Suzlon Energy Ltd.

Regulatory and Financial Challenges in Scheduling of Wind Power

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Differences.....

- Market structures
  - Open Access, Day Ahead Market
- Hierarchy in grid management and operation
  - SLDC, RLDC and NLDC
  - Central and State Transmission Utilities
- Central and State jurisdictions
  - Central Grid Code and State Grid Code
- Absence of Ancillary Services
- Unique Frequency linked settlement mechanism
  - Not all state have the UI based settlement mechanism

Scheduling of Wind power

- Wind power potential and Installed Capacity

State	Installed capacity (MW)				Wind Potential (MW)	RPO (%)	
	Thermal	Hydro	Other*	Wind		As per Regulations (2014-15)	RPO achieved (2012-13)
Rajasthan	8454	1613	1272	2783	5050	9.00%	NA
Gujarat	21885	772	1307	3454	35071	8.00%	6.47%
Madhya Pradesh	9421	3223	494	423	2931	7.00%	1.48% (FY10-11)
Maharashtra	25215	3331	1372	4086	5961	9.00%	7.04%
Karnataka	6429	3599	1624	2324	13593	7-10%	7.00%-11.00%
Andhra Pradesh	12190	3734	824	746	14497	5.00%	NA
Tamil Nadu	10411	2182	1198	7271	14152	9.00%	11.00%

**- Nuclear + Renewable (except Wind)*

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Developments Till Now

- Feb 2010: Draft IEGC with scheduling provisions issued
- May 2010: IEGC notified –Scheduling of wind and solar generation to start from 1st Jan 2011 and postponed to 1st Jan 2012
- Dec 2011:CERC initiates *Suo Motu* proceedings as most of SLDCs are not prepared
- January 2013: CERC, based on Task force report issued order
- No RRF guidelines issued till 1st July 2013
- 9th July 2013: RRF guidelines issued
  - Scheduling to start from 1st July 2013
  - Pooling Station as building block
  - Concept of Coordinating agency and reference rate introduced
  - Scheduling to start from 15th July 2013
- Jan 2014: CERC issued draft 2nd Amendment in IEGC
  - Commercial implications suspended till “such time”

InWEA submission: it is preferred that a Sub-Load Despatch Centre dedicated for forecasting/ despatch/ co-ordination activities for non-firm RE sources is constituted at each State level. Every SLDC can then co-ordinate with such sub-Load despatch centre from all activities related to forecasts, scheduling, despatch, monitoring, records keeping and energy accounting of non-firm RE sources such as Wind Energy, Solar Energy etc.

InWEA brings out several implementation issues

A Task Force constituted to provide solution

- Independent of all these developments the Renewable Energy Management Centres are being developed by PGCIL……

….And where do we stand now?????

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Important Additions in July 2013

- Concept of Coordinating agency
  - To interact with generators and SLDC
    - Drawing up of schedules, submission and revisions of schedules to SLDC, RRF a/c settlement with SLDC and generators
- Concept of Reference Rate

Generation Schedule -100 MW; Actual Generation – 120 MW

Step - 1 : Purchaser pays to Wind generator at contracted rate as per actual (i.e. 120 MW).

Step - 2 : State agency responsible for UI settlement pays to RRF for difference (i.e. 20 MW) @ UI rate – reference rate, if UI rate is greater than reference rate.

Or

State agency responsible for UI settlement receives from RRF for difference (i.e. 20 MW) @ reference rate- UI rate, if reference rate is greater than UI rate.

State level Implementation and Interpretation

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- Who is to provide schedule
- Which generators are required to schedule
- Status of scheduling as per July 2013 order
- No uniformity about procedures, interpretations, data exchange methods
- No feedback
- Status of installation of special energy meters at s/s remains a matter of concern

Several State Load Despatch Centres communicate to wind developers and not to generators

Even those projects are asked to schedule which are connected to distribution s/s through feeders are also asked to schedule

July 2013: Only Southern Regional Power Committee starts providing RRF account

Sept 2013:Tamil Nadu stops providing RRF accounts – except Gujarat

Dec 2013: The RRF accounts are discontinued since TN submits that all new pooling s/s are with temporary connection with an undertaking from generators for backing down and hence out of RRF

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Financial Impact

- Fixed cost
  - One time
    - – Hardware, software, RTU and data communication
    - ~ 2 million
  - Recurring
    - – Forecasting cost
    - – Coordinating agency cost
    - ~ About 0.3 million as against annual O&M cost of 0.9 million
- UI cost
  - Approximately 8-10% of revenue with present level of accuracies
  - No forecast service provider ready to guarantee what it promises
  - With uncertainties the risk is non-quantifiable

To make the present format work

- Metering and communication infrastructure at all the s/s
- Respective amendments in state grid codes
- Applicability on S/S basis post IEGC
  - Feeders connecting at Distribution S/S to be clarified
- Recognition and powers to Coordinating agency
  - Designated / registered Coordinated agencies by CERC/SERC
- Scheduling exercise....
  - Modifications like accuracy limits , more revisions post actual results of financial implications
- States will have to work out banking and open access provisions
- Incorporation of fixed variables – Generation, Freq. (and UI rate), Contract and Reference rates
- Need to address overall issue of connectivity and related responsibilities including scheduling

Accuracy band to be removed

Possibility of banking

Applicability on Older wind projects

Alternate way

- Centralised forecasting
  - Sub SLDCs undertaking renewable scheduling for the entire state

  OR

  - The REMCs in every state

  How to handle Interstate transactions will remain unresolved

Scheduling of wind power is the key to wider acceptability, future growth and access to markets……