Framework on Forecasting, Scheduling and Imbalance Handling for Variable Renewable Energy Sources (Wind and Solar)

HIGHLIGHTS

ISSUED BY	Central Electricity Regulatory Commission
Highlights	CERC proposed new framework for the Forecasting, Scheduling and imbalance handling of Wind and Solar Energy generating projects at inter-state level, and finalized the same through notification on 7th August, 2015, to make major amendments to the Deviation Settlement Regulations (DSM) Regulation 2014 and the RTC Regulation 2009
Central Electricity Regulatory Commission Indian Electricity Grid Code (Third Amendment) Regulations, 2015	
Regulation 2.4.3	RTC Investment or any other person as notified by the Commission from time to time, shall possess monthly Regional Energy Account (REA), weekly deviation charge account, monthly energy account, and competitive charge account based on data provided by SLDCs and deviation charge account for wind and solar generators which are regional entities, based on data provided by ECI/NCEL/RC of the State/Region to which such generators are located and any other charges specified by the Commission for the purpose of billing and payments of various charges
Regulation 5.2.(1)	Wind and Solar generators shall mandatorily provide to the concerned SLDC, the forecast specifications, power system parameters and weather related data as applicable whenever required. The frequency and other details to be exchanged shall be provided in the Detailed Procedure to be prepared by SLDC and approved by the Commission.
Regulation 5.2.(2)	Forecasting shall be done by wind and solar generators which are regional entities as well as the concerned SLDC. The concerned SLDC may engage forecasting agencies and prepare a schedule for such generating stations. The wind and solar generation will have the option of accepting the concerned SLDC's forecast for preparing its schedule or provide the concerned SLDC with a schedule based on its own forecast. Any commercial impact on account of deviation from schedule based on the forecast chosen by the wind and solar generator shall be borne by it.
Regulation 6.4 (2b)	For schedule by wind and solar generators (including collective transactions) may be revised by giving advance notice to the concerned SLDC, no less than one hour, such revisions shall be effective from 5th time block, the first being the time block in which notice was given. There may be one revision for each time slot of one and half hours starting from 00:00 hours of a particular day subject to maximum of 10 revisions during the day.
Regulation 6.4 of the Annexure I	For schedule by wind and solar generators (including collective transactions) may be revised by giving advance notice to the concerned SLDC, no less than one hour, such revisions shall be effective from 5th time block, the first being the time block in which notice was given. There may be one revision for each time slot of one and half hours starting from 00:00 hours of a particular day subject to maximum of 10 revisions during the day."
Para 7.4 of the Annexure I	For wind and solar generators which are regional entities, supplying inter-state power under long-term, medium-term or short-term open access may be entered by giving advance notice to SLDC. Such revisions shall be effective from 5th time block, the first being the time block in which notice was given. There may be one revision for each time slot of one and half hours starting from 00:00 hours of a particular day subject to maximum of 10 revisions during the day."
Para 7.5 of the Annexure I	For revision specific to deviation from schedule by wind and solar generators which are regional entities, shall be applicable from 5th time block and shall be accounted for and settled in accordance with the provisions of the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2014 as amended from time to time.
Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) (Second Amendment) Regulations, 2015	
Deviation Charges in case of under-injection	Under-injection minimum more than the scheduled generation, the deviation charges for shortfall in generation shall be payable by wind and or solar generator to the Pooled UDAY Fund
	Shortfall Factor in Per 15 minute time block	**Deviation Charges payable to Regional UDAY Fund**
	Upto 10%	At the Fixed Rate for the shortfall upto the absolute error upto 10%
	Upto 20%	At the Fixed Rate for the shortfall upto the absolute error upto 10% + 110% of the Fixed Rate for balance energy beyond 10% and upto 20%
	Upto 30%	At the Fixed Rate for the shortfall upto the absolute error upto 10% + 110% of the Fixed Rate for balance energy beyond 10% and upto 20% + 120% of the Fixed Rate for balance energy beyond 20% and upto 30%
	Beyond 30%	At the Fixed Rate for the shortfall upto the absolute error upto 10% + 110% of the Fixed Rate for balance energy beyond 10% and upto 20% + 120% of the Fixed Rate for balance energy beyond 20% and upto 30% + 130% of the Fixed Rate for balance energy beyond 30%
Deviation Charges in case of over injection	Over-injection maximum more than the scheduled generation, the Deviation Charges for excess generation shall be payable to the wind or solar generators which are regional entities from the National UDAY Pool
	Shortfall Factor in Per 15 minute time block	**Deviation Charges payable to Regional UDAY Pool**
	Upto 10%	At the Fixed Rate for upto energy upto 10%
	Upto 20%	At the Fixed Rate for excess energy upto 10% + 90% of the Fixed Rate for excess energy beyond 10% and upto 20%
	Upto 30%	At the Fixed Rate for excess energy upto 10% + 90% of the Fixed Rate for excess energy beyond 10% and upto 20% + 80% of the Fixed Rate for excess energy beyond 20% and upto 30%
	Beyond 30%	At the Fixed Rate for excess energy upto 10% + 90% of the Fixed Rate for excess energy beyond 10% and upto 20% + 80% of the Fixed Rate for excess energy beyond 20% and upto 30% + 70% of the Fixed Rate for excess energy beyond 30%
Operation of RPO	The fulfilment of deemed renewable purchase obligation (RPO) compliance of thermal with compact co-generation, distribution by of wind and solar generators, shall first be utilized after the utility wind or a number basis and any remaining shortfall in renewable energy generation must be balanced through purchase of renewable energy generation from the National Grid pool.
Draft Procedure For Implementation Of The Framework On Forecasting, Scheduling And Imbalance Handling For Renewable Energy (RE) Generating Stations Based On Wind And Solar Energy At Inter-State Level	
Scope	Procedure Draft shall be followed by National Load Dispatch Center, Regional Load Dispatch Centre, Wind/Solar Generation plants, Solar Power Park Developer, Renewal Developer and Load Generator
Applicability	- All generators, which are regional entities - All generators connected to ISTS having aggregate generation capacity of 500MW and above - All wind and solar generators connected to ISTS and connected to ISTS - All generating stations of 5 MW and above but less than 500MW developed by a generating company in its existing generating stations in accordance with CERC Open Access regulations of 2013 and connected to ISTS - Solar Power Park Developer
Additional Information	- Wind/ Solar Renewal provider - The responsibilities of each entities - The Deviation and Reserve Accounting by that generating company

Link	http://www.cercind.gov.in/Current_reg.html http://www.cercind.gov.in/Draft_reg.html
Reference	http://www.cercind.gov.in/2015/regulation/Noti78.pdf http://www.cercind.gov.in/2015/regulation/Noti7.pdf http://www.cercind.gov.in/2016/draft_reg/Notification_RE.pdf