ARR, Tariff Determination for retail sale of electricity for FY 2018-19 *O.P. Nos.60 and 61 of 2017*

Need for a longer term perspective

Public Hearing at Hyderabad

14th February 2018

Before the Andhra Pradesh Electricity Regulatory Commission

Presentation by Prayas (Energy Group)



Prayas, Energy Group



 NITI Aayog: 175 GW Expert Committee, Low Carbon Inclusive Growth, India Energy Security Scenarios, New Integrated Energy Policy; Indo-US energy dialogue.

Presentation context

- Tariff filings and hearing focus on one year before and one year ahead, but sector analysis needs a longer time horizon – say five years past and five years ahead
- MYT process would have addressed this, but review and new MYT plan may happen only next year
- Important that APERC and DISCOMs take a longer term view during the annual tariff process
- Prayas has used RATE model to assess order of magnitude impacts of changes in AP for FY 2017-18 to FY 2021-22 and this presentation is largely based on our experiences



Some facts...



Past CAGR (FY14-FY17) vs Projected CAGR (FY17-FY19)

- Growth in average cost of supply at 4%, 1.8% for projections
- Growth in average power procurement cost at 5%, 0.15% for projections
- Growth in average billing rate without subsidy at -2%, projections at 3.15%
- Growth in average billing rate with subsidy at 0%, projections at -4.34% without subsidy announcement and at 3.03% assuming Rs. 4000 crore subsidy



Current petition

- Tariff increase = 0%, Revenue gap ~ Rs. 7,900 crores
- Over and above this, there is a possibility of :
 - Under- estimation of costs which are fait accompli
 - Over-estimation of revenue recoverable
- Increased future tariff burden on consumers
 - Actual costs including fait accompli costs will be higher than estimated costs
 - Revenue gap recovery will take place with carrying cost which DISCOMs are entitled to
 - Revenue recovery difficult with loss of cross subsidising consumers
 - Will increase burden on small consumers
- Lack of timely cost recovery would necessitate another UDAY



Under-estimation of costs

- Variable cost for coal-based power plants
 - Assumed to increase at 3% from approved costs for most stations
 - 5 year CAGR of Run of Mine coal rates @ 6% to 7.5%
 - 2 year increase in rail freight charges @ 14%
 - Anticipated increase in royalties, duties, cess?
- Need for more scrutiny \rightarrow transmission, distribution and generation fixed costs
 - Based on MYT approved costs and trajectories approved in 2013-14
 - However, actual costs higher than approved for the year 2016-17
 - 7% variation in average distribution costs, 12% variation in power procurement costs and 15% variation in transmission cost
 - Possible that actual costs in recent past were higher due to uncontrollable factors
 - Also possible that capitalisation was less than planned
 - Need to establish prudence of past costs, establish trends and estimate future costs



Over-estimation of Revenue

- Revenue from sale of surplus
 - 3,100 MUs assumed to be sold via market operations in 2018-19
 - DISCOM are assuming a profit margin of 56 paise/unit from sale in additional surcharge estimation but revenue anticipated from sale is yet unclear
 - This implies selling power at above Rs.4.5 /unit, > 30% higher than market prices → Infeasible?
 - In FY 17, sale of surplus was approved at Rs. 4.29/unit which reduced projected revenue gap by 46%.
 - In FY 17 , from tariff formats, it seems like no surplus was sold to reduce revenue gap
- Revenue from sales of power
 - Possibility of migration of cross-subsidising consumers to open access and captive options.
 - > 2000 MU open access sales between May 17 and Sept 17 \rightarrow 31% of HT sales
 - 5% reduction in sales between FY 16 and FY 17 but sales assumed to grow at 10% for HT General category
 - Non-revision of tariffs and levy of additional surcharge may not be enough to prevent sales migration.
 - Lucrative options available at less than Rs.5/unit via captive route $\frac{1}{100}$

Utility Business Model at crossroads

Renewable energy boom

- \downarrow Solar PV, wind price
- Wheeling ,CSS concessions
- Net metering
- RE 175 GW

Uncertainty in Demand Growth

- ACOS @ Rs. 6/unit and \uparrow
- ↑ in open access, captive sales migration
- Impact of EE efforts
- Unmetered demand
- Make in India

Generation and Power Procurement

- Performance of power plants
- Backing down
- Coal, gas: 个 prices, issues with availability, quality

- New thinking needed for power procurement
 - Surplus management: Backing down strategies, sale of surplus power
 - New opportunities for medium term contracts
- Tariff design needs to be re-imagined
 - Sales migration leaves little room to \uparrow cross subsidy
 - Additional surcharge, increased fixed charges etc. could encourage further migration to captive
- Major trends → inter-related → need to think of assessing cumulative impacts
 - An analytical tool for 'what-if' scenario based sense making of various trends/possibilities



About RATE Model

- RATE (Revenue and Tariff Analysis for Electric Utilities)
 - scenario building model to inform power sector decision making
 - Excel based model with disaggregated inputs
 - Customised for Maharashtra in 2016
- APERC requested PEG to adapt model for AP
 - RATE-AP developed between June and October 2017
 - Model based on discussions with APERC staff, relevant regulations, orders and petitions, state government policies
 - Model is highly flexible and thus key assumptions can be changed as required
 - All assumptions and estimations for the model are made by PEG
- Documentation which serves as user guide with example scenarios to be available on SERC website and PEG can be contacted for the model itself_



About Scenarios



- Time period considered 2017-18 to 2021-22
- Annual treatment of costs and performance parameters
- All numbers reported for 2021-22 are only for the year and are not aggregate numbers



Impact of various scenarios...Results

Particulars	Unit	DISCOM Estimates FY19	Baseline FY22	Sales Migration FY22	High RE FY22	Sales Migration +High RE FY22
Average cost of supply	Rs./kWh	6.14	6.53	10%	4%	15%
Average Power Procurement Cost	Rs./kWh	4.19	4.20	4%	6%	13%
Cumulative revenue gap with carrying cost assuming nominal tariff increase of 1.7%	Rs. Cr	7,984	21,900	31,100	29,300	38,100
Average annual tariff increase required to meet revenue gap each year	%		10%	15%	13%	19%
Annual Subsidy payments required meet revenue gap each year	Rs.Cr		8,900	11,900	10,800	13,600



Impact of various scenarios...Implications

- Future costs to be much higher than revenue recovery and will be even higher with sales migration and RE capacity addition.
- Revenue gaps to be unsustainably high. May not be met by tariff increase or increase in subsidies.

Increase in Tariff

- Tariff increase of 10% to 20% needed each year.
- This will more than double if tariff increase is skipped in any year.
- May not be sustainable with increased sales migration and current cross subsidy design.
- Average HT Industrial and Commercial tariffs > Rs.10/unit

Increase in Subsidies

- Annual subsidy payments to increase from Rs. 4000 crores to Rs.8,900 – Rs.13,600 crores
- Comparable to corporation and income tax revenue in 2017-18.
- If only 65% of subsidy payments take place every year, additional carrying cost burden of Rs.8-10,000 crores



Tweaking tariffs to prevent sales migration: Some insights from RATE-AP

- Increasing fixed charges which keeping average tariffs the same
 - Will not prevent sales migration due to reduction in energy charges
 - 100% \uparrow in fixed charges \rightarrow 10% to 20% \downarrow in energy charges,
 - Energy charges higher than rooftop solar prices (Rs.5/unit)
 - Increase in fixed cost might incentivise captive sales migration
 - Annual fixed cost payments for 1MW+ consumer Rs.60 lakhs to Rs.1.25 crores/year/MW
 - Comparable to 13% to 28% of capital costs for 1 MW solar PV system.
- Additional surcharge levy and RE concession impact
 - Revenue from removal of RE concessions > Revenue from levy of Additional Surcharge on all open access consumers
 - Need to rethink need for RE concessions, if policy imperative can be subsidised by State Govt. rather than cross-subsidised by consumers.



Implications for the future

- Ballooning of accumulated losses due to revenue gaps
 - Recovery via tariff increase impractical/infeasible
 - Subsidy burden significant and may not be best use of taxpayers money
- Surplus power to continue to grow imposing cost burden on consumers
 - Significant backing down and resource lock-ins especially with lack of buyers for power
 - Surplus will be mostly off-peak necessitating short-term or seasonal power procurement.
 - RE capacity addition without proper planning might contribute to the impact
- Small consumers to be affected the most
 - Large consumers will migrate to alternative sources
 - Small consumers will face increased tariff or poor supply quality



Preparing for an uncertain future...1

- Need for agile planning
 - Reporting and forecasting of demand and assessment of capacity in the pipeline
- Accountability of DISCOMs for performance
 - Importance of MYT process
 - Third party independent audits of post facto cost benefit analysis of capital expenditure schemes
 - Review of supply and service quality related issues and Institutionalising processes for supply quality monitoring
- Re-think cross-subsidy/ tariff design to aid better planning
 - Large consumers can be encouraged to migrate for the long term with appropriate price signals, policies → reduce burden on DISCOMs to plan for such consumers
 - Power procurement planning, investments can be focussed on small consumers
 - Small consumers with consumption < 300 units per month can be ensured tariff
 certainty with tariffs being linked to inflation

Preparing for an uncertain future...2

- White paper to be drafted by Commission to facilitate public consultation
 - Demand estimation with Sales migration, impact of EE, impact of new demand options such as electric vehicles
 - Review of PPAs and power procurement planning for uncertain demand
 - Tariff design changes preparing for a future with reduce cross subsidy
 - Implications and impacts of renewable energy capacity addition, storage
 - Can help informed debate and discussion across actors
- Need for dispatch modelling exercise by DISCOMs, SERC, APTRANSCO and SLDC
 - Better estimation of seasonal and diurnal variation
 - short term power purchase, surplus sale options, medium term supply options
 - Impact of short-term and long-term open access on system operation and costs
 - Better estimation of variable costs escalation
 - Impact of changes in regulatory approach- Technical minimum, RE banking, MoD
 - Impact of RE capacity addition: different RPO trajectories , desired RE mix?



THANK YOU

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