Renewable in a Regulated Power Sector

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Agenda

- Relevant Provisions of the Act
- Tariff Issues related to purchase by licensees
- Tariff Issues for captive and wheeling
- Renewable Obligation under Section 86 (1)(e)

Relevant Provisions of the Electricity Act 2003

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EA 2003 – Boon for Renewable Energy

- **NEP and NTP to take into account renewables**
  - *"The Central Government shall, from time to time, prepare the National Electricity Policy and tariff policy, in consultation with the State Governments and the Authority for development of the power system based on optimal utilization of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy".*

- **Policy for Stand-alone systems**
  - *"The Central Government shall, after consultation with the State Governments, prepare and notify a national policy, permitting stand alone systems (including those based on renewable sources of energy and non-conventional sources of energy) for rural areas."*

National Tariff Policy – Clause 6.4 (1/2)

(1) Pursuant to provisions of section 86(1)(e) of the Act, the Appropriate Commission shall fix a minimum percentage for purchase of energy from such sources taking into account availability of such resources in the region and its impact on retail tariffs. Such percentage for purchase of energy should be made applicable for the tariffs to be determined by the SERCs latest by April 1, 2006.

It will take some time before non-conventional technologies can compete with conventional sources in terms of cost of electricity. Therefore, procurement by distribution companies shall be done at preferential tariffs determined by the Appropriate Commission.

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National Tariff Policy - Clause 6.4 (2/2)

- (2) Such procurement by Distribution Licensees for future requirements shall be done, as far as possible, through competitive bidding process under Section 63 of the Act within suppliers offering energy from same type of non-conventional sources. In the long-term, these technologies would need to compete with other sources in terms of full costs.

- (3) The Central Commission should lay down guidelines within three months for pricing non-firm power, especially from non–conventional sources, to be followed in cases where such procurement is not through competitive bidding.

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NTP raised more issues than it solved:

- No clear guideline on preferential tariffs
- Can Competitive bidding take place for renewable energy purchase especially when we have little experience of procurement of conventional energy thru bidding?
- What would be the status of existing orders?
- Can procurement of non-firm power take place thru competitive bidding?
- Can guidelines be uniform across India?

Tariff related operative provisions

- Section 61: The Appropriate Commission shall, subject to the provisions of this Act, specify the terms and conditions for the determination of tariff, and in doing so, shall be guided by the following, namely:-
  - *(h) the promotion of co-generation and generation of electricity from renewable sources of energy;*

- Section 86(1): **The State Commission shall discharge the following functions, namely:**
  - ***(e) promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources,*** *a percentage of the total consumption of electricity in the area of a distribution licensee;*

Tariff issues related to Purchase by Licensees

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ERC Orders for various RE technologies

State	Wind	Small Hydro	Biomass	Cogeneration	MSW	Solar
Maharashtra	√	√	√	√	√	
Andhra Pradesh	√	√	√	√		
Madhya Pradesh	√	√	√	√		
Tamil Nadu	√	√	√	√		
Karnataka	√	√	√	√		
Kerala	√	√				

Project Specific or Generic

- Strictly every project is unique in certain characteristics.
- However, it is difficult to set tariff for each RE project as:
  - Projects are small in nature
  - Large number of projects exists
  - Ownership of the projects is diverse.
- Tariff determination for each project will be:
  - Cumbersome
  - Put significant strain on regulatory institutions.
- Therefore, all ERCs have opted for determination of tariff on the basis of representative case though this would lead to some investors earning more than specified rate of return while others earning less.

Two part Vs Single Part

- CERC adopted 2-part tariff for central generating stations.
- NTP provides for 2-part tariff for conventional generation.
- Therefore, many have demanded 2-part tariff even for renewable and non-conventional sources of energy.
- However, for most renewable technologies such as wind, solar or small hydro, it is not possible to determine two part tariffs as generation from these technologies does not involve any fuel and hence variable cost.
- Some ERCs have opted for 2-part tariff for certain technologies such as biomass and cogeneration.
- However, no SERC has adopted two part tariff for wind and small hydro projects.

Reactive Power Charges

- Reactive power is essential part of the power system operation and generators are required to supply the same.
- However, certain technologies use induction generators which consume reactive power rather than supplying.
- Given that the reactive energy is an essential component of power system, it is reasonable that the induction generators pay for the reactive energy consumed.
- MERC has specified charge of 25 paise per kVArh with 5% escalation for reactive energy consumed upto 10% of active energy delivered.
- MPERC has determined rate of 27 paise /kVArh for purchase of reactive energy from the grid without limit.

Merit Order Dispatch (MOD)

- MOD is considered as an important tool to bring about efficiencies in the generation sector.
- In this regard some want to apply MOD even to RE generators.
- RE generation is infirm and non-dispatchable in nature and hence not amenable to MOD.
- None of the SERCs have subjected wind generation to MOD.
- Associated issue is that of application of intra-State ABT regime to non-dispatchable generation such as wind and small hydro.
- NEP and NTP requires States to implement intra-State ABT.
- No State has implemented intra-State ABT as on date though several SERCs have published discussion papers.

Evacuation Facilities

- RE generation is largely dependent on geography and spread across the State and require good transmission system.
- This is responsibility of State Transmission Utility which due to poor financial health are not in a position to make necessary investments.
- RE generators have been backed down due to Tx constraints.
- MERC has directed the STU to bear the cost of transmission lines and associated facilities beyond the point of energy metering.
- However, Developers to provide interest free advance to STU for an amount of 50% of the cost of works to be carried out by the STU.
- STU to refund this interest free advance, in five equal installments, commencing one year after the date of commissioning of the projects.
- TNERC, in its Order has directed STU in the State to create necessary infrastructure on war footing.
- The cost of the same has been considered in tariffs.

Financing Parameters

- **Apart from these issues ERC is required to determine various other capital and finance related parameters such as:**
  - **Capital cost of the project**
  - **Debt – Equity Ratio**
  - **Rate of interest**
  - **Return of equity**
  - **Rate of depreciation**
  - **Income tax benefit**
  - **Working capital**

Operating Parameters

- ERC is also required to develop assumptions for operating parameters such as:
  - Operations and Maintenance costs
  - Capacity utilization factor
  - Auxiliary consumption

Tariff issues for

Captive Sales & Wheeling of Power

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Applicability of OA Regulations

- Under MNES policy as well as various State Government Policies, RE generators were allowed to sell power to third parties.
- These 'third party sales' transactions are now referred to as 'Open Access' transactions under Electricity Act 2003.
- These transactions have been saved under Section 172of the Act.
- However, operating framework governing these transactions has undergone complete change.
- Under new legal framework, where open access has been permitted to large number of consumers, SERCs are required to develop 'Open Access Regulations' to regulate such transactions.
- Issue is, whether new Regulations would be applicable to old third party sales transactions.
- Many SERCs have not yet tackled this issue, however it is likely that Open Access Regulations will be applied to these transactions.

Wheeling Charges

- MNES guidelines stipulated 2% wheeling charges for captive and third party sales transactions.
- Such low charges were primarily attributed to the promotional nature of policies. In reality, costs involved in wheeling of energy are certainly much more than this.
- With implementation of Electricity Act 2003, it has become necessary to develop wheeling charges in more transparent manner.
- Several SERCs have determined wheeling charges for captive and third party transactions.
- TNERC, in its recent Order has specified transmission and wheeling charges of 5% on captive and third party sales transactions.

Surcharges

- Though existing third party sales have been saved, these would be governed by set of provisions, rules and regulations under EA 2003
- One such provision relates to payment of cross-subsidy surcharge under Section 42 of the Act.
- It was expected that NEP and NTP would clarify this issue.
- Section 8.5.2 of the NTP clarifies that surcharge shall not be applicable to transactions authorized under Section 43(A)(1)(c) of the Electricity Supply Act, 1948 and under Section 27 of the Indian Electricity Act, 1910, till the current validity of such consent.
- However, large number of third party sales transactions are being undertaken under Section 28 of the Indian Electricity Act 1910 which have not been exempted from the levy of the surcharge.
- ERCs have to decide on whether cross-subsidy surcharge should now be applied to existing as well as new OA transactions.

Banking of energy

- Under old policies, banking of energy was permitted freely.
- However, with drive to implement balancing market at the State level, banking of energy has become difficult as it exposes distribution licensee to imbalance risks.
- Further, banking has not been defined as a function of a licensee.
- Nevertheless some ERCs have permitted banking of energy, albeit with lots of restrictions.
- TNERC has permitted banking for a period of upto one year. However, banking is to be carried out on TOD basis and any energy not utilized at the end of the year will be purchased by the utility at 75% of the rate applicable for that slot. Further, it has also imposed 5% charges for banking of energy.
- KERC has formulated a very complex mechanism, banking would be allowed fore wind and mini-hydel projects subject to payment of difference of UI charges between the time of injection and time drawal of the power and with banking charges @ 2% of input energy.

Loss Compensation

- MNES guidelines provided for transmission and wheeling charges though did not explicitly provide for compensating for loss incurred on network. However, with unbundling of network and services and associated costs, significant transparency has come in pricing of these services.
- Transmission and distribution losses which were earlier combined together in single loss number are now segregated and are required to be compensated separately depending on incidence of the transaction. This issue assumes importance only in case of open access and wheeling charges.
- MERC in its Order, has ordered levy of transmission losses of 5% for third party sales as well as captive transactions till such time realistic level of loss compensation is arrived at through scientific study which the Commission intended to take up.

Implementation of Renewable Obligation - S86(1)(e)

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Section 86 (1) (e) – Driver for RPO

- Section 86(1): **The State Commission shall discharge the following functions, namely:**
  - ***(e) promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources,*** *a percentage of the total consumption of electricity in the area of a distribution licensee;*
- *Various State Commissions have put significant emphasis on the last part of this important clause while developing regulations for Distribution Licensees under their jurisdiction*

Ambiguity in application of S 86(1)(e)

- What is meant by a percentage of the total consumption of electricity in the *area of a distribution licensee*?
- Whether total consumption includes technical and commercial losses in the area?
- Whether total consumption include captive and open access consumption in the area?
- Currently regulators have used either total energy input or energy sales as criteria while determining the percentage.
- This has necessarily resulted in exempting captive and open access consumption from renewable obligation.

RPOs already established – Key features

- Specify % of renewable energy every utility need to purchase:
  - Single target for overall renewable energy purchase
  - Usually close to existing purchase levels,
  - In some cases Y-o-Y targets,
  - no technology specific targets
- Period is upto five years,
- Purchase of RE from outside the State has not been permitted,
- Silent on mode of procurement, competitive or cost based
- Implementation mechanisms need further refinement
- Weak on enforcement methodology

Need for action on other fronts

- Section 86 (1) (e) require State Commissions to provide:
  - Suitable measures for Connectivity to the grid
  - Sale of electricity to any person
- It is obvious that intent of the act is to:
  - Promote purchase of RE electricity by all category of users
  - Cover entire consumption in the area of licensee
- It is not advisable to exempt large open access / captive consumers from this obligation
- Exempting OA consumers from RPO would result in larger per unit charge on subsidised consumers

RPOs – what further is required?

- Specific targets for RE sources which are not commercial
- Application of RPO to OA/Captive/trading transactions
- Efficient mechanism for purchase of RE by OA consumers
- OA consumers be allowed to procure RE from other States
- RE sources not spread evenly across various states making implementation of single RPO target difficult
- Higher RPO for RE-rich regions may result in distorted tariffs
- Enabling mechanism for inter-state sale is required.
- Stronger enforcement and penalty mechanism
- Clarity on wheeling/ banking facilities

Thank You

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