Review of Multi Year Generation Tariff structure in India

Ashok Upadhayay
Research Scholar, MANIT, Bhopal (M.P.) India
Research Scholar No. 113213109

Abstract: This paper mainly presents the review of multi-year tariff framework for recovery of cost of power generation from thermal power stations. In the Indian context, generation activity has become partly competitive with introduction of competitive bidding, while transmission is a monopoly activity and distribution and retail supply is still largely an area-specific monopoly, despite provisions of open access and parallel licensing provisions. All the three segments are regulated by Electricity Regulatory Commissions in India and mainly regulated through Cost-Plus Regulation. The approach of tariff setting plays an important role for attracting investment in power generation. In line with the objectives of safeguarding consumer interest and to ensure recovery of cost of electricity in a reasonable manner, performance based cost of service regulation adopted in all previous tariff periods. A Multi Year Tariff framework will divide all costs into two broad categories, controllable and non-controllable. The Controllables are those costs which are endogenous to the utility whereas non-controllables are those which are external to the utilities over which they have no control. This paper mainly cover commercial issues involve in determination of the cost of energy generated from thermal power stations. This paper also focuses on distract features of Multi Year Tariff approach and its impact on development of the sector.

Keywords- Area-specific monopoly, Force majeure conditions, Multi Year Tariff approach.

---------- * ---------

1. Introduction:

The Multi Year Tariff (MYT) has been proposed in the Electricity Act 2003 to give an element of certainty to all stakeholders. The basic premise of multi-year tariff is that the tariffs would not fluctuate beyond a certain width unless there are force majeure conditions. While formulating the multi-year tariff framework, it is essential to clearly specify the controllable factors and uncontrollable factors and their treatment in tariff. The impact on the Utility due to uncontrollable factors are generally considered as a pass-through element in tariffs, while the impact – gain or loss – on account of controllable factors has to be shared between the Utility and the consumers in a specified manner. Controllable factors are those considered to be under the Utility's control. The Regulators needs to define these factors under the MYT framework. Therefore, expenditure on administrative and general (A&G) expenses, repair and maintenance, employee expenses etc., are all controllables whereas enhanced expenditure on fuel cost for example, rise in price of coal, gas, etc., would be treated as non-controllables. The regulator will determine, at the beginning of the control period, how much expenditure would be allowed during the period as far as the controllables are concerned. While doing so, it will take into account legitimate increases on account of inflation, etc. While fixing all these costs, the regulator would be guided by the base line data at the beginning of the control period.

- *Author Ashok Upadhyay is currently pursuing PHD program in electrical engineering in MANIT, Bhopal, Madhya Pradesh, India, PH-09893324160. E-mail: ashok.upadhyay06@gmail.com*

The utility would be responsible for any increase in the controllable expenditure beyond the stipulated levels and such excess expenditure shall not be allowed as a "pass through" for determination of tariffs.

There are two options to specify trajectories for performance parameters under the MYT framework, which are as under:

a. Prescribing Norms, based on the analysis of past performance levels and approved trajectory of last Control period.

b. Prescribing principles outlining the approach that needs to be followed to be used in the MYT/ Tariff Orders for determination of ARR.

Both the approaches have their merits and demerits. However, prescribing Norms based on the analysis of past performance levels and approved trajectory of last Control period, provides clarity about the roadmap of tariff, to the Utilities as well as to the consumers. Regulatory certainty is one the key objectives of any MYT framework. Hence, it is appropriate to prescribe norms for performance parameters, including O&M expenses, wherever possible. The baseline data available while defining the trajectory of different performance and financial parameters for the Control Period needs to be accurate and reliable. Such baseline data will have to be compiled based on audited accounts of the Utilities and operational and financial parameters of the Utility. The existing performance levels of the Utilities also need to be borne in mind while defining the baseline values for the next Control Period. A suitable performance trajectory for improvement in operational parameters has to be evolved along with an appropriate arrangement for sharing the gains and losses on account of superior and inferior performance vis-à-vis target performance, with the consumers. This will ensure protection of consumers' interests as well as provide

motivation to the Utilities for improving the efficiency of operations.

While setting the norms, due regard has to be given to the existing performance levels and the desired performance levels, and the performance improvement trajectory has to be designed in such a manner that sufficient time is given to the Utilities to achieve the desired operational efficiency, while at the same time ensuring that the performance trajectory is not slack and is easily achievable by the Utilities. Further, the mechanism for sharing the gains and losses due to controllable factors vis-à-vis desired operational norms has to be formulated. The Generating Companies has to retain a portion of the gains earned in this manner. However, since one of the basic objectives of the MYT regime is to ensure that the consumer tariffs are rationalised in the long-term, the operational norms have to be revised at the beginning of each Control Period, on the basis of the actual performance achieved during the previous Control Period, so that the benefits of operational efficiency improvement should passed on the consumers. Under this mechanism, the Utilities should allowed to retain the incentive earned during the Control Period, and at the end of the Control Period, the operational norms are revised, so that there is continuous improvement and the Utilities are incentivised to further improve their operational efficiency, with a provision of mid-term review of Business Plan.

This paper takes brief account of the state of MYT framework in Indian power sector and of concerns that have prompted various steps by the regulator for the implementation of this framework. Next, we take stock of the major statutory provisions under Electricity Act, 2003 and the guidelines for MYT framework provided in Tariff policy and its implications on future prospects in Indian power sector. It also puts these in perspective towards understanding the evolving market structure in the generation, T&D segments. This paper also discusses the issues involved in multiyear tariff structure into the power sector primarily through development of a market for bulk power. Further, the paper offers an in-depth review of availability based tariff and its cost components. Finally, the paper briefly discusses the issues involved in multi-year tariff framework of power stations and its impact on determination of tariff components.

2. Legal framework:

Electricity Act, 2003:

(2.1) Introduction of Multi-Year tariff principles is mandated by Section 61 of the Electricity Act 2003 (EA 2003), and the National Tariff Policy. Section 61 of the Act requires the Commission to be guided by the multi year tariff principles while specifying the terms and conditions for determination of tariff.

(2.2) Clause 5.3 (h) of the tariff policy provides the guidelines for multi-year tariff as under: (12)

- *Section 61 of the Act states that the Appropriate Commission, for determining the terms and conditions for the determination of tariff, shall be guided inter-alia, by multi-year tariff principles. The MYT framework is to be adopted for any tariffs to be determined from April 1, 2006. The framework should feature a five-year control period. The initial control period may however be of 3 year duration for transmission and distribution if deemed necessary by the Regulatory Commission on account of data uncertainties and other practical considerations. In cases of lack of reliable data, the Appropriate Commission may state assumptions in MYT for first control period and a fresh control period may be started as and when more reliable data becomes available.*
- *In cases where operations have been much below the norms for many previous years the initial starting point in determining the revenue requirement and the improvement trajectories should be recognized at "relaxed" levels and not the "desired" levels. Suitable benchmarking studies may be conducted to establish the "desired" performance standards. Separate studies may be required for each utility to assess the capital expenditure necessary to meet the minimum service standards.*
- *Once the revenue requirements are established at the beginning of the control period, the Regulatory Commission should focus on regulation of outputs and not the input cost elements. At the end of the control period, a comprehensive review of performance may be undertaken.*
- *Uncontrollable costs should be recovered speedily to ensure that future consumers are not burdened with past costs. Uncontrollable costs would include (but not limited to) fuel costs, costs on account of inflation, taxes and cess, variations in power purchase unit costs including on account of hydro-thermal mix in case of adverse natural events.*
- *Clear guidelines and regulations on information disclosure may be developed by the Regulatory Commissions. Section 62 (2) of the Act empowers the Appropriate Commission to require licensees to furnish separate details, as may be specified in respect of generation, transmission and distribution for determination of tariff.*

Concept of Multi Year Tariff:

A Multi Year Tariff (MYT) framework is defined as a framework for regulating the Generating Company or licensees over a period of time wherein the principles of regulating the returns/profits of utilities and the trajectory of individual cost and revenue elements of the utility are

determined in advance. The concept of MYT gives an element of certainty to all stakeholders. The basic premise is that tariffs would not fluctuate beyond a certain limit. The consumer would have a fair idea of what to expect in the next three to five years and the Utility would also be able to plan its business having known the principles for tariff determination for the control period. Multi-Year Tariff does not imply that the regulator need to fix an identical tariff, year after year, throughout the control period though, of course, there is no bar if the regulator chooses to do so. It is more likely -that the regulator would fix the guidelines which would determine the tariffs and having fixed the guidelines, it is expected that the tariffs would operate within a certain band. The concept of MYT can therefore be divided into two kinds of regimes one that seeks to specify the input costs and another that seeks to specify the output prices. In both cases, this can be done either by specifying the precise costs/prices numbers or the mechanism by which these would be adjusted based on certain principles approved by the Commission. The shift from an annual tariff determination exercise to such a multi-year system is expected to bring the following benefits:

a. Reduction in regulatory effort on the part of the Commission, utilities and other stakeholders.
b. Reduction in regulatory uncertainty and
c. Provision of a transparent and stable system of incentives and disincentives.
d. The basic premise is that tariffs would not fluctuate beyond a certain width unless there are force majeure conditions.
e. The consumer have idea about the tariff for next three to five year. The utility would also have idea of their revenue to plan their business.

MYT provides clarity on the rules to be applied over a pre-defined future time period in advance. It seeks to eliminate the control aspects of regulation and replace them with a system of incentives and penalties. In this way, all stakeholders are made aware of the outcome of various actions/events for the pre-defined future time period, and are able to plan accordingly. For Generating Companys or Licensees, firstly, MYT principles provide clarity on the rules of regulation that are applied over a long term, and help finance growth and operations better, and facilitate improvement in supply quality and customer service. Secondly, the design of incentives as a part of the MYT exercise will help promote efficiency. Since some of the efficiency improvements will require time to take effect, these incentives should be applicable for a reasonably long period of time. Thirdly, these principles can help licensees mitigate risks in electricity supply. For consumers, an improvement in efficiency gets translated into greater cost effective supply. The MYT principles are expected to result in reduction in tariffs in the long-term, as the performance benchmarks will be restated at improved levels at the beginning of every Control Period. The primary objective of any multi-year Regulation for tariff determination is to improve efficiency by rewarding good performance, where the actual performance is measured relative to some pre-defined benchmark. Internationally, regulators have adopted a variety of benchmarking methods and techniques in incentive regulation. Some of the common approaches to incentive regulation are as follows:

a. Rate of Return Regulation (ROR)
b. Price Cap Regulation
c. Revenue Cap Regulation
d. Sliding Scale (ROR Band width)
e. Yardstick Regulation
f. Targeted Incentive Regulation

Approach of Tariff Setting:

Different tariff setting approach has been adopted at different time period.

The components of the "Availability Based Tariff" for power stations and basis of recovery of the each component is as follows: (7)

- Annual Fixed Charge: -Payment Linked to Availability
- Energy Charge: - Payment linked to Sch. Generation
- Deviation Charge: -Payment linked to grid frequency
- Incentive: -Payment linked to PLF in thermal

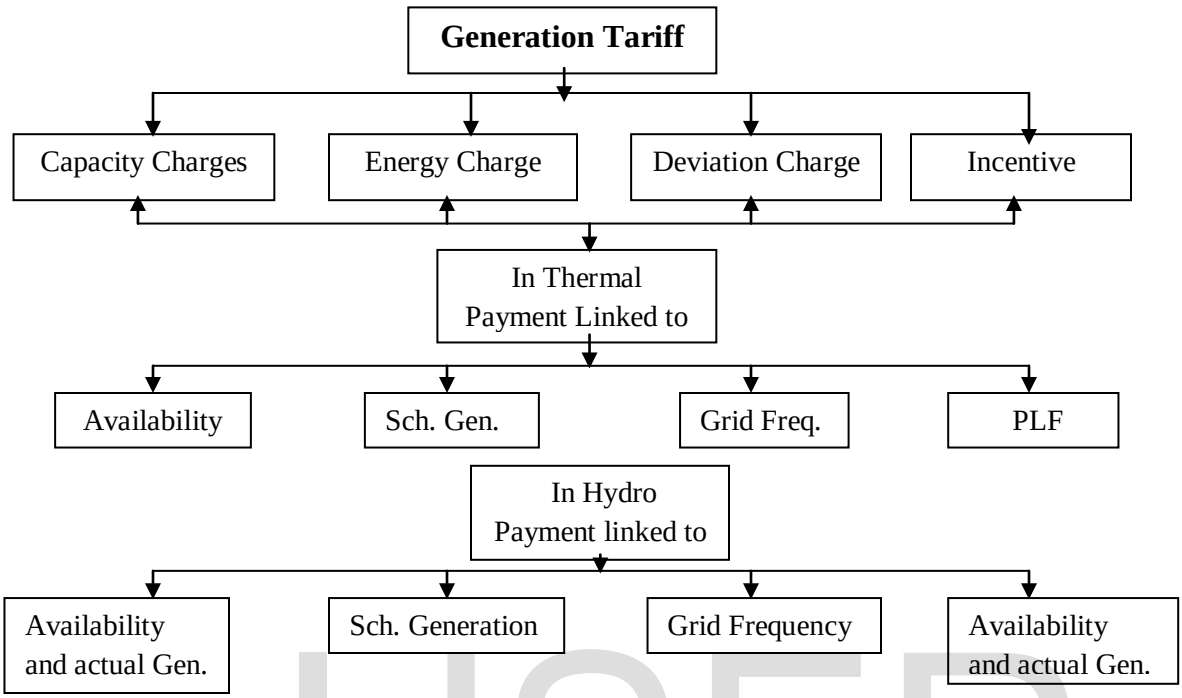
-Payment linked to Availability and ex-bus generation in hydel

Under the Availability Based Tariff (ABT), two part tariff structure (fixed + variable cost) is being followed for generation tariff with incentive and disincentive mechanism. Recovery of fixed charges is based on the availability of plant while the recovery of variable charges is linked to operational parameters like normative Station Heat Rate (SHR), auxiliary consumption etc. The fixed charges have five main components namely Return on Equity (ROE), Interest on Loan, Depreciation, Operation & Maintenance cost, and Interest on Working Capital. There are incentive/ disincentives built in for over/under achievement of target availability and normative parameters. The tariff structure of transmission system is governed through single component of annual fixed charges with incentive linked to availability.

In view of the anticipated growth in demand and the existing challenges in the power sector, a balanced approach is required to be adopted for tariff determination in the larger interest of the sector. Further, a focus is needed to improve the operational efficiency so that benefit on account of efficiency gains should be shared with the beneficiaries and the consumers at large. It is equally important to harness all resources to increase proportionate

mix of power generation. In Indian power sector, the typical tariff structure for thermal and hydel power stations commonly used are as given below: (7)

The components of the "Availability Based Tariff" for power stations and basis of recovery: (7)



Capacity Charges or Fixed Charges:

The main driving factors for the annual capacity charges are capital cost and debt-equity ratio. The determination of Capital cost is a critical step in tariff. The Capital cost forms the rate base for determination of return on investment. The Capital cost of project including interest during construction and financing charges, any gain or loss on account of foreign exchange rate variation, capitalized initial spares and additional capital expenditure etc. have been admitted after prudence check. The regulator require to undertake comprehensive review of the capital investment and capitalization plans filed by the utilities and approve the amount of capital investment to be undertaken during the Control Period. Expenses linked to the capital investment which are to be factored into the revenue requirement are usually treated as controllable and hence are considered for true-up exercise only at the end of the Control Period. (1)

Debt: Equity ratio is the most important factor for the promoters as it has an impact on return on investment. A Debt: Equity ratio of 70:30 has been adopted nationally for financing new projects and for additional capitalization. The equity in excess of normative level is normally treated as normative loan unless allowed by the Commission and in case of equity below the normative level, actual equity is being used for determination of Return on Equity in tariff computations. The major components of Capacity Charges or Fixed Charges are as follows: (1)

1. Return on Equity
2. Interest and Finance charges
3. Depreciation
4. Operation and Maintenance expenses
5. Interest on working capital
6. Compensations Allowance for old power stations
7. Special Allowance in lieu of Renovation and Modernization

The existing tariff setting follows a hybrid approach where performance based cost of service approach by considering actual cost and normative parameters specified in the tariff regulations. Components like return on equity, operation and maintenance expenses and interest on working capital need to be specified on normative basis whereas cost of debt on actual basis. The normative parameters are expected to induce operational and financial efficiency. While continuing with the hybrid approach, ensuing tariff Regulations for the new control period may provide more weightage for normative parameters to induce efficiency during operation as well as in development phase.

The rate of return for equity need to be fix in a manner that will not only attract investment but generate sufficient resources for further growth in the sector. The Central Commission has continue with the existing base rate of

return on equity of 15.5% with the additional 0.5% return on equity for timely completion of projects. The timely completion of projects impresses upon the importance of, which has a direct impact of the growth of the economy. On the other hand, if the project is not completed within the stipulated timeline for any reasons whatsoever, the additional return shall not be admissible.

The interest on loan is pass through and is computed by considering weighted average rate of interest on the basis of actual loan, actual interest rate and scheduled loan repayment. As of now, debt market is gradually structuring and foreign debt market is becoming accessible to the Indian companies. The rising cost of domestic borrowing as seen presently could lead to an increase in demand for External Commercial Borrowings amongst Indian Companies; however, there are several constraints like limit on borrowing, shorter tenures of up to 5 years, high hedging costs, exposure to foreign exchange risks etc. Keeping in view of the limitation on ECBs, the existing mechanism of encouraging developer for reduction of cost of debt through swapping, hedging is to be examined.

Depreciation is a major component of annual fixed cost. It is accepted in regulatory regime that the depreciation represents service to capital subscribed and normally considered a cash flow available for repayment of loan. The National Electricity Policy also provides that "depreciation reserve is created so as to fully meet the debt service obligation." The regulatory meaning of depreciation was pronounced in 2009-14 tariff period which held that there should be enough cash flow available to meet the repayment obligations of the generating Company during first 12 years of operation. This regulatory meaning has gained precedence in tariff setting approach. In previous control period regulation, the depreciation rate has been considered based on normative repayment period of 12 years to repay the normative loan (70% of the capital cost).

The operation and maintenance expenses comprises of costs incurred on a day-to-day basis in order to run the business efficiently. These costs include:

- Employee Expenses, which include "wages and salaries" and "contribution to employee funds";
- Repair and Maintenance Expenses; and
- Administrative and General Expenses, including expenses on rents, rates and taxes, legal charges, and audit and other charges.

Operation and Maintenance expenses for the base year would be determined on the basis of latest audited accounts, estimates of the respective utilities for relevant years and other relavent factors. The projected O&M Expenses of the respective utilities need to be benchmark with similar utilities. Under the MYT framework, O&M expenses are treated as a controllable parameter.

Separate interest on working capital as part of capacity charges is also allowed for generating stations on normative basis irrespective of the actual working capital loan if any availed by the generating companies based on actual fuel prices, fuel price escalation, movement in interest rates, liquid fuel stock. Further, there are several sources of obtaining working capital finance and the rate of interest on such working capital depends on the operational performance and profitability of operations, hence, the regulated entities able to source funds at cheaper rate of interest, depending on their performance.

In case of coal-based thermal generating station, a separate compensation allowance admissible to meet expenses on new assets of capital nature, and in case an event, revision of the capital cost not allowed on account of compensation allowance but the compensation allowance is allowed to be recovered separately. The compensation allowance is admissible based on the life of the generating unit and manner for allowing the Compensation Allowance from the year following the year of completion of 10, 15, or 20 years of useful life.

In case of coal-based thermal generating station, the generating company, instead of availing Renovation & Modernization may opt to avail a "special allowance" in accordance with the norms, as compensation for meeting the requirement of expenses including renovation and modernization beyond the useful life of the generating station and in such case, revision of the capital cost is also not allowed.

(A) Recovery of Capacity Charges:

The fixed cost of a thermal generating station shall be computed on annual basis, based on norms specified under these regulations, and recovered on monthly basis under capacity charge. The total capacity charge payable for a generating station shall be shared by its beneficiaries as per their respective percentage share/allocation in the capacity of the generating station. The capacity charges payable to a thermal generating station for a calendar month shall be calculated in accordance with the following formulae (1):

CC_1= (AFC/12)(PAF_1 / NAPAF) subject to ceiling of (AFC/12)
CC_2 = ((AFC/6)(PAF_2 / NAPAF) subject to ceiling of (AFC/6)) – CC_1
CC_3 = ((AFC/4) (PAF_3 / NAPAF) subject to ceiling of (AFC/4)) – (CC_1+CC_2)
CC_4 = ((AFC/3) (PAF_4 / NAPAF) subject to ceiling of (AFC/3)) – (CC_1+CC_2+CC_3)
CC_5 = ((AFC x 5/12) (PAF_5 / NAPAF) subject to ceiling of (AFC x 5/12)) – (CC_1+CC_2 +CC_3 +CC_4)

CC_6 = ((AFC/2) (PAF_6 / NAPAF) subject to ceiling of (AFC/2)) – (CC_1+CC_2 +CC_3+CC_4 + CC_5)

CC_7 = ((AFCx7/12) (PAF_7 / NAPAF) subject to ceiling of (AFC x 7/12)) – (CC_1+CC_2 +CC_3+CC_4 + CC_5 + CC_6)

CC_8 = ((AFCx2/3) (PAF_8 / NAPAF) subject to ceiling of (AFC x 2/3)) – (CC_1+CC_2 +CC_3+CC_4 + CC_5 + CC_6 + CC_7)

CC_9 = ((AFCx3/4) (PAF_9 / NAPAF) subject to ceiling of (AFC x 3/4)) – (CC_1+CC_2 +CC_3+CC_4 + CC_5 + CC_6 + CC_7 + CC_8)

CC_{10} = ((AFCx5/6) (PAF_{10} / NAPAF) subject to ceiling of (AFC x 5/6)) – (CC_1+CC_2 +CC_3+CC_4 + CC_5 + CC_6 + CC_7 + CC_8 + CC_9)

CC_{11} = ((AFC x 11/12) (PAF_{11} / NAPAF) subject to ceiling of (AFC x 11/12)) – (CC_1+CC_2+CC_3 +CC_4 + CC_5 + CC_6 + CC_7 + CC_8 + CC_9 + CC_{10})

CC_{12} = ((AFC) (PAF_Y / NAPAF) subject to ceiling of (AFC)) – (CC_1+CC_2 +CC_3 +CC_4 + CC_5 + CC_6 + CC_7 + CC_8 + CC_9 + CC_{10} + CC_{11}

Where,

AFC - Annual fixed cost specified for the year, in Rupees.

NAPAF - Normative annual plant availability factor in percentage.

PAF - Plant availability factor achieved during the Year

CC_1, CC_2, CC_3, CC_4, CC_5, CC_6, CC_7, CC_8, CC_9, CC_{10}, CC_{11} and CC_{12} are the Capacity Charges of 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th and 12th months respectively.

The PAFM upto the end of a particular month and PAFY shall be computed in accordance with the following formula:

$$\text{PAFM or PAFY} = 10000 \times \sum_{i=1}^{N} DC_i / \{ N \times IC \times (100 - AUX) \} \%$$

Where,

AUX=Normative auxiliary energy consumption in percentage.

DCi = Average declared capacity (in ex-bus MW), for the i^{th} day of the period i.e. the month or the year as the case may be, as certified by the concerned load dispatch centre after the day is over.

IC = Installed Capacity (in MW) of the generating station

(B) Recovery of Energy Charges:

The energy charge shall cover the primary and secondary fuel cost and limestone consumption cost (where applicable), and shall be payable by every beneficiary for the total energy scheduled to be supplied to such beneficiary during the calendar month on ex-power plant basis, at the energy charge rate of the month (with fuel and limestone price adjustment). Total Energy charge payable to the generating company for a month shall be (1):

(Energy charge rate in Rs./kWh) x {Scheduled energy (ex-bus) for the month in kWh.}

Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to three decimal places in accordance with the following formulae:

(a) For coal based and lignite fired stations

ECR = {(GHR – SFC x CVSF) x LPPF / CVPF+SFC x LPSFi + LC x LPL} x 100 / (100 – AUX)

(b) For gas and liquid fuel based stations

ECR = GHR x LPPF x 100 / {CVPF x (100 – AUX)}

Where,

AUX =Normative auxiliary energy consumption in percentage.

CVPF = Weighted average gross calorific value of coal as received in Kcal/kg

CVSF =Calorific value of secondary fuel, in kCal per ml.

ECR =Energy charge rate, in Rupees per kWh sent out.

GHR =Gross station heat rate, in kCal per kWh.

LC = Normative limestone consumption in kg per kWh.

LPL =Weighted average landed price of limestone in Rupees per kg.

LPPF =Weighted average landed price of primary fuel, in Rupees per kg, per litre

SFC = Normative Specific fuel oil consumption, in ml per kWh.

LPSFi =Weighted Average Landed Price of Secondary Fuel in Rs./ml

(C) Recovery of Deviation Charges:

The objective of these charges is to maintain grid discipline and grid security as envisaged under the Grid Code through the commercial mechanism for Deviation Settlement through drawal and injection of electricity by the users of the grid (13). The charges for the Deviations for all the time-blocks shall be payable for over drawal by the buyer or beneficiaries and under-injection by the seller or generator and receivable for under-drawal by the buyer

and over-injection by the seller and shall be worked out on the average frequency of a time-block at the rates and methodology specified in CERC "Deviation Settlement Mechanism". The Charges for deviation for each 0.01 Hz step is equivalent to 35.60 Paise/kWh in the frequency range of 50.05-50.00 Hz, and 20.84 Paise/kWh in frequency range 'below 50 Hz' to 'below 49.70 Hz' (13).

(D) Recovery of Incentive:

The Availability Based Tariff was introduced by the Central Commission in the year 2000 and implemented through Tariff Regulations, 2001. The Central Commission in its previous Tariff Regulations, 2001 and Tariff Regulations, 2004 had specified separate norms to be achieved for recovery of entire annual fixed charges and to qualify to receive incentive in case the station performs above the specified norm. In the above said regulations specified that the entire full fixed charges shall be recoverable if the Station achieved target availability. However, in order to qualify for incentive a separate norm was prescribed as target Plant Load Factor (PLF). The generator was allowed incentive only in case when it generated power in excess of target PLF (10). In order to encourage the generators to make it available, in Tariff Regulations, 2009 changed the norm and specified single norm as target availability for recovery of full fixed charges and incentive. It is found that mere availability of the station does not lead to commensurate benefit to the beneficiaries. The difficulties faced by various distribution utilities and issues arising out on account of payment of incentives without receiving power leading to increased average cost of power purchase, it proposed to re-introduce separate norms for recovery of full fixed charges linked to the target availability and norms for target PLF above which the incentive shall be applicable. Considering the prevalent demand supply scenario in the country and other factors affecting the actual generation, the Central Commission has now re-introduce separate norms for recovery of full fixed charges linked to the target availability and norms for target PLF above which the incentive shall be applicable considering the difficulties faced by various distribution licensee. As per the tariff regulation frame by the central Commission for new control period the Incentive to a generating station shall be payable at a flat rate of 50 paise/kWh for ex-bus scheduled energy corresponding to scheduled generation in excess of ex-bus energy corresponding to Normative Annual Plant Load Factor (NAPLF). (1)

Review of Controllable and Uncontrollable Costs

The assessment of Cost is the most important step in the regime of performance based regulation. The principles for review of costs, although universal in economic theory, cannot in practice be divorced from the specific financial position of the utility. We believe this review should be based on the following principles while providing for adequate cost recovery for ensuing year:

- Economic signals : Cost reviews should be forward looking and take into account the current financial position
- Long term norms: In order to prevent the generating companies from regulatory uncertainty, norms or targets must be fixed in a manner that reveals a consistent approach on reviews by the Commission. These norms must provide a guiding direction so that convergence can be reached between the performance and expectations.
- Realistic efficiency norms: Efficiency norms need to be set at realistic and achievable levels. We would suggest the fixation of norms in a manner which encourages efficiency improvements for the generating companies. This would help retain the savings resulting from better performance.

Recommendations:

i. There is a need to review the existing level of return on equity keeping in view of the existing market condition and expected return by regulated entity. The fixed rate of return over the entire tariff period as per the existing practice should also be review and provision for mid-term review should be introduced. There is a need to linked return with the market conditions considering the risk factor. Further, if the Return on Equity is to be linked to market conditions, criteria to be adopted for arriving at the rate of return need to be addressed.

ii. The component of risk premium should also be defined and quantified based on available financial information which needs to be added in the overall return. There is a need for differential rate of return for generation projects (hydro and thermal) or transmission projects. Consider a case for reduction of ROE level in view of the profit of the regulated entities and risk premium in operation of project.

iii. It is felt that allowable cost of debt may be linked to a benchmark yield on comparable bonds or normative debt for achieving financial efficiency. The possibility of normative cost of debt or benchmarking of debt is to be examined. Alternately, the ceiling for cost of debt may also require to be examined as the cost of debt varies depending upon credit rating and financial condition of project developer.

iv. There is need to switchover to normative cost of debt calculated on the basis of present debt market

condition. The criteria for working out normative cost of debt need to be specified. There should be well defined Process to address the variation of cost of debt among different rating Companies. The allowable cost of debt should be linked to a benchmark yield on comparable bonds or Government securities. Ceiling be specified linking with benchmark yield.

v. While combining assets or units, the treatment of weighted average life may have a mismatch in respect of completion of 12 years of each individual units or assets. Similarly, there will be a mismatch at the end of completion of useful life of combined units vis-à-vis individual units. Since useful life is linked with depreciation after 12 years, there will be a consequential impact on recovery of depreciation. The treatment of depreciation on account of additional capital expenditure at the fag end of life and also the Special allowance approved in lieu of renovation and modernization as the same have consequential impact on the tariff due to recovery of depreciation over balance life.

vi. The additional capital expenditure after allowing the Special allowance has an impact on recovery of depreciation. As more assets of regulated entities are approaching towards completion of useful life, this issue needs to be address. The need is felt that pre-specified useful life could be revised and extended after re-assessment of useful life for spread over of balance depreciation. There is also need for re-assessment of useful life for treatment of additions during fag end of life has been recognized. It is perceived that extension by way of re-assessment of useful life will provide certainty to distribution licensee for getting supply beyond useful life and consumers will be benefited by availing supply of electricity at lower cost.

Conclusion

In this subject paper we have concluded that the concept of MYT gives an element of certainty to all stakeholders. The regulator through the MYT framework aims to meet the following broad objectives:

a. Minimizing the risks for utilities and consumers.
b. Promote operational efficiency and appropriate reduction of system losses.
c. Attract investments.
d. Bring greater predictability to consumer tariff on the whole by restricting tariff adjustments to known indicators on power purchases and inflation tariff indices.
e. Providing incentives to and levying penalties on the licensees for over- achieving or failing to achieve respectively, the target set out for items which are controllable / uncontrollable, initially the incentives.

References:

1. Terms and Conditions for determination of tariff Regulations, 2014, issued by Central Electricity Regulatory Commission for new control period FY14 to FY19.
2. Paper on Multi Year Tariff Regulations for Second Control Period issued by GERC in December, 2010.
3. Model Regulations for Multi Year Distribution Tariff *prepared by* Crisil Infrastructure Advisory for Forum of Regulators.
4. Life Cycle Assessment of a Coal-fired Old Thermal Power Plant by Charles Mbohwa, Associate Professor, Department of Quality and Operations Management, University of Johannesburg, Proceedings of the World Congress on Engineering 2013 Vol I, WCE 2013, July, 2013, London.
5. Power sector reform in India: current issues and prospects by Anoop Singh_Department of Industrial and Management Engineering, Indian Institute of Technology, Kanpur 208 016, India
6. A Novel Stochastic Model for the GenCos Self-Scheduling in a Restructured Electricity Market by H.Y. Yamin, IEEE Senior Member Power Engineering Department Al-Hijawwi Faculty for Engineering Technology Yarmouk University Irbid, Jordan.
7. Bulk Power Generation Tariff-Commercial Issues and Regulatory Perspective by S C Shrivastava presented in IIT Kanpur in the 4th Capacity Building Programme for Officers of Electricity Regulatory Commissions.
8. A Joint Decision Model of Pricing and Inventory Control for a Distribution System in Apparel Industry by Jun-jun Gao Sydney Institute of Language & Commerce Shanghai University, Y. Zheng Sydney Institute of Language & Commerce Shanghai University.
9. Economic and Operational Effects of Introducing Independent Power Producers into The Kenyan Power System by Dr. A. O. Akumu, Electrical & Electronic Engineering Dept. Jkuat, A. G. Oduor, Dr. L. M. Ngoo Technical Services Dept. Kenya Power & Lighting Company Nairobi Kenya.

10. Statement of Reasons for Terms and Conditions of Tariff Regulations, 2014, issued by Central Electricity Regulatory Commission.
11. Introducing competition in retail electricity supply in India, issued by Forum of Regulators In July, 2013.
12. National tariff policy prescribing the guiding principles and methodology for tariff, issued by Govt. of India, in 2006.
13. "Deviation settlement mechanism, 2014" for frequency based billing issued by CERC

---------- x ----------
--