

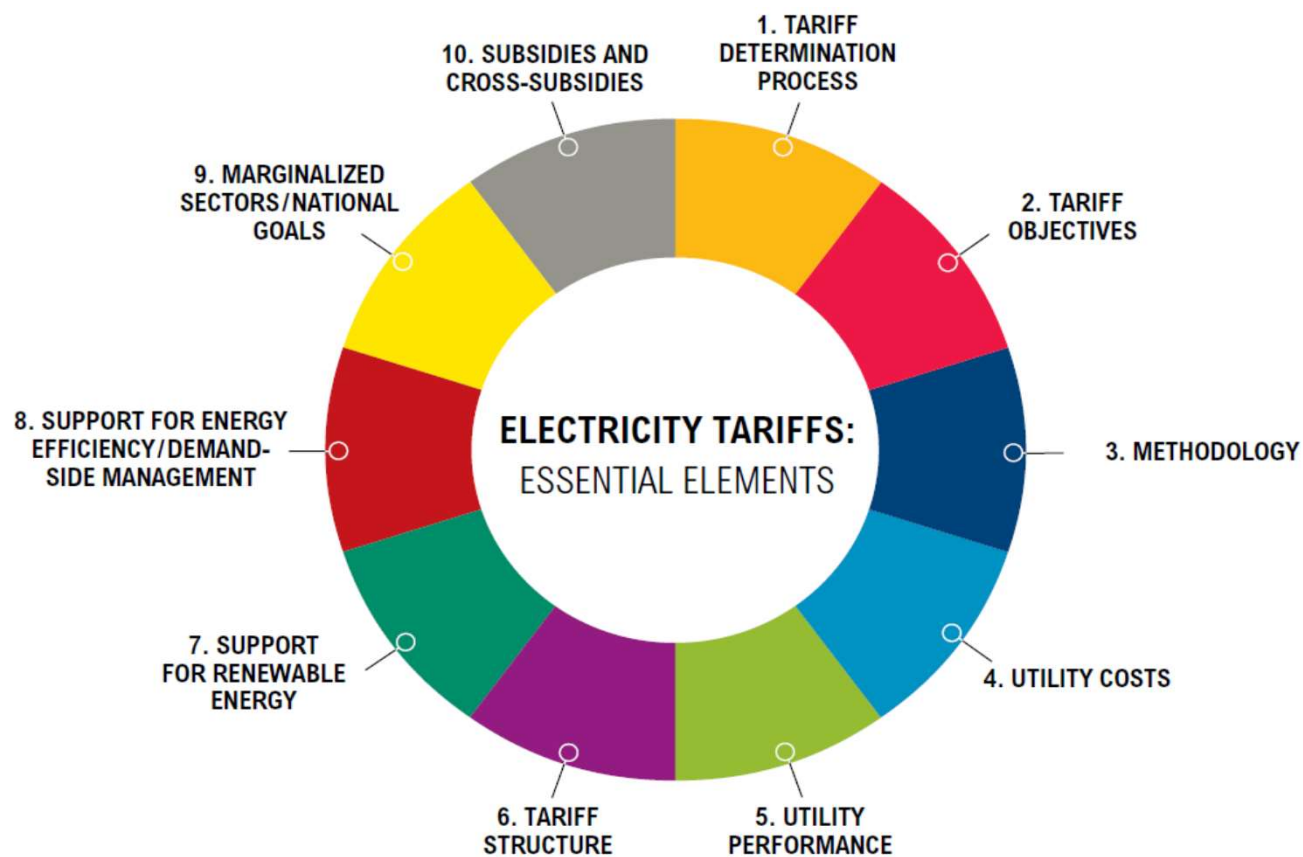


ELECTRICITY TARIFF DETERMINATION METHODOLOGIES

SAFIR 15TH Core Course organised by
ASCII, Hyderabad

ISMAIL ALI KHAN
Chairman TSERC

ELECTRICITY TARIFF - ESSENTIAL ELEMENTS



PRINCIPLES OF TARIFF DESIGN

1. Effectiveness of yielding total revenue
2. Stability and predictability of revenue
3. Stability and predictability of rates
4. Discouraging wasteful use of services
5. Understanding of present and future private and social costs and benefits of service provided
6. Fairness of rates in the apportionment of total costs of service among different consumers
7. Avoidance of discrimination in rates
8. Promotion of innovation and cost-effectiveness in the face of changing demand and supply patterns
9. Simplicity, understandability, public acceptability, and feasibility
10. Freedom from controversies as to proper interpretation

TARIFF DESIGN METHODOLOGY

The method of tariff determination is an important factor from a public interest perspective. Most commonly used methods are:

- ▶ 1. Cost plus or Rate of Return regulation - a process of balancing costs incurred by the utilities and future estimated revenues
- ▶ 2. Performance Based or Incentive Regulation - an extension of cost plus approach that provides incentives for improving efficiency and reducing costs
- ▶ 3. Hybrid Approach - is a performance based cost of service approach by considering actual cost and normative parameters specified in the regulations

Performance Based Regulation

- ▶ Performance based regulation could include: quality of service, operating standards such as plant load factor, T&D losses management, O&M expenses per customer etc. as well as quality of service indices such as duration of outages and blackouts. Performance based regulation methods are:
 - ▶ 1. Price Cap - adjusts the operator's prices according to the price cap index that reflects the overall rate of inflation in the economy. Here regulators explicitly compare the operator to the average firm in the economy
 - ▶ 2. Revenue Cap - attempts to do the same thing, but for revenue rather than prices. This method places an upper limit on revenues thereby constraining the price indirectly. Revenue cap regulation is preferred for utilities that face high fixed costs

Determination of Revenue Requirement

There are three approaches to determine overall revenue requirement.

- Actual historical accounting cost. In this approach the regulator defines a specific 12 months period in recent past as the historic test year data. This approach is being traditionally used in the Indian power sector
- Estimation of future accounting cost - uses a forecast of future costs and future load expected in a specific 12 months period. The utility may not be able to produce forecasts with sufficient degree of reliability.
- Estimation of marginal cost. This approach reflects the cost of expanding the system efficiently to satisfy the load forecast over a long time horizon. Estimation of long-term marginal cost is difficult and sensitive to many subjective assumptions that must be made during the estimation process.

Consumer Tariff Design

After the total revenue requirement of the utility / licensee is determined, it is necessary to assign the total requirement to various class of services and to fix tariff within those classes. The typical approaches include:

- ▶ Embedded cost-based allocation.
- ▶ Marginal cost-based allocation.
- ▶ Social tariff making.

Multi Year Tariff (MYT)

- ▶ 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 licensees 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 bandwidth unless there are force majeure conditions. 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 Regulatory Commissions need to fix an identical tariff, year after year, throughout the control period though, of course, there is no bar if the Regulatory Commission chooses to do so.

Challenges for the Regulators due to the Emerging technologies

- ▶ Potentially emerging technological challenges
- ▶ Such as solar photovoltaics, public policies to support renewable energy resources through Renewable Purchase Obligation (RPO), automated demand response and distributed energy resources coupled with evolving wholesale markets and new environmental regulations. This confluence of factors raises challenging questions for state regulators:
 - ▶ First, what is the significance and urgency of the trends and their possible negative impact on utility finances?
 - ▶ Second, how will utilities adapt to these changes under the current regulatory framework? Third, what potential changes to regulatory framework are warranted in response to these challenges? In other words, what fundamental changes are required to be made to the traditional cost of service regulation that would be beneficial for achieving 21st century goals for the power sector?

*Thank
You*

