BEFORE THE CENTRAL ELECTRICITY REGULATORY COMMISSION

New Delhi

FILING No.....
CASE No.....

IN THE MATTER OF :

Draft Central Electricity Regulatory Commission (Ancillary Services Operations) Regulations, 2015.

AND

IN THE MATTER OF:

Shanti Prasad,
41-A, RSEB Officers' colony, D-Block, Vaishali Nagar,
Jaipur -302021.

Commenter

Hon'ble Chairman and Members,

The CERC ,vide public notice No. 18/1/2013 – Reg. Aff. (AS Reg.)/CERC dated 1st May, 2015 placed on its web site, has invited comments / suggestions by 1.6.15 on Draft Central Electricity Regulatory Commission (Ancillary Services Operations) Regulations, 2015. I am submitting my views on aforesaid draft regulations for the considerations of the Commission. Suggested changes are to elaborate the point. I wish to state that I am not representing any person and giving my views on the subject for reference of the commission. I will not be participating in the proceeding.

Definitions:

2. Term 'ancillary service' has been referred in the definition of 'Reserves Regulation Ancillary Services' at reg. 2.1(l) but this term has not been defined. The explanatory memorandum lists ancillary services into three categories ,viz, (a) load- generation balance(for frequency control), (b) voltage and reactive power support (var compensation) and (c) maintaining generation and transmission reserves. Although proposed regulations mainly covers sr.no (a) and part of (c) pertaining to generation reserves. it is suggested that regulations should cover all these services and 'Ancillary services' may kindly be defined as per explanatory memo with generation and transmission reserves categorised separately.

3. As stated above ancillary services will not be for restoring the frequency level to desired level as mentioned at reg. 3- objective, but also for regulation of voltage as well as providing reserves. Each of the three categories of ancillary service will have different mechanism of control and tariff. For example, voltage control or var compensation will have mainly local impact (unlike generation capacity having impact on entire region or National grid) and has to be paid / levied based on MVArh charges (and not on energy charges) based on

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local voltage profile.In view of this , it would be appropriate that either regulations is sub divided into sections dealing with each category separately (and present regulations may be covered as "Ancillary active power services" with other sections to be added later) or this regulations may be for "Ancillary active power services operation".

4. From the definitions of 'Reserves Regulation Ancillary Services Provider, ,'Regulation Down Service' , 'Regulation Up Service' , 'Scheduled generation' ,'scheduled drawal' , 'actual injection' and 'actual drawal' ,respectively at reg 2.1(m), 2.1(n), 2.1(o), 2.1(q), 2.1®, 2.1(b) and 2.1(c), it is clear that regulations cover only generating stations and generation (i.e. 'MW or energy generation'). The ancillary service, as per explanatory memo, will also be for voltage control and reactive power support. Such support can be provided by synchronous generators as well as other equipments like Capacitor banks, shunt reactors, static var compensators, synchronous condensers, etc. In view of this, definitions at reg. 2.1(b), 2.1(c), 2.1(m), 2.1(n), 2.1(o), 2.1(q), 2.1® may kindly be provided in the section Ancillary active power services operation or appropriately modified to cover other than active power.

Reserves Regulation Ancillary Services Provider

6. "Reserves Regulation Ancillary Services Provider" , vide reg. 2.1(m), are defined as the inter-State Generating Stations (ISGSs) having un-requisitioned surplus and eligible to participate in the Reserves Regulation Ancillary Services. Criterion of "eligibility" has not been defined in the regulations. Presumably it is to be covered in the 'detailed procedure' to be notified by nodal agency with the approval of the commission. As this aspect is vital , the detailed procedure when submitted by nodal agency may kindly be published for comments.

7. The definition is restricting the participation to only ISGS , a few generating stations. Table 1 below Para 2.3.2 of the explanatory memorandum assesses capacity (in MW) available for ancillary services as 4974 MW based on difference between Availability and PLF. This is based on annual availability and PLF, while there may be seasonal variation in availability. Further small and continuous variation occurs in load demand and on this account, there is always a difference of 5-7% in availability and PLF. In considerations to these, capacity actually available for ancillary services will be less. This capacity so available will be quite low compared to all India grid having peak demand of 135000 MW and RE (wind and solar) grid connected power station capacity of 27188 MW as on 31.3.15 (source – MNRE) with steep growth. Thus, there is need to widen this availability. Intra-state generating stations, IPP, CPP and Merchant power plant can also have un-requisitioned capacity. With Grid having been integrated and now operating as all India Grid, Their un-requisitioned capacity can also be tapped taking into considerations the intra-

state transmission charges and losses. Excluding them from participation and leaving their participation only for such ancillary services in the state sector as per relevant regulations of SERCs (as conceived vide definition at reg 2.1 (k)), will not be correct. It is suggested that Intra-state generating stations, IPPs, CPPs and Merchant power plants should also be covered by the regulations.

Hot and cold spinning reserves:

8. Explanatory memo describes three levels of frequency controls i.e. primary, secondary and tertiary frequency control. Ancillary services of un-requisitioned capacity are mainly for tertiary control. Un-requisitioned capacity may be due to unit operated at part / no load or unit under shutdown. Former will be hot spinning reserve , which shall come to rescue immediately. While later is cold reserve and will take some start up time. Thus these may come up with some time delay. Further ramp rate (in MW per minute of picking up and dropping) of generation may differ among power stations. Hydro generating stations (with pondage) , pumped hydro power station or open cycle gas turbine power stations may have very high ramp rate and may therefore pick up generation very quickly compared to other thermal stations. These have to be called upon to respond first and will initially pickup / drop generation as per ramp rate. Other thermal generation will picks up based on starting time and ramp rate. Further hydro generations is dependant on irrigational discharges and downstream reservoir water level, on these account it may have limitations in sustained higher or lower generation. Hydro generation (if sustained operation is not feasible at low load due to irrigational discharges) has to be phased out as thermal generation picks up. Thus even for tertiary frequency regulations there will be three stages (short time, dynamic and steady state) and criterion to be followed for each stage will differ. On these accounts, ancillary service generation will initially be based on availability of hot spinning reserve and their ramp rate, time to bring up / back down cold spinning reserve units, their ramp rates and hydrological limitations and gradually to be modified to fall in line with merit order economical despatch (vide reg. 6.5). Regulations 6.1, 6.2, 6.3 and 6.5 will require modifications. Solar and wind power generation has the same characteristics for regulation down. Suggested changes are as under (covering aspects mentioned in para 8 and 9):-

"6.1. Nodal Agency shall prepare ~~merit order~~ stack of un-requisitioned surplus capacities of Inter-State Generating Stations willing to participate in this mechanism based on the variable cost of generation, **hot or cold reserve, ramp rate, starting time (for cold reserve), hydrological limitations and** Declared Capacity and take despatch decision.

6.2. Nodal agency shall prepare **daily the** stack of un-requisitioned surplus capacities available of Inter-State Generating Stations ~~from lower variable cost to higher generation cost~~ in each time block **considering**

parameters as mentioned in sub-regulation 6.1 and based on day ahead schedules finalised by RLDCs and SLDCs. Seperate stack will be prepared for "regulation up service" and "regulation down service."

6.3. Nodal agency shall prepare region-wise ~~merit order~~ stack factoring **above parameters and** inter-regional transmission constraints, if any.

6.5. Nodal agency **shall workout economic despatch considering aforesaid parameters and** direct the selected Reserves Regulation Ancillary Services providers ~~based on the merit order for economical despatch~~ for Regulation Up and Regulation Down, as and when requirement arises in the system ....."

8. Un-requisitioned capacity may vary based on day ahead schedule as such ancillary service available from each power plant (whether ISGS or inter-state GS or IPP or MPP or CPP) may vary daily. Further capacity available for regulation up service and regulation down service from the same power station may differ. As such reg. 6.3 may provide that nodal agency shall prepare based on day ahead schedules finalised by RLDCs and SLDCs, availability of un-requisitioned surplus capacity separately for regulation up service and regulation down service.

9. Hot spinning reserve and cold spinning reserve has to be treated differently in respect of triggering-in and triggering-out. While direction under reg. 6.5 and 6.6 of nodal agency to the selected Reserves Regulation Ancillary Services providers for Regulation Up and Regulation Down, and cessation of their services may be in order for cold spinning reserve, it may not be so for hot spinning reserve. As hot spinning reserve can come up instantly to rescue of the system, no time should be spent in issuing of direction to bring them in operation. It may be appropriate that hot spinning reserves is triggered in / out based on system conditions (say freq. or df/dt+freq. crossing set points) as per the standing instructions of the Nodal Agency. Suggested change is new sub reg. 6.7 as under:-

"6.7. In respect of generating units in operation at part load and participating in Reserves Regulation Ancillary Services, Nodal agency can give standing instruction of 'triggering in' regulations up or regulation down and 'triggering out' based on frequency and/ or rate of change of frequency."

Tariffs and payments:

10. Presently all thermal and hydro power stations whose tariff has been determined by the central or state regulatory commissions, fixed charges are

paid as per availability and energy charges as per schedule. Accordingly adjustment among generating company , beneficiaries and pseudo entity pool (for regulation up / down services) will be as per annexure-1 for reserves regulation ancillary service. Thus :-

(i) For regulatory up service, fixed charges corresponding to regulation up generation shall be payable by pseudo entity pool to beneficiaries and for energy generation (increase) as scheduled shall be payable by pseudo entity pool to generating company.

(ii) For regulatory down service, energy generation (decrease) as scheduled shall be payable by generating company to beneficiaries.

(iii) Over these payments, deviation settlement mechanism will be superimposed for any deviation from revised schedule.

11. It is submitted that un-requisitioned capacity of Northern Region can be utilised for reserves regulation up / down by other region. Thus the beneficiaries of regular supply and ancillary services may be different. The payment from / receipt to can not be to the same Deviation Settlement Account. The regulations 13.1 and 13.2 will require clarity. Further, fixed charges and variable charges adjustment (vide reg. 13.6 and 13.7) will be for scheduling by 'pseudo entity pool' and deviations with respect to revised schedule will be as per CERC (deviation settlement mechanism) regulations 2014 (reg. 13.4) and this is to be segregated as per original and revised schedule. Further payment of fixed charges to service provider by deviation pool account and service provider passing it to beneficiary can be avoided and payment can be directly made to the beneficiaries. Regulations 13.1, 13.2, 13.4, 13.6 and 13.7 ,regarding payment mechanism for regulations up / down service, requires clarity. Suggested changes , incorporating terms requisitioning region and supplying region, are:-

"13.1. The settlement shall be done by the Nodal Agency under the Deviation Settlement Account **of requisitioning region** under separate account head of Reserves Regulation Ancillary Services."

13.2. The payment to Reserves Regulation Ancillary Services provider **and Deviation Pool Account Fund of supplying region,** shall be from the Regional Deviation Pool Account Fund **of requisitioning region.**

13.3 **In case of Regulation Up services, for the quantum of Reserves Regulation Ancillary Services scheduled, fixed and variable charges, with markup as decided by the Commission through a separate order from time to time, shall be payable. In case of Regulation Up services, for the quantum of Reserves Regulation Ancillary Services**

scheduled ,the Reserves Regulation Ancillary Services provider shall be paid at their ~~fixed and~~ variable charges, with markup~~, as decided by the Commission through a separate order from time to time in case of Regulation Up services for the quantum of Reserves Regulation Ancillary Services scheduled~~ **and benefiaries shall be paid fixed charges ,with mark up,** from the Regional Deviation Pool Account Fund **of requisitioning region in the proportion as indicated by regional energy account of supplying region.**

13.4. Any deviation from the schedule given under Reserves Regulation Ancillary Services shall be in accordance with the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2014 **and shall be payable / receivable by requisitioning region. Any deviation beyond ancillary service scheduling shall be payable / receivable by the supplying region.**

13.6. ~~The Reserves Regulation Ancillary Services provider shall adjust the fixed charges to the original beneficiaries in proportion to the quantum scheduled from generating station.~~

13.7. The Reserves Regulation Ancillary Services provider shall pay variable charges to Regional Deviation Pool Account Fund **of requisitioning region** in case of Regulation Down services for the quantum of Reserves Regulation Ancillary Services scheduled.

13.8. **wind / solar power plant shall be considered as reserves regulation down service provider of last resort. In case of their backing down for reserves regulation down service, deemed generation corresponding to quantum of regulation down shall be paid by from the Regional Deviation Pool Account Fund of requisitioning region to the wind / solar power generating station.**"

Other aspects:

11. Regulation 13.5 provides for penalties for sustained failure to provide the regulation reserves services. This regulations does not cover for the mis-declaration of ramp rate or start time. It appears that it has been presumed that this will be taken care of by deviation from ancillary service schedule (based on declared capacity, ramp rate and start time) and actual generation. There can be gaming on these by the provider as envisaged at para 3.9.4 of the explanatory memo. There should be penalties in the regulations for their misdeclaration also. Suggested changes:

"Sustained ~~failure to provide~~ **misdeclaration by** the Regulation Reserves Services Provider (barring unit tripping) **for capacity, ramp rate and**

start time shall attract penalties on account of gaming. Violation of directions of RLDC for ancillary services shall also involve penalties in terms of section 29 of the Act"

12. The regulation should provide that criteria of schedule being effective after six intervals (of 15 minutes) will not apply for such services. Schedule for such services will be effective from trigger – in to trigger – out time based on despatch schedule or as per standing instructions. Suggested changes:

"9.3A. Scheduling of reserves regulation up /down services shall be effective from the triggering in to triggering out time."

13. There may be the contingency of say load crash down (by rains) or very high and abrupt change in RE generation, wherein it may be envisaged by application of power number (i.e. dP/df) that backing down of entire (hydro and thermal generation) capacity of regulation down providers may not able to control system over frequency and during initial stage of 15-30 minutes or during steady state , backing down of wind and solar power plants may be the obvious choice. In that case, the wind and solar power plants should be considered as "deemed regulation down service provider of last resort" and loss of generation may be considered as deemed generation payable at applicable tariff by "pseudo entity pool".

14. Reserves regulation ancillary service (vide para 1.2©, 1.5 and 2.3.4 of explanatory memorandum) will be called upon for black start of power plant following the partial or total grid failures. These will be small capacity power plants of ,say 10% of highest unit rating and they will not normally be able to take extra load or charging of long transmission line. It may not be appropriate to govern them by provisions of reg. 9 of scheduled and actual generation as load on them during starting up of a units of the power plant will vary. These needs to be paid based on say hourly commitment charges and actual generation as per the direction of respective power station authority. Regulation 13.8 should not apply for them. It would be appropriate that this service is considered by separate provisions / section in the regulation.

Yours truly

(Shanti Prasad)
Ex-chairman, RERC

Annexure -1

Payment mechanism for ancillary services

Fixed charges, Rs./kW	F
Variable charges, Rs/kWh	v
Capacity Availability, kW	A
Capacity scheduled by beneficiary, kW	Sb

Sr. no.	particulars		Cost to generating company,Rs	Paid by beneficiaries, Rs	Payable be pseudo entity pool,Rs
1	**Regulation up**				
	Payment for Capacity Availability		F*A	F*A	
	Additional capacity scheduled by pseudo entity pool, KW	Su			F*Su
	Energy originally scheduled for time block	Sb/4		+v*Sb/4	
	Energy scheduled by pseudo entity pool for the time block.	Su /4			+v*Su/4
	Energy generation during time block	(Sb+Su)/4	v*(Sb+Su)/4		
	Total , due to generating company / due from others		F*A+ v*(Sb+Su)/4	F*A- F*Su+ v*Sb/4	F*Su+ v*Su/4
	Total paid to gen.Co. and by beneficiaries		F*A+v*Sb/4	F*(A) + v*Sb/4	
	Balance Amount payable to		**+v*Su/4**	**+F*Su**	
	Balance Amount payable by				**+F*Su+ v*Su/4**
2	Regulation down:				
	Payment for Capacity Availability		F*A	F*A	
	Energy originally scheduled for time block	Sb/4		v*Sb/4	
	Schedule capacity reduced by pseudo entity pool	-Su			
	Revised Energy schedule during time block	(Sb-Su) /4	v*(Sb-Su)/4		
	Total , due to generating company / due from others		F*A+ v*Sb/4	F*(A) + v*(Sb-Su)/4	Su/4
	Total paid		F*A+v*Sb/4	F*(A) + v*Sb/4	
	Balance Amount payable to			**v*Su/4**	
	Balance Amount payable by				**+v*Su/4**

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3rd and 4th floor, Chanderlok Building,
36, Janpath, New Delhi-110001

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Commenter

Affidavit verifying the comments

I, Shanti Prasad , son of sh. Shive Dutta Joshi aged 73 residing at 41-A, RSEB Officers' colony, D-Block, Vaishali Nagar, Jaipur-302021 do solemnly affirm and say as follows:

1. I am a Commenter in the matter
2. The statement made in paragraphs 1 to 14 of the comments are true to my knowledge.

I Solemnly affirm, this 15th day of May, 2015 that the contents of above affidavit are true to my knowledge & no part of it is false and nothing material has been concealed.

(Shanti Prasad)