariffs are notified for different times of a day according to demand in the system. The tariffs are high during peak hours when demand is more and low during the off-peak hours when demand is low. The categories of consumers where this tariff is applicable often adjusts its power consumption timing from evening peak hours to day or night hours when tariff is relatively low. The three tier TOD tariff introduced in Tariff Order 2005-06 for some categories have already achieved the purpose of its implementation upto some extent. The Commission intended to extend the benefit of TOD tariff to other HT category of consumers for FY 2006-07. This Demand Side Management (DSM) practice has been considered as one of the most effective methods for demand management. At present under HT group, domestic, commercial, public water works, HT Small industries and HT Irrigation are not covered under TOD rate. However, no separate data is available for consumption during different periods of day by different categories under TOD tariff. The Commission suggested that the proposed Load Research Cell under Discoms will collect data from such consumers and submit to the Commission for a Data Base on TOD consumption.

Since the data regarding TOD consumption is not available at present, the Commission decided not to go for extension of TOD tariff to other categories in the Tariff Order 2006-07.

7. Renewable Energy:

In Assam, during winter months very high consumption of electricity is observed during the morning hours resulting in peaking of demand in morning in addition to

normal peak hours. One of the reasons for this peaking of demand in the morning during winter months is the use of water heating appliances like geysers, immersion rods etc. These heating appliances consume high amounts of electricity. In order to encourage consumers to switch over to solar water heating system, the Commission introduced in Tariff Order 2005-06, a monthly rebate of Rs.30 for all consumers who installed such solar water heating systems for meeting their hot water requirements and these are actually used.

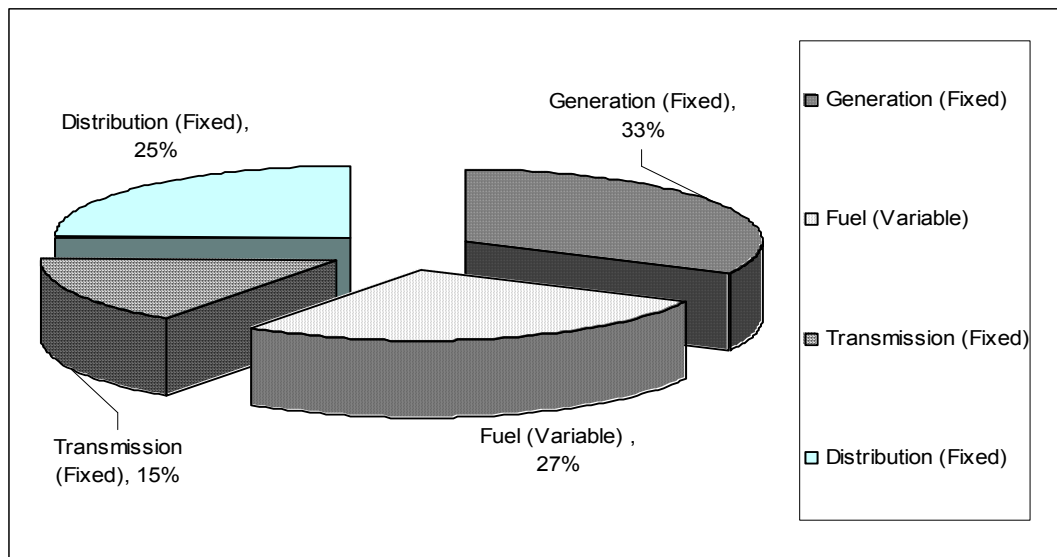
The Commission does not have detailed information as to the number of consumers actually using solar water heating appliances and getting benefit from this arrangement. Even then, *in the Tariff Order 2006-07, the Commission decided to continue with the arrangement of granting rebate for use of solar water heating system and raised the rebate in the present Tariff Order from Rs 30/-per month to Rs 40/- per month. The Commission directed the Load Research Cell of Discoms to collect information regarding use of solar water heating systems in their respective areas and total amount of rebate allowed and submit reports of the same along with the next tariff petition.*

TWO PART TARIFF STRUCTURE

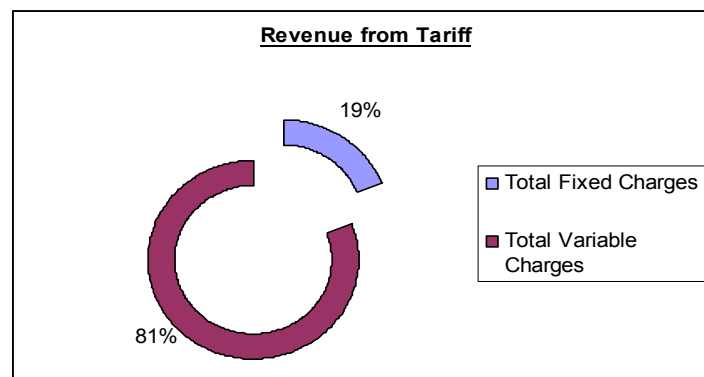
Electricity Tariff structure which was single part type in earlier days gradually moved towards two part structure. The reasons behind adopting two part tariff structure was to recover the cost which the utility has to bear for providing the facility and also to ensure a certain amount of income to the utilities. The power business is a highly capital intensive business. To provide one KW connection to a consumer, the supplier is required to make an upstream investment of approximately Rs 50000 - Rs 60000. Once the connection is provided to a consumer, the consumption of energy will depend on the requirements of the consumer, and if no consumption is made, the supplier will not be in a position to recover any return on his investment. When tariff was fixed as single part, there was a provision of minimum charge. The factor behind this charge was to recover the portion of charges liable to be borne by the utility even when a consumer is not consuming any power.

Two part tariff in retail business became more relevant and imperative after 1992 when the Ministry of Power, Government of India notified Tariff Notification making it mandatory for all Central Sector Generating Station (CSGS) to follow two part tariff structure for recovery of revenue from the beneficiaries. The beneficiaries of CSGS are the states belonging to the respective regions where the CSGS is located. Till that time, the fixed charge commitments of state level utilities were limited to recovery of capital investment in the state in the form of depreciation and O&M expenditure including salary of personnel. The concept of minimum charge had taken care of such liabilities in those days. Non implementation of similar principles in the state level power sector as well led to insufficient recovery of revenue.

In order to overcome such deficiencies, two part tariff structure was introduced in state level retail tariff. Although the liabilities of utilities towards fixed and variable charges are in the order of 73% and 27% respectively, the estimated recovery as per the tariff are 19% and 81% respectively.



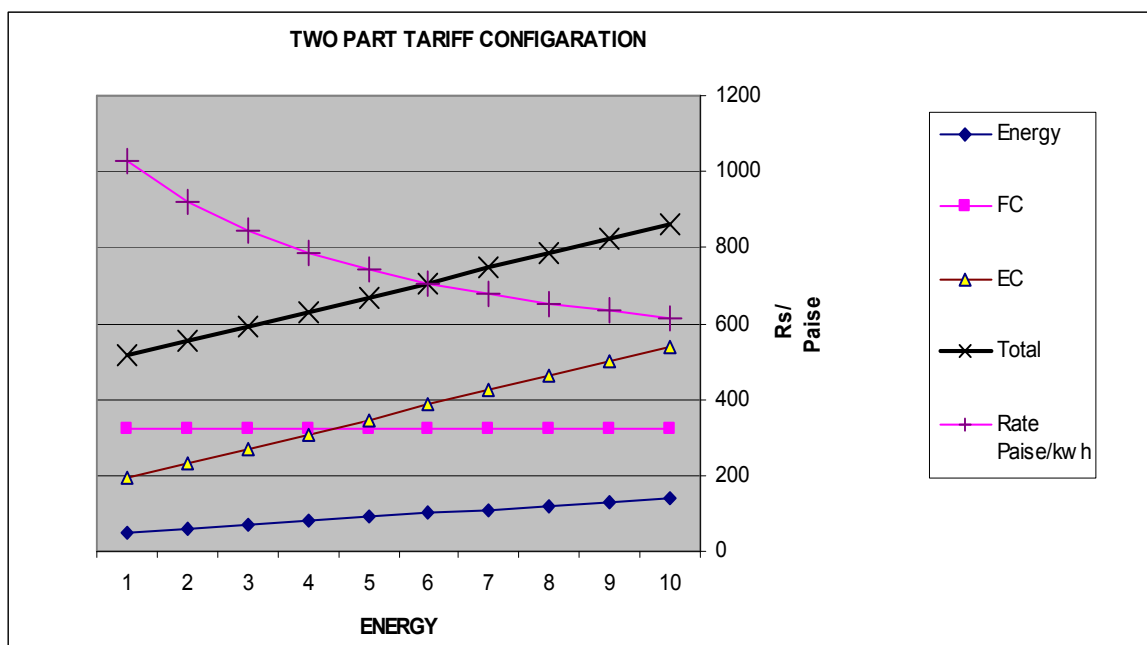
In contrast the estimated recovery on account of Fixed & Energy (variable) charges is shown below.



In a supply shortage situation a consumer may feel disgruntled to pay fixed charges. This situation exposes the supplier to a greater business risk in the event of not being able to sell power to consumers. As such, while fixing tariff in two parts, the energy charge component is made unusually higher to match the ARR.

The variation in estimated consumption with that of actual consumption gives a different average tariff rate. This is due to the reason that in two part tariff scenario the average tariff rate changes with change in consumption as shown below:

TWO PART TARIFF & AVERAGE TARIFF (The figures are illustrative only)							
CL KW	Energy (kWh)	Tariff (Rs)		Revenue (70% of Contracted Demand) (Rs)			Rate (Paise/kWh)
		FC	EC	FC	EC	Total	
2	50	230	3.85	322.00	192.50	514.50	1029.00
2	60	230	3.85	322.00	231.00	553.00	921.67
2	70	230	3.85	322.00	269.50	591.50	845.00
2	80	230	3.85	322.00	308.00	630.00	787.50
2	90	230	3.85	322.00	346.50	668.50	742.78
2	100	230	3.85	322.00	385.00	707.00	707.00
2	110	230	3.85	322.00	423.50	745.50	677.73
2	120	230	3.85	322.00	462.00	784.00	653.33
2	130	230	3.85	322.00	500.50	822.50	632.69
2	140	230	3.85	322.00	539.00	861.00	615.00



In the Tariff Order 2006-07, the Commission decided not to enhance the fixed charge component of tariff except for minor rationalization of one sub category and decided to fill up the revenue gap by adjustment of energy charge component only.

Latest Implementation Status of various schemes under Investment Plan of APGCL for the year 2006-07

Sl. No.	(A) R&M	Approved/ Sanctioned Cost	Funding Agency/ Source of Fund	%age of works completed		Likely date of completion	State plane		Brief Status
		(PFCL/SP)		Supply	Works		Grant (90%)	Loan (10%)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Thermal								
1	R&M of NTPS	1294/200	PFCL/SP	---	---	March'07	180	20	Major work order placed for restoration work of GT unit 2 of NTPS
2	R&M of LTPS	345/Nil	PFCL/--	---	---	Sept'07	---	---	PFCL sanctioned Rs.. 32.00 Cr as loan @ 8.75% interest. Capital repayment will start from April'08
	Capital								
	(B) On Going								
1	Lakwa WHP (1x37.2 MW)	5587/2333 (ACA)	PFCL/SP	---	---	June'08	1650	683	Main order placed with BHEL alongwith 20% advance payment. Project work to

									be started shortly.
	New								
1	235 MW Replacement Power Plant at Namrup	--/50	---/SP	---	---	---	45	5	NTPC Ltd. Has been engaged for preparation of DPR.
2	200 MW CCGT Joint Venture project with OIL	--/25	---/SP	---	---	---	22.5	2.5	DPR & MOA for gas to be prepared by OIL
3	Borgolai coal based project	--/25	---/SP	---	---	---	22.5	2.5	Invited tender from potential bidders to carry out feasibility study.
	Hydel								
	On Going								
1	KLHEP (2x50MW)	---/5740	PFCL/SP	---	---	June'06 (1st unit)	5166	574	The progress report is enclosed in Annex-'A
2	Dhansiri HEP	---/49	---/SP	---	---	---	44	5	To clear outstanding liabilities against the completed works.
	New								
1	Lower Kopili HE project	---/50	---/SP	---	---	---	45	5	Pre-construction survey and preparation of DPR

2	Survey & investigation of HEP	---/25	---/SP	---	---	---	22.5	2.5	The outlay is approved to carry out S&I works for the following projects: 1. KLHEP (Upper Borpani) 2x30 MW, 2. KLHEP (Upper Borpani)/Intermediate) 2x30 MW, 3. Amring HEP (2x16.5 MW)
3	Non conventional energy sources for rural electrification.	---/20	---/SP	---	---	---	18	2	
	Hill Plan								
1	Myntriang Small HEP (2x3=6 MW Stg'-1, 2x1.5=3 MW Sg.-2	---/200	---/SP	---	---	---	180	20	DPR prepared. Process for forest clearance started. NABARD has sanctioned Rs.. 4615 Lakh towards implementation of the project a total cost of Rs.. 6792 Lakh.
2	R&M Bordikharu HEP	---/50	---/SP	---	---	---	45	5	-----
3	Survey & investigation	---/5	---/SP	---	---	---	4.5	0.5	-----

An Introduction to ABT

ABT Stands for Availability Based Tariff.

1 What is Availability Based Tariff?

Availability Based Tariff (ABT) is a rational tariff structure for power supply from generating stations, on a contracted basis. The power plants have both fixed and variable costs. The fixed cost elements are interest on loan, return on equity, depreciation, O&M expenses, insurance, taxes and interest on working capital. The variable cost comprises of the fuel cost, i.e., coal and oil in case of thermal plants and nuclear fuel in case of nuclear plants. In the Two Part Tariff mechanism, the fixed and variable cost components are treated separately. In Availability Based Tariff, the payment of fixed cost to the generating company is linked to availability of the plant, that is, its capacity to deliver MWs on a day-by-day basis. The total amount payable to the generating company over a year towards the fixed cost depends on the average availability (MW delivering capacity) of the plant over the year. In case the average actually achieved over the year is higher than the specified norm for plant availability, the generating company gets a higher payment. In case the average availability achieved is lower, the payment is also lower. This component of tariff is termed ‘capacity charge’. Since the tariff is dependent on the plant availability, therefore, it is termed as ‘Availability Based Tariff’.

The second component of Availability Tariff is the ‘energy charge’, which comprises of the variable cost (i.e., fuel related cost) of the power plant for generating energy as per the given schedule for the day. It may specifically be noted that energy charge is not based on actual generation and plant output, but on scheduled generation. In case there are deviations from the schedule (e.g., if a power plant delivers 600 MW while it was scheduled to supply only 500 MW), the energy charge payment would still be for the scheduled generation (500 MW), and the excess generation (100 MW) would get paid for at a rate dependent on the system conditions prevailing at the time. If the grid has surplus power at the time and frequency is above 50 cycles/second, the rate would be lower. If the excess generation takes place at the time of generation shortage in the system (in which condition the frequency would be below 50 cycles), the payment for extra generation would be at a higher rate.

To recapitulate, the Availability Based Tariff comprises of three components: (a) capacity charge, towards reimbursement of the fixed cost of the plant, linked to the plant's declared capacity to supply MWs, (b) energy charge, to reimburse the fuel cost for scheduled generation, and (c) a payment for deviations from schedule, at a rate dependent on system conditions. The last component would be negative (indicating a payment by the generator for the deviation) in case the power plant is delivering less power than scheduled.

2 Who are the beneficiaries?

The various states of the region where the Central Sector Generating Stations (CSGS) are located are the specified beneficiaries or bulk consumers for inter state ABT.

3 How is the power from CSGS allocated to different states?

The share of power from the CSGS are calculated according to *Gadgil formula*, and duly notified by the Ministry of Power.

4 How do the beneficiaries share their payments?

The beneficiaries have to pay the capacity charge for these plants in proportion to their share in the respective CGS plants. This payment is dependent on the declared output capability of the plant for the day and the beneficiary's percentage share in that plant, and not on power / energy intended to be drawn or actually drawn by the beneficiary from the Central station.

The energy charge to be paid by a beneficiary to a Central station for a particular day would be the fuel cost for the energy scheduled to be supplied from the power plant to the beneficiary during the day. In addition, if a beneficiary draws more power from the regional grid than what is totally scheduled to be supplied to him from the various Central generating stations at a particular time, he has to pay for the excess drawal at a rate dependent on the system conditions, the rate being lower if the frequency is high, and being higher if the frequency is low. These rates are termed as the Unscheduled Interchange (UI) rates.

5 How does the entire mechanism work?

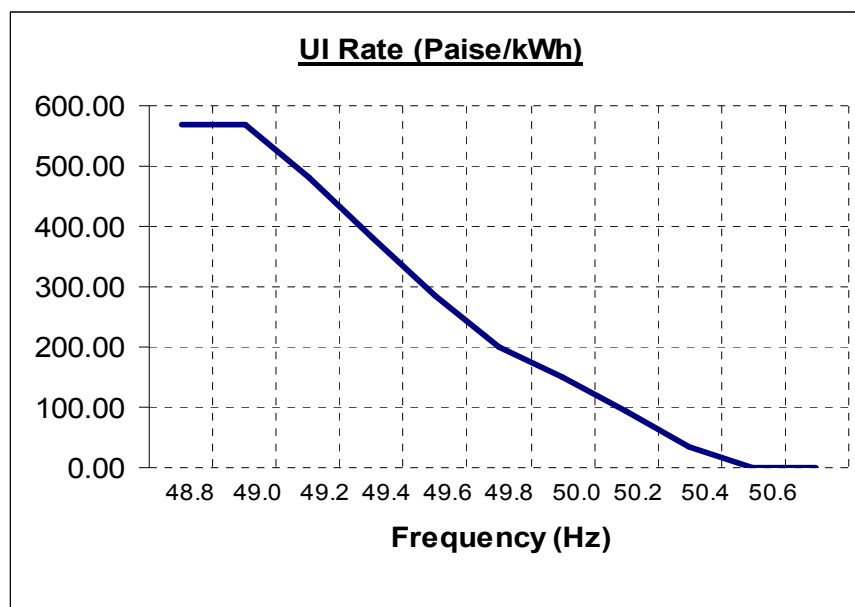
The process starts with the Central Generating Stations in the region declaring their expected output capability for the next day to the Regional Load Dispatch Centre (RLDC). The RLDC breaks up and tabulates these output capability declarations as per the beneficiaries' plant-wise shares and conveys their entitlements to State Load Dispatch Centres (SLDCs). The latter then carry out an exercise to see how best they can meet the load of their consumers over the day, from their own generating stations, along with their entitlement in the Central stations. They also take into account the load curtailment etc. that they propose in their respective areas. The SLDCs then convey to the RLDC their schedule of power drawal from the Central stations (limited to their entitlement for the day). The RLDC aggregates these requisitions and determines the dispatch schedules for the Central generating stations and the drawal schedules for the beneficiaries duly incorporating any bilateral agreements and adjusting for transmission losses. These schedules are then issued by the RLDC to all concerned and become the operational as well as commercial datum. However, in case of contingencies, Central stations can prospectively revise the output capability declaration, beneficiaries can prospectively revise requisitions, and the schedules are correspondingly revised by RLDC.

While the schedules so finalized become the operational datum, deviations are allowed as long as they do not endanger the system security. The schedules are also used for determination of the amounts payable as energy charges, as described earlier. Deviations from schedules are determined in 15-minute time blocks through special metering, and these deviations are priced depending on frequency. As long as the actual generation/drawal is equal to the given schedule, payment on account of the third component of Availability Tariff is zero. In case of under-drawal, a beneficiary is paid back to that extent according to the frequency dependent rate specified for deviations from schedule.

6 How does the UI rate vary with frequency?

When frequency goes up, UI rate decreases. When frequency goes down, the UI rate (for both oversupply and under supply) goes up, reaching a ceiling level of Rs 5.70 per unit at a frequency of 49.0 Hz.

The chart below gives an idea of the changes in UI rate with frequency fluctuations.



7 Why was Availability Based Tariff necessary?

Prior to the introduction of ABT, the regional grids were operating in a very undisciplined and haphazard manner. There were large deviations in frequency from the rated frequency of 50.0 cycles per second (Hz). Low frequency situations result when the total generation available in the grid is less than the total consumer load. These can be curtailed by enhancing generation and/or curtailing consumer load. High frequency is a result of insufficient backing down of generation when the total consumer load has fallen during off-peak hours. The earlier tariff mechanisms did not provide any incentive for either backing down generation during off-peak hours or for reducing consumer load / enhancing generation during peak-load hours. In fact, it was profitable to go on generating at a high level even when the consumer demand had come down. In other words, the earlier tariff mechanisms encouraged grid indiscipline.

The Availability Tariff directly addresses these issues. First, ABT gives incentives for enhancing output capacity of power plants which enables more consumer load to be met during peak load hours. Second, backing down during off-peak hours no longer results in financial loss to generating stations. Third, the beneficiaries now have well-defined entitlements, and are able to draw power up to the specified limits at normal rates of the respective power plants. In case of over-drawal, they have to pay at a higher rate during

peak load hours, which discourages them from over-drawing further. This payment then goes to beneficiaries who received less energy than was scheduled, and acts as an incentive/compensation for them. Thus grid discipline is encouraged.

8 How does ABT benefit everyone?

The ABT mechanism benefits one and all in the following ways:

- a. Firstly, it has dramatically streamlined the operation of regional grids in India. Through the system and procedures in place, beneficiaries' schedules get determined as per their shares in Central stations, and they clearly know the implications of deviating from these schedules. Any constituent which helps others by under-drawal from the regional grid in a deficit situation, gets compensated at a good price for the quantum of energy under-drawn.
- b. Secondly, the grid parameters, i.e., frequency and voltage, have improved, and equipment damage correspondingly reduced. During peak load hours, the frequency can be improved only by reducing drawals, and necessary incentives are provided in the mechanism for the same. High frequency situation on the other hand, is being checked by encouraging reduction in generation during off-peak hours.
- c. Thirdly, because of clear separation between fixed and variable charges, generation according to merit-order is encouraged and pithead stations do not have to back down normally. The overall generation cost accordingly comes down. Fourthly, a mechanism is developed for harnessing captive and co-generation and for bilateral trading between the constituents.
- d. Also, ABT by rewarding plant availability enables more consumer load to be catered at any point of time.

9 What is the status of ABT in Assam?

The state of Assam has been receiving power from the CSGS located in North Eastern region as per the inter-state ABT mechanism and from other states as well. All the Power Purchase Agreements with CSGS were done with the erstwhile integrated

ASEB. But, with the restructuring of the erstwhile integrated ASEB into five companies, agreements with these new companies have become necessary. Moreover, there are metering arrangements to be in place before implementation of intra state ABT i.e. Availability Tariff among the state utilities, can be achieved.

10 What is the present state of affairs for implementation of intra-state ABT in Assam?

The following points give an idea about the present conditions prevailing in Assam for implementation of intra-state ABT

- 1 The State Load Dispatch Centre (SLDC) is now operating as per the requirements of Inter State ABT for receiving power from the CSGS.
- 2 Two part tariff has been notified by SERC for all state level generating station.
- 3 Special energy meters without frequency based monitoring are already in place in interfacing points between generators and STU (APGCL & AEGCL).
- 4 In most of the interface point between STU and discoms, special energy meters are not in place in demarcated boundary points.
- 5 The ASEB is now functioning as State Level Trader (Deemed) holding all Power Purchase Agreements (PPAs) with CSG & IPP stations and that of newly formed APGCL.
- 6 The Discoms have not been allotted with any firm power and receiving power from ASEB trader as per their requirements.

11 What is the status of progress for implementation of intra-state ABT in Assam?

The following points sums up the developments that are taking place for implementation of intra-state ABT

1. The AEGCL (STU) is now in the process for implementing a scheme of installation of ABT compliance energy meters in all identified interface points between utilities. As reported the implementation is likely to be completed by December 2006.
2. The GOA/ ASEB will have to modify the PPAs by reassigning them to Discoms for the implementation of intra state ABT.
3. However as a first step, after installation of interface energy meters with APGCL & AEGCL, generators under APGCL may be brought under ABT with ASEB as the beneficiary.
4. Only after transferring the existing PPAs from the ASEB to Discoms and installation of all interface metering full implementation can be achieved.
