

Renewable Energy Tariff (FiT) and Financial Analysis Tool

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Presentation Outline

- Renewable Energy Feed-in-tariffs or preferential tariffs in India
 - Legal, policy-regulatory framework
 - Experience from state electricity regulatory commissions and central electricity regulatory commission.
- Renewable Energy Tariff and Financial Analysis Tool



Policy framework

- National Electricity Policy, 2006:
 - set a tariff with appropriate **differential** with respect to conventional sources for such procurement of RE...
 - RE procurement by DISCOMs to be done at **preferential** tariffs till they became competitive with conventional sources.
- Based on these policy directives and legal framework under the Electricity Act, 2003, all state regulators came out with tariff and RPO regulations.
 - Each state has technology specific preferential, i.e. feed-in-tariffs
 - essentially generic regulated cost plus tariffs which typically include a 16% post-tax return on equity



RE Tariff Regulations

- Renewable Energy applicable technologies
- Control/Review period: 3-5 years
- Tariff period: generally same as life of plants.
- Tariff structure:
 - Single part levelised tariff
 - fixed cost components: (a) Return on equity; (b) Interest on loan capital; (c) Depreciation; (d) Interest on working capital; (e) Operation and maintenance expenses;
 - For technologies with fuel (biomass, cogeneration), two components, fixed part component and fuel cost.
- Despatch principles: Must run status, need to follow forecasting and scheduling regulations for wind/solar.



Financial principles

- Capital costs (Capex)
- Debt-equity ratio
- Loan tenure, interest rates
- Depreciation
- Return on equity (RoE)
- Interest on working capital
- Operation and Maintenance charges (O&M)

- Rebate / Late payment surcharge
- Sharing of CDM benefits
- Subsidy / Incentives by Govt; taxes and duties



Technology specific parameters

- Generation, i.e. Capacity Utilization Factor
 - Wind: 22-35%, depending on annual wind power density measured at 100 m.
 - Small Hydro: 30-45% depending on region
 - Biomass: 70-80%; cogeneration: 45-53%
 - Solar PV: 19%
 - Solar thermal (CSP): 23%
- Auxiliary consumption for SHP, Biomass, solar PV, CSP
- State Heat Rate, fuel costs by state and calorific values for technologies with fuel use (biomass, cogeneration, biogas, MSW).



Broad process

- Collate latest data on various parameters needed for calculating the feed-in-tariff.
 - Most importantly capital costs, generation expectation (CUF), debt terms, fuel costs etc.
- Calculate tariffs for various renewable energy technologies and publish draft tariff order
- Carry out public process, analyze comments/suggestions received.
- Revise calculations as needed and publish final order applicable for next year.
- Process initiated suo-motu by Regulatory Commission



- Renewable Energy Tariff and Financial Analysis Tool

- Modeled on the CERC FiT regulations
- Detailed user guide
- Detailed inputs, scenarios, sensitivity



Weakness of FiT

- Information asymmetry and lack of comprehensive granular data, especially related to costs and performance in the public domain limits the accuracy of the regulator's assumptions w.r.t various input parameters.
- Different technologies may vary in terms of costs and performance. Different investors may have range of varying interest rates, expectations of returns etc.
 - However regulator needs to finally come out with best point estimates for various inputs.
- No pre-defined degression rates, linkage of FiTs to actual generation performance in India like in Germany.
- Experience of recent bidding based price discovery for solar PV and wind shows that FiTs had been estimated to be much higher than market estimates.



THANK YOU

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