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GOVERNMENT OF INDIA

केन्द्रीय विद्युत प्राधिकरण

CENTRAL ELECTRICITY AUTHORITY

विद्युत मंत्रालय

MINISTRY OF POWER

सेवा भवन, रामकृष्ण पुरम्

SEWA BHAWAN, RAMAKRISHNA PURAM

No. CEA/E2C/RA/LEG6C/3/6/2016-17/84 नई दिल्ली-110066, दिनांक : 21.02.2017  
NEW DELHI-110066, Dated :

To  
The Secretary  
Central Electricity Regulatory Commission,  
Third Floor, Chandernagore Building,  
36, Janpath, New Delhi- 110 001  
Fax No: 91-11-23753923

[Kind Attn: Shri T. Rout, Chief (Legal)]

**Subject: Draft CERC (Indian Electricity Grid Code) (Fifth amendment) Regulations, 2016- Regarding**

Reference is invited to your letter No. L-1/18/2010/CERC/137 dated 3<sup>rd</sup> January, 2017 forwarding therewith a copy of **Draft CERC (Indian Electricity Grid Code) (Fifth amendment) Regulations, 2016** for comments of CEA.

2. As desired, the comments of CEA on the above subject duly approved by Chairperson, CEA is enclosed at Annexure-I

Encl: As above

Yours Sincerely,

(P. D. Siwal)  
Secretary, CEA

**Comments of CEA on CERC (Indian Electricity Grid Code) (5th Amendment) Regulations, 2016**

SN	Existing clause No	Existing clause	Amendment proposed by CERC	Proposed addition/change	Reasons for change																
1	<b>Regulation 2(1)(sss)</b>	“part loaded generating capacity with some reserve margin that is synchronized to the system and is ready to provide increased generation at short notice pursuant to dispatch instruction or instantaneously in response to a frequency drop;”	"The Capacity which can be activated on the direction of the system operator and which is provided by devices including generating stations/ units, which are synchronized to the grid and able to effect the change in active power.”	In place of definition of spinning reserves, the definitions of Primary, Secondary and Tertiary Reserve/Control may be provided.	<p><b>It seems that spinning reserves includes Secondary Control Reserve and partially Tertiary Control Reserve. Therefore, to avoid any confusion, definition of “Spinning Reserves” may be omitted and definitions of primary, Secondary and tertiary Reserve/Control may be defined in this Regulations and methodology along with time and duration of reserves required to achieve these responses may be provided in the Regulations.</b></p> <p><b>The report of the committee on Spinning Reserves constituted by CERC has provided the followings.</b></p> <table border="1"> <thead> <tr> <th>Reserve</th> <th>Start</th> <th>Full availability</th> <th>End</th> </tr> </thead> <tbody> <tr> <td>Primary reserve</td> <td>Immediate</td> <td>&lt; 30 s</td> <td>&gt;15 min</td> </tr> <tr> <td>Secondary Control reserve</td> <td>&gt; 30 s</td> <td>&lt;15min</td> <td>As long as required or till replaced by Tertiary Reserves</td> </tr> <tr> <td>Tertiary control reserve</td> <td></td> <td colspan="2">Usually &gt; 15 min to Hours</td> </tr> </tbody> </table> <p><b>Accordingly, the framework for commercial settlement may also be devised for Primary, Secondary and Tertiary Control.</b></p>	Reserve	Start	Full availability	End	Primary reserve	Immediate	< 30 s	>15 min	Secondary Control reserve	> 30 s	<15min	As long as required or till replaced by Tertiary Reserves	Tertiary control reserve		Usually > 15 min to Hours	
Reserve	Start	Full availability	End																		
Primary reserve	Immediate	< 30 s	>15 min																		
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Tertiary control reserve		Usually > 15 min to Hours																			
2	Typological Error		clause-2.7.1 (f)	<b>Clause 2.7.1 (2)(f)</b>	There is no sub-clause of clause-2.7.1 in Principal Regulation																
3	<b>clause 5.2 (f)(i)(c) &amp; Clause 5.2 (f) (iii)</b>	<i>iii)All other generating units including the pondage upto 3 hours Gas turbine/ Combined Cycle Power Plants, wind and solar generators and Nuclear</i>		iii) All other generating units including the pondage upto 3 hours, Gas turbine/Combined Cycle <b>Generating Stations having Gas Turbines of Capacity 50 MW or lower each</b> , wind and solar generators and	<p>Clause 5.2 (f)(iii) seeks to remove exemptions granted to all Gas Turbines, Combined Cycle Gas Turbine Stations;</p> <p>But, the exemptions for the Gas Turbines/Combined Cycle Gas Turbine Stations of <b>capacity 50 MW and below</b> would need to be provided in Clause 5.2 (f)(iii).</p>																

		<i>Power Stations shall be exempted from Sections 5.2 (f) ,5.2 (g), 5.2 (h) and ,5.2(i) till the Commission reviews the situation.</i>		Nuclear Power Stations shall be exempted from Sections 5.2 (f) ,5.2 (g), 5.2 (h) and ,5.2(i) till the Commission reviews the situation.	
4	Regulation 5.2(h)	All thermal generating units of 200 MW and above and all hydro units of 10 MW and above operating at or up to 100% of their Maximum Continuous Rating (MCR) shall normally be capable of (and shall not in any way be prevented from) instantaneously picking up to 105% and 110% of their MCR, respectively, when frequency falls suddenly. ..... .....	<i>"All coal/lignite based thermal generating units of 200 MW and above, Open Cycle Gas Turbine/Combined Cycle generating stations having gas turbines of capacity more than 50 MW each and all hydro units of 25 MW and above operating at or up to 100% of their Maximum Continuous Rating (MCR) shall have the capability of (and shall not in any way be prevented from) instantaneously picking up to 105%, 105% and 110% of their MCR, respectively, when the frequency falls suddenly.</i>		CEA (Technical Standard for Connectivity to the Grid), Regulations 2007 notified on 21/02/2007 provides that all generating machines irrespective of capacity which are connected on or after the date on which these regulations became effective shall have electronically controlled governing system with approximate speed/ load characteristics to regulate frequency. As such, CERC may not give a blanket exemption for generating machines of capacity lower than the capacity suggested in the draft amendment as it would be in contravention to CEA's Connectivity Regulations.
5	Regulation 5.2(h)	All thermal generating units of 200 MW and above and all hydro units of 10 MW and above ..... .....Any generating unit not complying with the above requirements, shall be kept in operation (synchronized with the Regional grid) only after obtaining the permission of RLDC.	Following para may be added at the end of clause 5.2 (h): <i>"For the purpose of ensuring sustainable primary response, RLDCs/SLDCs shall not schedule the generating units beyond exbus generation corresponding to 100% of the Installed capacity. Further, Valve Wide Open (VWO) operation of units is not allowed so that there is</i>	This clause needs to be modified as under:  <i>"For the purpose of ensuring sustainable primary response, RLDCs/SLDCs shall not schedule the generating units beyond exbus generation corresponding to 100% of the Installed capacity. Further, Valve Wide Open (VWO) operation of units is not allowed so that there is margin available in valve opening for providing</i>	To bring clarity that hydro plants which are capable of providing 110% of the rated capacity in line with CEA Regulations should be scheduled optimally to exploit the availability of water and overload capacity in the Plants

			<p>margin available in valve opening for providing primary response upto 5% of the generation level. In case of gas/Liquid fuel based units also, adequate margins while scheduling should be kept by RLDCs/SLDCs in due consideration of prevailing ambient conditions of temperature and pressure viz. a viz. site ambient conditions on which installed capacity of these units have been specified.</p> <p><i>Provided that the VWO margin shall not be used by RLDC to schedule in Ancillary Services.”</i></p>	<p>..... .....</p> <p><u><i>Provided that Hydro Stations may be scheduled beyond exbus generation corresponding to 100% of installed capacity such that 5% overload capacity is still available to provide primary response.</i></u></p> <p><u><i>Provided further that Hydro stations shall normally be scheduled such that there is no spillage of water.</i></u></p>	
6	Clause 19 under Regulation 6.5	<p>Notwithstanding anything contained in Regulation 6.5(18), in case of forced outage of a unit for a Short Term bilateral transaction.....</p> <p>.....</p> <p>.....</p> <p>..... However, the transmission charges as per original schedule shall continue to be paid for two days.</p>	<p>Following Para shall be added at the end of clause 19.</p> <p><i>"Provided that if a generator is not able to restore the unit by the estimated time of restoration, RLDC shall revise the schedule only one more time on the basis of new estimated time of restoration and the revision schedule shall become effective from the 4<sup>th</sup> time block, counting the time block in which the revision is advised by the generator to be the first one.</i></p>		<p>Plant revival after forced outage is a complex activity and accurate estimation of the time thereof is a difficult task. The proposed amendment suggested by CERC still does not avoid the unnecessary deviation from the schedule in case generator is not able to restore its plant by the exact estimated time. As the scheduling is being done on daily basis, it is suggested that the generator may be allowed to confirm its revival schedule once a day, when it is selling power under STOA &amp; goes under forced outage.</p> <p>The same intent was expressed by CERC in the Statement of reasons for the first amendment in para 8.11 dated 06/03/2012 to the IEGC while dealing with CEA's suggestion in the matter.</p>

7	<b>Regulation 6.5 Clause 3</b>	<p>3. By 8 AM every day, the ISGS shall advise the concerned RLDC, the station-wise ex-power plant MW and MWh capabilities foreseen for the next day, i.e., from 0000 hrs to 2400 hrs of the following day.</p> <p>Clause 4. The above information of the foreseen capabilities of the ISGS and the corresponding MW and MWh entitlements of each State, shall be compiled by the RLDC every day for the next day, and advised to all beneficiaries by 10 AM. The SLDCs shall review it vis-à-vis their foreseen load pattern and their own generating capability including bilateral exchanges, if any, and advise the RLDC by 3 PM their drawal schedule for each of the ISGS in which they have Shares, long-term and medium-term bilateral interchanges, approved short term bilateral interchanges.</p> <p>Clause 7. By 6 PM each day, the RLDC shall convey:</p> <p>(i) The ex-power plant “despatch schedule” to each of the ISGS, in MW for different time block, for the next day. The summation of the ex-power plant drawal schedules advised by all beneficiaries shall constitute the ex-power plant station-wise despatch schedule.</p>	<p>Clause 3, shall be substituted as follows <i>"By 1 PM every day, the ISGS shall advise the concerned RLDC, the station-wise ex-power plant MW and MWh capabilities foreseen for the day after the next day, i.e., from 0000 hrs to 2400 hrs of the day after the next day."</i></p> <p>Clause 4 shall be substituted as follows <i>"The above information of the foreseen capabilities of the ISGS and the corresponding MW and MWh entitlements of each State, shall be compiled by the RLDC every day for the day after the next day, and advised to all beneficiaries by 3 PM. The SLDCs shall review it vis-à-vis their foreseen load pattern and their own generating capability including bilateral exchanges, if any, and advise the RLDC by 5 PM their tentative drawal schedule for each of the ISGS in which they have Shares, long-term and medium-term bilateral interchanges, approved short-term bilateral interchanges."</i></p> <p>Existing clause no.7 shall be substituted as follows: <i>By 7 PM each day, the RLDC shall convey:</i></p> <p><i>(i) The ex-power plant “despatch schedule” to each of the ISGS, in MW for different time block, for the day after the next day. The summation of the ex-power plant drawal schedules advised by all the beneficiaries</i></p>	<p>Tariff policy dated 28/01/2016 provides that the procurer shall communicate, at least 24 hours before 00:00 Hours of the day when the power and quantum thereof is not requisitioned by it enabling the generating stations to sell the same in the market in consonance with laid down policy of Central Government in this regards.</p> <p>CEA is of the view that to implement the above provision of tariff policy in letter and spirit 2 days ahead scheduling may not be required. It can be done with the existing day ahead schedule if the beneficiary provides details of URS well in time. CEA vide its letter dated 09/03/2016 addressed to MoP, has suggested the methodology, the same may be considered. <u>The copy of the letter is enclosed.</u></p>	

	<p>(ii) The “net drawal schedule” to each regional entity, in MW for different time block, for the next day. The summation of the station-wise ex-power plant drawal schedules from all ISGS and drawal from /injection to regional grid consequent to other long term access, medium term and short-term open access transactions, after deducting the transmission losses (estimated), shall constitute the regional entity-wise drawal schedule.</p>	<p><i>shall constitute the ex-power plant station-wise despatch schedule.</i></p> <p><i>(ii) The tentative “net drawal schedule” to each regional entity, in MW for different time block, for the day after the next day next day. The summation of the station-wise ex-power plant drawal schedules from all ISGS and drawal from /injection to regional grid consequent to other long term access, medium term and short –term open access transactions, after deducting the transmission losses (estimated), shall constitute the regional entity-wise drawal schedule.</i></p> <p><i>(iii) ISGS wise Un-requisitioned surplus (URS) power to ISGS and SLDCs.</i></p>	
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(ISO 9001:2008)

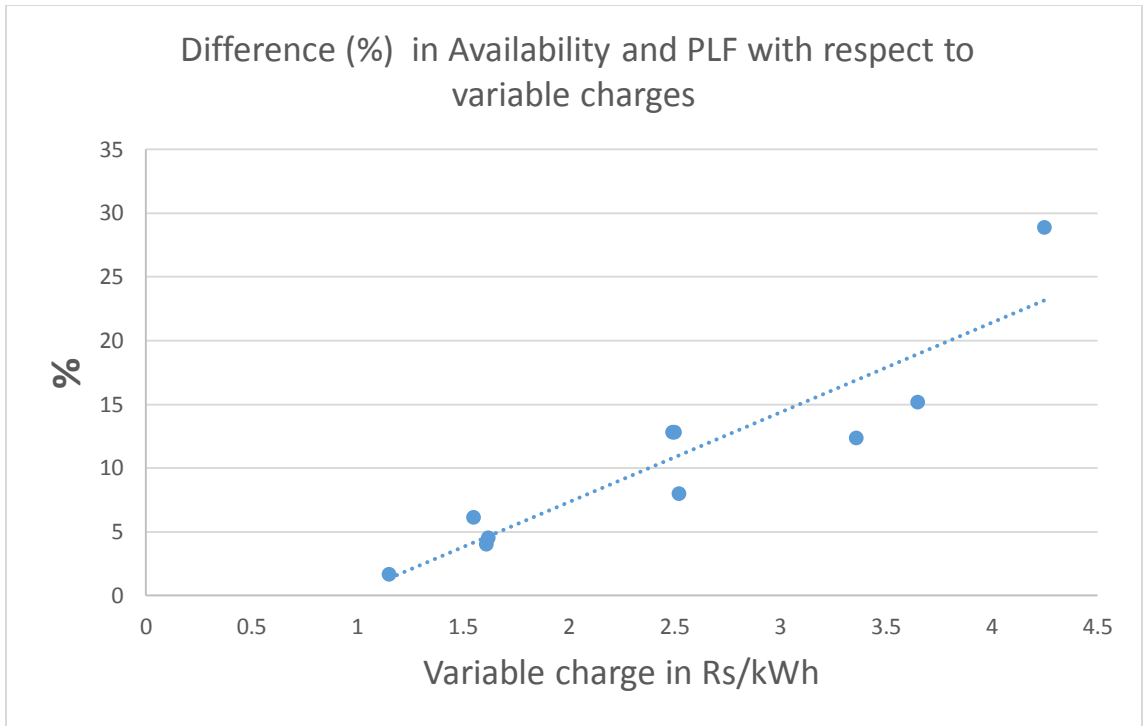
वैबसाइट / Website: [www.cea.nic.in](http://www.cea.nic.in)

**Subject: Scheduling procedure for un-requisitioned power**

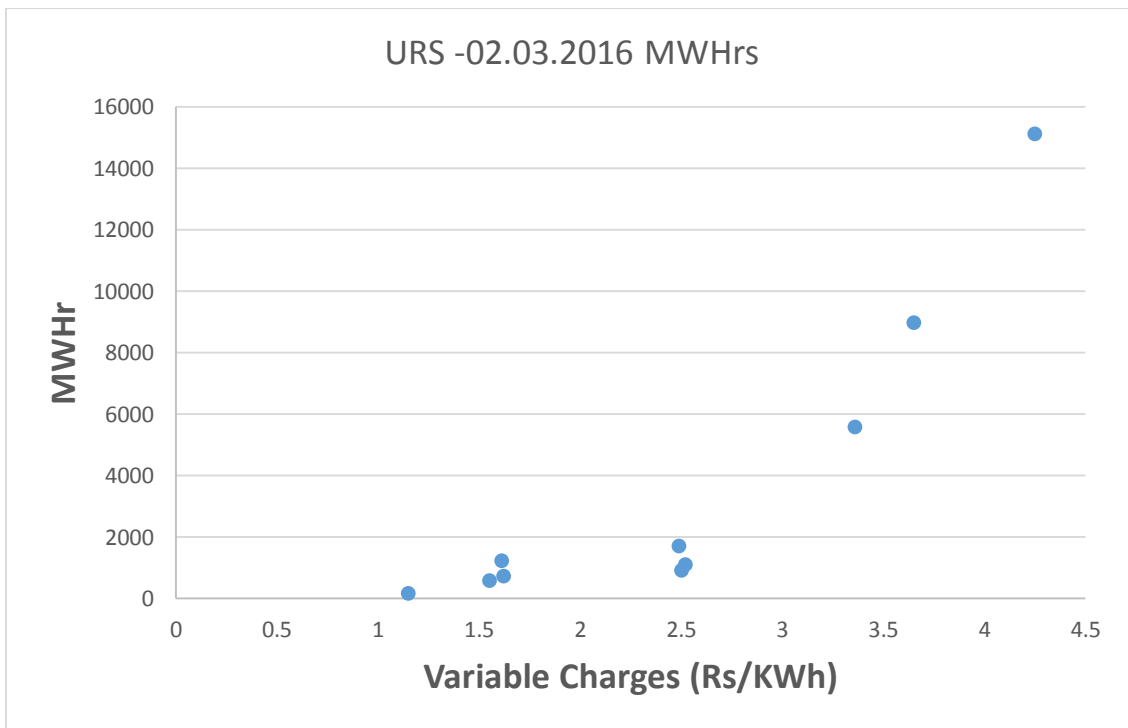
On 26.2.2016, discussions were held in Ministry of Power on the issue of operationalization of un-requisitioned surplus (URS) in accordance with the provisions of tariff policy 2016. Further to the discussions at the meeting, Office of Director (OM), MOP has sent a mail enclosing proposed scheduling procedure to operationalize URS for comments of CEA.

The comments of CEA on proposed procedure are given below:

1. It is to state that the quantum of URS which is existing, is small compared to total power scheduled from central sector generating stations. Also major part of URS is existing in costly stations which is not being scheduled by beneficiaries due to high variable cost. The price of such power is not competitive to make it attractive or saleable in power market. So for this, making a procedure by amending all existing scheduling procedures, timelines which not only require changes in regulatory regime but also has potential of disturbing corridor allocation time lines and power market price discovery, does not appear appropriate. The existing one-day advance scheduling procedure is based on Availability based tariff and Grid code since the year 2000, and just for harnessing small quantum of URS, it may not be appropriate to amend this procedure without consulting all stakeholders. As an estimate, only 1.5 % URS would be available at pit head stations and majority is available at high variable cost plants like Mauda and Jhajjar. Other than this, URS is available at gas based stations due to its high cost and it cannot be sold in the Power Exchange even at Variable cost. It may also be mentioned that major part of the URS is available during off peak hours.
2. An analysis of Regional Energy Accounts of Northern Region in respect of Central Sector generating stations for the year 2014-15 shows that the possible quantum of URS i.e difference between Declared availability and Plant load factor achieved is directly correlated with the variable cost of the generating stations.



3. Also URS available in NR for 2.3.2016 is having a direct correlation with Variable charges





4. The difficulties in implementation of the proposed two-day advance scheduling procedure under which schedule is to be fixed 24 hours in advance are given below:
- i) International Experience:  
While Day ahead scheduling is adopted in almost all markets, there is no power market wherein two day ahead scheduling is in vogue. So, the proposed scheduling procedure is not in line with international experience.
  - ii) Renewable Integration requires flexible scheduling:  
The power sector is moving toward more and more distributed generation and renewable generation which necessitates flexibility in scheduling. To facilitate this, the scheduling as close to real time system operation is being allowed. In Europe and USA, schedule revision on 5 minutes and 10 minute ahead basis is being allowed. Keeping in view the planning for renewable capacity addition to the extent of 1,75,000 MW in India, proposal of 2 day ahead scheduling wherein schedules are to be fixed 24 hours ahead basis, may come in the way of optimum utilization of Renewables.
  - iii) Hydro generation forecast:  
Scheduling process for all ISGS generating stations needs to be on same time line. While it may be feasible for thermal stations to declare availability about 36 hrs ahead of actual operation, with higher uncertainty, for run of the river hydro stations it would be difficult as water availability assessment would be difficult.
  - iv) Operational Management by SLDC/ DISCOMS:  
The uncertainties on Discom's sides are many as load is not entirely under their control. It may vary from projected load due to load forecasting error, weather dependent events and distributed generation. If a drawl schedule of the State is fixed 32 hours earlier than actual operation, it means freezing of schedule. So on the operating day, it cannot increase its schedule if required as its power is already sold. Besides, unbalanced scheduling right wherein generators can reschedule on the 4 block basis but Discoms cannot do it, is not considered justified.
  - v) Partial Generation schedule revision:  
Consider the case of an ISGS indicating its DC as 100 MW, out of which 80 MW is scheduled to Discoms and 20 MW sold in market. If subsequently, generator revises its DC to 90 MW it is likely to pose problems in rescheduling as power Exchange transactions cannot be rescheduled. For DISCOM, balance power available would be 70 MW only, creating difficulties for the Discoms in managing the gap of 10 MW balance power.
  - vi) Uncertainty of tentative schedule:  
Getting tentative schedule from states at 1500 hrs i.e. within one hour of Availability intimation by RLDCs practically does not appear feasible. SLDC before finalizing schedule

needs to consider availability from its own generating stations and demand or load forecast from Discom(s). At present, five hours are provided for the same (10am to 3 PM).

Also using word “tentative “does not seem correct for initial drawl schedule because after this drawl schedule, power is going to be sold in PX and state cannot reclaim it saying it was tentative.

vii) Commercial implication:

The proposed procedure should also mention the implication if any, of retaining some ISGS capacity by state to manage its forecasting error and not scheduling it initially. As by retaining a capacity and not utilizing it, utility is already paying fixed charges, which itself is a burden on it. So additional penalty, if any, may not be appropriate. The provision in the tariff policy regarding sharing of benefit between ISGS and the beneficiary on 50:50 basis due to sale of URS power in the market, itself is likely to encourage the utilities to surrender their surplus shares in ISGS.

viii) Transmission Corridor allocation:

- Allocating corridor for supply of URS to utilities outside the region under STOA over inter-regional corridor is not in line with non-discriminatory open access principle. It also has potential of market distortion and is considered economically inefficient. STOA transaction is only possible upto 1500 hrs of D-1 day and processed after collective transaction. In the proposed procedure, these are given precedence over collective transaction. Also under present system, URS is known around 2200 hrs of D-1.
- The present sequence of transmission corridor allocation is Allocations/Long Term Access (LTA)> Medium Term Open Access (MTOA)> Advance/First Come First Served (FCFS) Short Term Open Access (STOA) > Power Exchange (PX) Day Ahead Market (DAM) >Contingency STOA > UnRequisitioned Surplus (URS) scheduling to beneficiaries only as per CERC Regulations/Orders.

ix) Market participation of States:

At present SLDCs are giving their final schedule after results of PX are out and they come to know whether their own buy bids have been cleared and how much volume has been cleared. Then for its uncleared volume, it will revise its schedule from CGSs keeping in view the merit order. This flexibility will not be available to SLDCs in the proposed procedure.

x) Open Access customer issue:

With the implementation of proposed scheduling procedure, DISCOMS are likely to face operational difficulty in managing requirements of open access customers, which revert back to Discom for supply of power in case their bids for purchase of power do not get cleared. As per universal obligation, State Discoms need to supply power to these customers without overdrawing from the grid.

5. Alternative proposal:

- a) Both Mechanisms, the one suggested in tariff policy and the other in MOP note, can be implemented under existing scheduling mechanism.
- b) At present scheduling is on a floating basis wherein both generators and beneficiaries have right to reschedule. Any mechanism which makes total schedule of state fixed is difficult to implement due to various reasons like load forecasting error, renewable integration and requirement of grid discipline. So part of flexibility in scheduling is to be retained.
- c) The URS may be declared by the utilities in a broad manner and all of it may not depend on day-to-day declared capacity, entitlement calculation and requisition by state.
- d) URS would be intimated on "Prior consent basis" well in advance. A copy of Prior consent given by KSEB is enclosed for illustration purpose.
- e) As station wise scheduling is done, State would have choice to indicate its URS from an ISGS in 2 parts:

**Part A** – Station-wise and time slot- wise URS as per tariff policy under which power would be sold by generator in power market and there would be no right to recall. This will be given well in advance ( say 7 days ahead) on "Prior consent basis" and power can be sold by generator either in bilateral mode or through PX. In PX this need to be bided in block bid basis else operationally it may not be possible to generate the power.

**Part B** – URS as per MOP proposal /existing mechanism where option to recall remains. This part may be given on say 2 day ahead basis and can be utilized for scheduling between 5 PM to 10 PM. At present this time slot is used for day ahead contingency scheduling.

- f) There would be no commercial implication for choosing option A i.e for capacity not scheduled initially or not utilized in real time, i.e deemed generation (variable charge) or incentive (additional charges considering deemed generation) should not be payable. Proposing this will not be in line with CERC Tariff Regulations. Recently the incentive scheme has been amended from availability based incentive to PLF based incentive. If for unscheduled/unutilized portion, deemed generation is given then schedule plus deemed generation may be equal to availability and it may amount to Availability based incentive.

As an illustration, Delhi may intimate its URS from different ISGS in 2 parts as under, for implementation, as per existing scheduling procedure and revised provision in the Tariff policy.

Part A:

Station	Capacity	Days	Time (Hrs.)
APCL Jhajjar	267	1-15 March	00-24
Auriya Gas	74	1-15 March	00-24
Farakka	23	1-15 March	00-24
Dadri Gas	93	1-15 March	00-24
NCCPP DADRI	630	1-15 March	00-24
Anta Gas	45	1-15 march	00-24
Kahelgaon Stage 1	52	1-15 March	00-1200;2200-2400

Part B:

Station	Capacity allocated	Capacity for URS( MW)	Days	Time hrs
Kahelgaon Stage 1	52	52	1-15 March	1200-2200
Meija Unit 6	52	52	1-15 March	00-0800
Kahalgaon Stage 2	160	80	1-15 March	00-0800

(Vijay Menghani)  
Director

Director(OM), MoP\_\_\_\_\_.

No. 7/X/VIP/GM-2016/

Date: -09/03/2016