

**No. L-1(1)/2011-CERC  
CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Coram : Dr. Pramod Deo, Chairperson  
Shri S.Jayaraman, Member  
Shri V. S. Verma, Member  
Shri M. Deena Dayalan, Member**

**Date: 6.3.2012**

**In the matter of**

Central Electricity Regulatory Commission (Unscheduled Interchange charges and related matters) (Second Amendment) Regulations, 2012

**STATEMENT OF REASONS**

The Commission published on its web site on 19.08.2011 the draft amendments to the Central Electricity Regulatory Commission (Unscheduled Interchange charges and related matters) Regulations, 2009 (hereinafter referred to as "the principal regulations") as amended from time to time, inviting comments/suggestions from the stakeholders by 10.09.2011.

2. About 25 stakeholders, including State Regulatory Commissions, Generators, Beneficiaries, NLDC/PGCIL, RPCs, SLDCs, consumer etc., filed their written submissions/suggestions. A list of stakeholders who

made their comments/suggestions is enclosed as **Annexure-I**. The Commission also held a public hearing on 19.10.2011 giving opportunity to the stakeholders to present their views on various proposed amendments.

3. The Commission has finalized the Central Electricity Regulatory Commission ((Unscheduled Interchange charges and related matters) (Second Amendment) Regulations, 2011(hereinafter referred to as "Amendment Regulations") after detailed deliberations and due consideration of the various issues raised by the stakeholders. These are discussed in the succeeding paragraphs.

### **General**

4. In the proposed draft amendments, UI Charges and UI Price Vector were based on Energy charges of generating stations regulated by CERC for the period August 2010 to January 2011. With the narrowing down of the operating grid frequency band from 49.5 -50.2 Hz to 49.7 – 50.2 Hz, step size was proposed to be reduced from 0.02 Hz to 0.01 Hz for the UI vector. The UI price vector was designed such that UI charges were set at the grid frequency of "50.2 Hz and above" as Zero, UI Charge at grid frequency in step of "Not below 50.0Hz and below 50.01Hz" as ₹ 1.65 /kWh (Median Value of energy charges of coal/lignite based generating stations), UI Charge at grid frequency in step of "Not below 49.80Hz and below 49.81Hz" as ₹. 4.50/kWh to ensure that all stations using imported coal also get

despatched, UI Charges at grid frequency "below 49.7 Hz" as ₹ 9.0 /kWh was linked to highest cost of generation of power.

5. The responses to the proposal are as under:

(a) Er. Padamjeet Singh has submitted that the worst performing plant of Auriaya (highest SHR) should not be considered as benchmark for specifying Max UI Charge. Moreover, the year 2011-12 is the last year of the 12<sup>th</sup> Five year plan and it is very unlikely that capacity additions would take place in the last quarter of 2011-12. Therefore, the Commission may defer the implementation of UI amendment till 31st March, 2012.

(b) Uttar Pradesh Power Corporation Limited (UPPCL) has submitted that there is no necessity for hike in UI charges as the grid is running normally in safe zone of frequency. The hike in UI charges shall also increase the rates of electricity in the market from energy exchange and bilateral agreements. Narrowing of frequency is not required because system can run in the frequency range of 50.5 Hz to 49.0Hz.

UPPCL has further submitted that the methodology of hike in U.I. charges by linking a particular frequency to specific rate of power station violates section 61 of the Electricity Act, 2003 ("2003 Act") because U.I. charges are third part of tariff. Section 61 (d) & (g) of the 2003 Act have not been followed for making these regulations. UPPCL has filed 5 writ petitions before Hon'ble High Court of Judicature at Allahabad (Lucknow bench) And the Hon'ble Court has passed two interim orders in the matter and is presently hearing

the petitions on regular basis. Therefore, the draft amendment may be deferred till the decision of the Hon'ble High Court. UPPCL has submitted that electricity is supplied into the grid from all the power stations (having different rates of electricity) at all the frequencies; so linking the U.I. charges at a particular frequency to any "specific rate based power station" is arbitrary. It does not reflect the actual cost of electricity. So this methodology is incorrect and violates the section 61 (d) & (g) of the 2003 Act, which mandates to fix tariff based on actual cost of electricity.

UPPCL has submitted that NTPC has been greatly benefitted by high UI charges. According to UPPCL, NTPC's 13 generating station's schedules and UI generation during 2009-10 shows that on an average, 1.35 % of excess generation is done over schedule leading to an income of over ₹ 173 Crore (for 1145 MUs) due to the fact that UI rates are higher than energy charges by ₹1.51 per unit for purchasing 1145 MU of electricity. Therefore, UI rates should be reduced.

UPPCL has further submitted that Anta GPS has generated 14.15% excess generation leading to income of ₹ 45.92 cores. Dadri GPS, FGUTPS-II and NCTPS-I have also earned ₹ 21.93 crores, ₹ 6.16 crores and ₹ . 3.55 crores respectively through extra generation of 2.45%, 1.35% & 2.45% and UI earning therefrom.

UPPCL has submitted that generation of electricity in excess of the

schedule is an act of indiscipline and therefore, excess generation should not be paid. Regulation 2.18 of Central Electricity Regulatory Commission (Terms & Conditions of Tariff) Regulations, 2001 provided that when the actual generation is more than schedule, the UI charges due to extra generation should be reduced to zero. In view of above, Regulation 24 (2) (i) of Central Electricity Regulatory Commission (Terms & Condition of Tariff) Regulations, 2004 and Regulation 6 (3) & (4) of Central Electricity Regulatory Commission (Unscheduled interchange and related matters) Regulation, 2009 and its amendment dated 28.04.2010 are arbitrary and unjustified, which allows payment for extra generation at UI rate.

(c) MPPTCL has submitted that the utilities are drawing 9.11% of UI power from the grid with the power available/injected by the generating companies on the present frequency range of 49.2 to 50.3 Hz. Further, 17.34 % narrowing down of permissible frequency range will increase the UI charges on utilities, which subsequently will be passed on to the consumers. The increase in power purchase amount will further increase the tariff of Distribution Companies. The proposed action of the Commission will defy the provisions of Section 61 (d) of the 2003 Act which provides for "safeguarding of consumers interest and at the same time recovery of the cost of electricity in a reasonable manner".

MPPTCL further stated that at present there is a deficit of 8.64 % between the demand and supply of power from available sources. The demand is much higher than the injection. The proposed frequency range is too narrow and does not meet the required level for equilibrium to be maintained between the demand and supply of electrical energy.

MPPTCL has further submitted that the beneficiaries have entered into several PPAs and TSAs to ensure sufficient procurement of electrical energy to match the demands of the ultimate consumers. But for reasons beyond control of the beneficiaries, it has not been possible till now, as the proposed power projects are getting delayed for some reason or other. The utilities are compelled to use UI power to meet their consumer demands. Therefore, the permissible frequency range should not be narrowed down and should remain unchanged.

(d) Chhattisgarh SPTCL has submitted that hike in UI rate is very steep due to narrowing down of frequency band which may cause hike in rate of electricity in the market as most of time, UI rate is a reference rate in trading. It has been suggested that frequency band may be kept as 50.2 to 49.6.

(e) Power Company of Karnataka has submitted that in order to maintain grid frequency as per IEGC, the State of Karnataka has done load shedding in both urban and rural areas and has been

forced to purchase power at higher rates. It has been further submitted that there is delay in commissioning of the projects for more than one to two years. On account of continuous increase in demand without corresponding increase in generation, the increase in UI rates may result in increase rates in open market and short term procurement/bilateral exchanges. The costs of power from the liquid based projects are increasing day by day. The proposed regulation will give more scope to Distribution Licensees to dispatch liquid based power project run by the CGS units of other generating stations. Ultimately, the power purchase cost will be increased and burden on the consumers. It has been requested to operate in the frequency range of 49.5-50.2 Hz.

(f) Karnataka Power Transmission Corporation Limited (KPTCL) has submitted that the penalty levied from those beneficiaries who overdraw when the frequency is between 49.8–49.7 Hz is very high and for each 0.01 Hz, 40.91 paise penalty is levied, which should be reduced. Already scheduled and unscheduled load shedding are being carried out by the constituents. Hence, for frequency below 49.8 Hz, levy of huge penalty is not feasible. KPTCL has further submitted that without adding adequate generation as per scheduled dates given by the generators in central sector will make the operation of grid between 49.80 and 50.20 Hz highly difficult for all SLDCs.

(g) MSEDCL has stated that it is not indulging in indiscriminate overdrawal from the grid and in spite of contracting power to meet its anticipated demand, if and when it overdraws from the grid, such excursions are due to the real time variations in the demand and/or supply. However, utmost care is taken to implement corrective actions immediately and to abide by grid discipline. MSEDCL has further submitted that it would be practically impossible for a huge system like MSEDCL to match its generation availability and load in each frequency step of 0.01Hz. Therefore, considering the fact that the grid has been operating at an improved frequency during 2010-11 and there has not been any major grid security problem during these years, MSEDCL has suggested for continuing with existing UI rates and the Commission may levy additional penal charges on utilities without tightening the operating frequency band to further ensure the grid security and book the erring utilities.

(h) POSOCO has submitted that narrowing grid frequency range will help in synchronization of SR and NEW grid, and will help in absorbing RES like wind energy.

(i) PTC has submitted that narrowing grid frequency range will help in better grid management.



(j) Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) has submitted that the Commission's observation in para 6 that "the concern that shrinkage of UI frequency band may lead to increase in load shedding is mitigated in view of additions taking place presently" does not appear to have been made based on actual position. The 11<sup>th</sup> Plan capacity addition which was envisaged at 78700 MW has been pruned down to 62000 MW and the present reality is that it may not exceed 50000 MW. The anticipated addition of 16531 MW before 31.3.2012, end of 11<sup>th</sup> Plan, may not materialize fully and may spill over to the first year of the 12<sup>th</sup> plan.

(k) R2I has submitted that short fall of over 43% during 2010-11 and short fall of over 29% during 2011-12 (till August 2011) have been reported in the capacity addition in the country. The Commission has overestimated the supply side and underestimated the demand.

6. We have considered the objections and suggestions as noted in para 5 above. UPPCL and MPPTCL have questioned the rationale of UI charges. The Commission, in the Statement of Reasons to the first amendment to UI regulations issued on 26.05.2010 has dealt with similar objections of UPPCL as under:

"A. Whether the UI Charges and various UI cap rates are against the provisions of Electricity Act, 2003 and against the Hon'ble Supreme Court Judgment

9. UPPCL has submitted that the proposed principles and methodologies applied for charging UI rates for deviation from schedule is against the provisions of Electricity Act,

2003 (the Act) and against the Hon'ble Supreme Court's order dated 17.8.2007 in the case of Central Power Distribution Co & others vs CERC & Anr. [(2007) 8 SCC 197] and CERC order dated 04.01.2000 on ABT.

10. UPPCL has further stated that the UI being 3<sup>rd</sup> part of tariff as per ABT Order of 4.1.2000 and as per the Hon'ble Supreme Court's judgment in Central Power Distribution Co & ors Vs. CERC & Anr, it must be consistent with Section 61 (d) and 61(g) of the Act, which provide that the tariff progressively reflects the (incurred) cost of supply and therefore, UI rate cannot be linked to costliest form of generation. The Commission was therefore, requested to fix appropriate rates as per the Act. According to UPPCL, there is a need to take new and alternative steps by providing additional allocations/power purchase arrangements favourable for deficit States and by restraining the undue enrichment of profit to generators/surplus States who are earning at the cost of the deficit states. Similar views have been echoed by other beneficiaries namely MPPTCL, GVUNL, HPPC etc. According to the UPPCL, the proposed UI charges are required to be discussed before "Central Advisory Committee" as per section 81 of the Act.

11. UPPCL has further stated that the Govt. of India may be advised by the Commission u/s 79 (2) of the Act to allocate power from 15 % unallocated share, to deficit States and change the policy of allocation to the States.

12. We are unable to subscribe to the point of view of UPPCL and other beneficiaries regarding UPPCL's interpretation of the Hon'ble Supreme Court's judgment cited above. The interpretation aims to question the very essence of the concept of UI as a commercial mechanism to ensure grid discipline which has been authoritatively settled by the Hon'ble Supreme Court and therefore, the arguments are devoid of any merit as discussed hereinafter.

13. The Hon'ble Supreme Court in its judgment dated 17.8.2007 in Central Power Distribution Co & ors supra has explained the concept of Unscheduled Interchange in the following terms:

"WHAT IS UI (UNSCHEDULED INTERCHANGE)

10. In addition to two charges, a third charge contemplated in the ABT scheme is for the unscheduled interchange of power (UI charges). The UI charges are payable depending upon what is deviated from the schedule and also subject to the grid conditions at that point of time. This element was introduced to bring about the effective discipline in the system. Under this system UI charges will be payable, if:

- i) a generator generates more than the schedule, thereby increasing the frequency;
- ii) a generator generates less than the schedule, thereby decreasing the frequency;
- iii) a beneficiary overdraws power, thereby decreasing the frequency;
- iv) a beneficiary underdraws power, thereby increasing the frequency.

11. It is thus clear from the above that UI charges are a commercial mechanism to maintain grid discipline. The UI charges penalises whosoever caused grid indiscipline, whether generator (NTPC) or distributor, is subject to payment of UI charges who are not following the schedule. The UI charges are not payable if the appellants maintain their drawl of electricity consistent with the schedule given by themselves. Therefore, there is no merit in the contention of the appellants that the UI charges are by way of penalty." {Emphasis laid}

14. The Hon'ble Supreme Court framed the issues as under:

*(A) "Whether the application of Availability Based Tariff (ABT) in relation to Unscheduled Interchange (UI) charges, which otherwise is not a component of tariff in terms of Regulation 15 of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004 and they are liable to be held as beyond the jurisdiction of the Central Electricity Regulatory Commission (CERC)?"*

*(C) Can the Availability Based Tariff as established and provided in the order of the CERC by its order dated 4.1.2000 be implemented under the provisions of Electricity Act, 2003, particularly when there is no provision under the statute that allows the CERC to levy Unscheduled Interchange Charges?*

*(D) whether in the present facts and circumstances as regards the Simhadri STPS thermal station of the National Thermal Power Corporation (NTPC) which admittedly supplies power to the State Grid and has no connection with the management of the National Grid, can the CERC in such circumstances exercise, particularly when matters relating to the State Grid falls within the role and function of the State Electricity Regulatory Commission?*

15. While ruling on the above questions of law, the Hon'ble Supreme Court observed as follows:

Question (A)

"(22) The application of Availability Based Tariff and imposition of Unscheduled Interchange (UI) charges are essential part of the Functions of the Central Commission under Section 79(1)(h) of the Electricity Act, 2003 which reads – "to specify Grid Code having regard to the Grid Standards, and under Sub-section (2) of Section 28 read with Section 178(2)(g) dealing with the Central Commission powers to frame Grid Code. The maintenance of Grid discipline envisaged under the Grid Code is regulated by the mechanism of ABT and UI charges. There is no basis for the appellant to contend that unless something is a part of Tariff the Central Commission cannot exercise powers and functions. The ABT and UI charges are commercial mechanism to control the utilities in scheduling, dispatch and drawl and the UI charges are tariff or charges payable for deviations. In the facts and circumstances mentioned above the legal position is clear and there is no ambiguity in respect of the jurisdiction of the Central Commission.

Question (C)

(24) As already noticed, the Central Commission has the power and function to evolve commercial mechanism such as imposition of UI charges to regulate and discipline. It is well settled that a power to regulate includes within it the power to enforce. See *Indu Bhusan vs. Rama Sunderi*, AIR 1970 SC 228, *K. Ramanathan vs. State of Tamil Nadu* (1985) 2 SCC 116, *V.S. Rice and Oil Mills vs. State of Andhra Pradesh*, AIR 1964 SC 1781, *Deepak Theatre, Dhuri vs. State of Punjab*, 1992 Supp.(1) SCC 684.

Question (D)

(25) In the facts and circumstances as alluded, and as per the Scheme of the Electricity Act, 2003 mentioned above, the Central Commission has the plenary

power to regulate the Grid, particularly in the context of the Grid being integrated and connected across the region comprising of more than one State. The State Grid cannot be isolated and cannot be seen as independent from the region.”

16. It is clear from the above judgment of the Supreme Court that the Central Commission has plenary power with regard to maintaining grid discipline in accordance with the Grid Code. It has also been unambiguously upheld that UI charges are a commercial mechanism to maintain grid discipline and the Central Commission has the power and functions to evolve commercial mechanism in the form of imposition of UI charges to regulate and discipline the grid. As the power of the Central Commission to impose the UI charges for maintaining the grid discipline has been upheld by the Supreme Court, the challenge to the UI charges as not being consistent with the provisions of Section 61 of the Act cannot be sustained. The issue as regards the legality of the levy of Unscheduled Interchange Charges has attained finality with the aforesaid judgment of the Hon’ble Supreme Court.

17. In this back drop, the objective of the UI mechanism needs to be clearly understood and appreciated. The Commission in its Statement of Reasons explaining the various provisions of UI regulations 2009 has stated as follows:

*“UI pricing is expected to serve the twin objectives of specifying settlement rate for deviations from schedules in normal operating range and ensuring ‘grid discipline’ on the one hand while ensuring maximisation of generation at optimal cost for grid participants on the other. Further, UI pricing mechanism should discourage grid participants from using UI mechanism as trading instrument.*

18. Therefore, the genesis of specifying UI charges based on maximum cost of grid connected generation i.e. energy charges based on liquid fuel is to ensure that every bit of available power should be supporting the grid, even the costliest one, under low grid frequency condition which indicates a deficit condition. It needs to be appreciated that the beneficiaries are under no compulsion to overdraw from the grid. If they adhere to their respective schedules, then there shall be no UI liability accruing to them whatever may be the grid condition.

19. Earlier, in 2007, when there was no market platform for trading in real time, the UI mechanism did offer a real time balancing market of power, where States could buy and sell power at rates determined by the system conditions, i.e. buy or sell power at high rates in deficit conditions and at low rates in surplus conditions. However, it was observed that some States took this as a license to overdraw power from the grid at the expense of the other States, thus jeopardising security of the integrated grid through load generation imbalance and overloading of transmission corridor. It was also found that the over drawing States were not making UI payments in time. The Commission has therefore, taken a view that UI should not be treated as a real time balancing market by putting limits on over drawal and under injection below grid frequency of 49.5 Hz and provided for payment of additional UI charges for over draws and under injections below grid frequency of 49.2 Hz, which were 40% higher than the UI rate at 49.2 Hz.

20. In the meantime, two power exchanges had also started operating by then with the approval of the Commission for the day-ahead market, which offered separate and transparent platforms for buying and selling of power in the real time. Subsequently, the day ahead contingency market and the intra-day market has also been allowed by the

Commission to be operated by the Power Exchanges. Overloading of certain transmission corridors have now become a real problem.

21. In the view of the Commission, priority of Grid security is the highest in the operation of the grid, and therefore, the generators / sellers and the beneficiaries/ the buyers should use other avenues like bilateral trading or the trading platforms of power exchanges by availing open access for meeting short term, medium term or long term arrangements or agreements. UI mechanism should not be used as a real time market any more.

22. It may further be appreciated that the generator or the Sellers and the Beneficiaries or the buyers are legally entitled to or liable for their net injections or draws corresponding to their schedules conforming to allocation/shares in terms of the agreements or the contracts from specific source or destination.

23. In view of the deliberations in above paragraphs, we are of the view that UI mechanism as provided earlier and in its amended form as discussed in subsequent paragraphs is neither against the provisions of the Act nor against the Hon'ble Supreme Court judgment in the case of Central Power Distribution Co. supra and the Commission's order dated 04.01.2000."

7. The Commission reiterates the above views in response to the objections of UPPCL and MPPTCL. As regards the suggestions of UPPCL to defer the amendment till the disposal of the UI cases pending before the Hon'ble High Court, we are of the view that pendency of cases does not prevent the Commission to discharge its statutory responsibility to regulate the inter-State transmission of electricity by making appropriate regulations or making amendment to existing regulations.

8. With regard to the UPPCL's submission regarding undue profiteering by the NTPC citing the UI details in respect of 13 stations of NTPC for the year 2009-10, we find that in cases of stations except Talcher TPS, the declared capacity was more than the sum of generation schedule and the UI generated by each station which clearly indicates that the beneficiaries had not given the full

schedule, specially so in case of gas/RLNG/Liquid fuel based stations namely, Anta, Dadri, Auraiya, and load center stations namely, FGUTPS-I & II and NCTPS-I. More UI generation in gas/ RLNG/ Liquid fuel based stations namely, Anta, Auraiya, Dadri is understandable as capacity on high cost RLNG and liquid fuel is not generally dispatched by the beneficiaries and when the UI rate is favorable and is higher than the energy charges on RLNG and liquid fuel, the generator generates more power as UI and helps the grid. The use of energy rate of natural gas by the UPPCL is not correct. It is clarified for the information of all concerned that there is no compulsion on any of the utilities to overdraw from the grid and prudent utility practice requires that they manage their consumer load on the basis of the scheduled power arranged by them. If the utilities do not overdraw from the grid, then they would not be required to pay UI charges. When the utilities overdraw knowing fully well that UI rates are applicable for such overdrawal, they are liable to pay for the energy so drawn at UI rates.

### **Basis of determination of UI Rates**

9. In the Explanatory Memorandum to the draft amendment, the energy charges of coal/lignite based generating stations regulated by CERC for the period August 2010 to January 2011 were taken into consideration for fixing the UI rates. The energy charges for the period August 2010 to January 2011 were considered as under:

S.No	Stations	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Average
1	TTPS	92.45	90.50	87.59	83.76	87.74	87.15	73.60
2	Korba STPS	83.24	80.02	73.53	92.91	81.66	90.87	83.71
3	Sipat-II	107.80	129.40	97.61	82.82	71.36	66.65	92.61
4	Rihand-I	140.99	167.74	122.56	127.47	120.87	117.21	132.81
5	Singrauli STPS	138.04	136.45	137.15	132.13	132.85	144.90	136.92
6	Vindhyanchal-II	144.04	154.12	126.97	134.31	127.62	141.80	138.14
7	Vindhyanchal-III	144.04	154.12	126.97	134.31	127.62	141.80	138.14
8	Rihand-II	146.84	172.95	128.63	133.81	127.31	121.44	138.50
9	VindhyanchaH	149.29	159.74	131.58	139.19	132.25	146.96	143.17
10	Talcher-II	175.73	146.22	157.12	150.66	149.55	170.81	158.35
11	Talcher-I	175.72	164.21	157.12	150.66	149.55	170.80	161.34
12	Ramagundam III	136.94	153.71	178.69	162.75	152.64	187.00	161.96
13	Ramagundam I&II	196.37	171.97	139.57	149.79	167.62	153.84	163.19
<b>14</b>	<b>Simhadri-I</b>	<b>200.08</b>	<b>183.72</b>	<b>155.75</b>	<b>125.86</b>	<b>146.02</b>	<b>174.57</b>	<b>164.33</b>
15	Tanda	230.56	212.91	191.45	197.26	201.37	192.29	172.26
16	TPS I Expansion	170.40	174.70	180.01	185.80	179.00	180.70	178.44
17	TPS II	185.80	192.10	187.80	186.60	186.60	186.50	187.57
18	Kahalgaon-II	189.37	210.40	192.52	177.50	184.25	199.95	192.33
19	Unchahar-III	197.91	193.33	197.08	194.22	189.09	187.38	193.17
20	Unchahar-II	198.74	198.02	197.29	193.88	188.78	187.37	194.01
21	TPS I	194.80	195.00	196.00	197.60	195.80	195.80	195.83
22	Unchahar-I	198.44	204.21	203.70	195.67	190.73	188.16	196.82
23	Kahalgaon-I	196.20	217.94	199.49	183.86	190.91	207.06	199.24
24	NCTPS-ii	245.20	219.20	210.90	202.00	204.50	221.70	217.25
25	NCTPP Oadri	263.86	239.26	230.32	221.78	223.63	247.57	237.74
26	BTPS	354.11	343.77	275.47	294.24	298.98	320.04	255.42
<b>27</b>	<b>Farakka STPS</b>	<b>306.94</b>	<b>307.35</b>	<b>306.22</b>	<b>289.15</b>	<b>287.37</b>	<b>293.85</b>	<b>298.48</b>

It may be seen that the median value of energy charges of the coal based stations is 164.33 paise/kWh. Accordingly, it was

proposed that UI rate should be fixed at ₹ 1.65/kWh at 50.00 Hz in line with earlier methodology.

Similarly, the energy charges of Gas/RLNG/Liquid fuel based generating stations regulated by CERC for the period August 2010 to January 2011 are as under:

Stations	Fuel	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Average
Anta	Liquid	751.59	751.59	751.59	751.59	751.59	803.63	760.26
	Gas	249.60	266.96	244.47	264.48	288.95	248.61	260.51
	RLNG	371.46	351.19	348.38	359.76	363.70	410.58	367.51
Auraiya	Liquid	878.80	887.30	887.30	887.16	887.16	948.39	896.02
	Gas	242.76	254.72	232.01	238.78	235.13	236.47	239.98
	RLNG	471.88	429.53	429.40	437.70	442.70	481.54	448.79
Dadri	Liquid	760.70	760.70	760.70	760.70	760.70	780.34	763.97
	Gas	246.53	253.83	242.59	236.79	237.36	238.52	242.60
	RLNG	404.97	417.29	418.43	433.34	437.17	492.75	361.13
Kawas	Liquid	614.25	601.34	601.34	380.44	380.44	695.07	545.48
	Gas	212.05	197.45	200.84	190.13	192.52	193.06	197.68
	RLNG	265.14	282.86	231.25	238.18	345.17	477.62	306.70
Gandhar	Gas	196.06	195.81	194.00	189.13	190.17	190.92	192.68
	RLNG	325.45	371.29	315.49	325.81	330.77	452.81	353.60
Kayamkulam	Naptham	686.54	694.48	711.95	752.59	792.82	841.62	746.67
Faridabad	Liquid	782.66	772.03	772.03	353.83	768.59	772.21	703.56
	Gas	210.93	207.75	207.72	207.72	206.26	206.85	207.87
	RLNG	357.59	336.27	336.22	336.22	348.77	386.43	350.25
Assam	Gas	142.30	146.50	149.90	143.40	144.40	152.10	146.43
Agartala	Gas	195.00	198.00	192.80	186.30	186.90	189.50	191.42

It may be seen that the highest cost of generation is in case of Auraiya CCGT Station which is 896.02 Paise/kWh. It was accordingly proposed to keep the UI charges at 'below 49.7 Hz' as 900 paise/kWh.



10. The responses to the proposed amendment on this point was as under:

(a) Er. Padamjeet Singh has submitted that the worst performing plant of Auriaya (highest SHR) should not be considered as the benchmark for specifying Max UI Charge.

(b) NLC has submitted that the UI Charge at grid frequency in step of "Not below 50.0Hz and below 50.01Hz" as ₹ 1.65 /kWh (Median Value of energy charges of coal/lignite based generating stations) is lesser than energy charges of lignite based stations at NLC. This will not encourage the Station Operators to maintain generation to match with the schedule even at rated frequency of 50.0Hz. The UI rate is economical only for coal based pit end stations. To encourage generators and ensure economic despatch, UI rate corresponding to rated frequency 50.0 Hz may be raised upwards to the energy charges of the respective stations. As higher limit of operating frequency band is being continuously narrowed from 50.5 to 50.2 Hz, UI price vector between 50 Hz to 50.2 Hz should be made more attractive to maintain generation at this level.

(c) Chhattisgarh SPTCL and power Company of Karnataka have submitted that increase in UI Charges and narrowing down of grid frequency would lead to hike in rate of electricity in power market.

(d) R2L, MPPTCL, TANGEDCO have submitted that narrowing down of the grid frequency has led to steep rise in the UI charges in the new operating grid frequency range of 50.2 Hz to 49.7 Hz. They have also argued that sufficient capacity addition has not taken place due to delay in execution of 11<sup>th</sup> plan projects.

(e) MSEDCL has submitted that the grid has been operating at an improved frequency during 2010-11 and there has not been any major grid security problem during these years and therefore, the Commission should continue with the existing UI rates and may levy additional penal charges on utilities without tightening the operating frequency band to further ensure the grid security.

(f) KPTCL has submitted that for 0.1 Hz reduction in frequency, penalty works out to ₹ 4.091/kWh, which is a very huge burden on constituents in view of coal shortage and delay in upcoming generation projects like Kundamkulam, Neyveli Exp-II and other projects in central sectors. The existing UI charges may be continued till the coal problem is solved and commissioning of proposed projects.

11. We have considered the objections and suggestions of the stakeholders. No one has objected to the UI Charge as Zero at grid frequency of 50.2 Hz and above to discourage generators to over inject into the grid, or the beneficiaries or buyer to under draw from the grid. As regards the submission of Er Padamjeet Singh, it is

reiterated that the commercial mechanism UI has been provided to ensure grid discipline and it is desirable that under condition of grid distress, every bit of available generation should be fed into the grid. Therefore, it is necessary that even the costly plant generates power at very low grid frequency conditions, irrespective of its efficiency. In view of this, we would like to continue with the existing practice of specifying max UI charge corresponding to highest cost of generation which is from Auraiya GPS. As regards the submission of NLC, it is clarified that all coal/lignite based stations are not necessarily generating at 50.0 Hz. For setting the UI prices at the grid frequency of "50.2 Hz and above" as Zero, UI Charge at grid frequency in step of "Not below 50.0Hz and below 50.01Hz" as ₹ 1.65 /kWh (Median Value of energy charges of coal/lignite based generating stations) and UI Charge at grid frequency in step of "Not below 49.80Hz and below 49.81Hz" as ₹ 4.50 /kWh, the same methodology has been adopted which was adopted in setting the UI prices earlier. The same methodology has been adopted for specifying these UI Charges. As regards the submission that narrowing down of frequency band and increase in UI prices has led to increase in the price in the power market, it is clarified that the incentive/disincentive mechanisms introduced through UI aim to adjust the drawal/injection to take care of grid security on real-time basis. On the other hand, power is traded on a day ahead basis in the PX and on days, weeks or months ahead basis in the case of electricity transacted through traders. The rate of electricity in the

power market depends upon the demand supply scenario in the real time. Therefore, the UI rate would not have much effect on the price in the power market. Table 1 and Table 2 below give the volume and price of electricity traded on the power exchanges and through traders. It can be seen that the rate of electricity in power market has remained low as compared to the high max UI charge.

<b>Table-1: Volume of Electricity Transacted through Traders &amp; Power Exchanges</b>		
Year	Electricity Transacted through trading Licensees (BUs)	Electricity Transacted through IEX and PXIL (Day Ahead Market & Term Ahead Market) (BUs)
2008-09	21.92	2.77
2009-10	26.72	7.19
2010-11	27.70	15.52
2011-12 (Apr-Oct 2011)	23.86	9.68
<i>Note1: The volume of electricity transacted through trading licensees in 2008-09 (April to July 2008) includes cross border trading and intra-state trading volume.</i>		

<b>Table-2: Price of Electricity Transacted through Traders &amp; Power Exchanges</b>		
Year	Price of Electricity transacted through Trading Licensees (₹ /kWh)	Price of Electricity transacted through Power Exchanges (DAM+TAM) (₹ /kWh)
2008-09	7.29	7.49
2009-10	5.26	4.96
2010-11	4.79	3.47
2011-12 (Apr-Oct 2011)	4.09	3.51

12. Capacity additions during the plans are as under:

Plan / Financial year	Capacity (MW)	Capacity Addition(MW)
End of 6th Plans(31.03.85)	42585	
End of 7th Plan (31.03.90)	63636	21052

End of 2 yearly Plans(31.03.92)	69065	5429
End of 8th Plan (31.03.97)	85795	16730
End of 9th Plan (31.03.02)	105046	19251
End of 10th Plan (31.03.2007)	132329	27283
NOVEMBER. 11	185497	53167

It is evident that there is substantial capacity addition during the 11<sup>th</sup> plan of the order of 53167 MW by November 2011 despite slippages which is much higher than the capacity additions in other plan periods. A sizeable capacity is expected to be commissioned by the end of the financial year 2011-12. We expect that the prevailing problem of coal shortage would be overcome in due course with the import of coal. Apart from above, lot of capacity is being tied up in case-I and case-II competitive bidding routes and a lot of merchant capacity is coming up as discussed in the explanatory memorandum to the draft amendments. We do not agree with submission of KPTCL regarding the shortfall in capacity addition. The Commission is of the view that it is the right time to narrow down the grid frequency band further as proposed in the draft amendment to the IEGC.

13. In the explanatory memorandum to the draft amendment, elaborate reasoning for narrowing of operating grid frequency range from 50.2-49.5Hz to 50.2-49.7Hz have been given which are not repeated for the sake of brevity. In line with the methodology

adopted till now, the maximum UI charge of ₹ 9.00 per unit should be applicable at grid frequency below 49.7 Hz with the narrowing of the grid frequency so that all available generation is available at 49.7 Hz grid frequency. Earlier the maximum UI charge was applicable at grid frequency of 49.5 Hz thereby prompting generation from the costliest power plant. It is a fact that there is substantial increase in UI Charges from the earlier UI charges in the grid frequency range of 50.2-49.7 Hz as per the proposed UI price vector in the draft amendment. We are also conscious that there is improvement in the grid frequency and over draws have been reduced. Considering these factors and having regard to the concerns of the beneficiaries, the Commission is of the view that UI price vector should be designed in such a way that the maximum UI charge of ₹ 9.00/kWh is made applicable at grid frequency of below 49.5 Hz instead of 49.7 Hz. However, there is a risk that the beneficiaries may continue to over draw below 49.7 Hz and it may not turn out to be a deterrent and it may be difficult to enforce the operating grid frequency band. The Commission is therefore, of the view that in order to enforce the grid discipline and ensure that the grid frequency remains between 50.2-49.7 Hz, additional UI charge should be made applicable at 20% of the maximum UI charges below grid frequency of 49.7 Hz and up to 49.5 Hz. The conduct of beneficiaries shall be watched and if it is found that the beneficiaries are resorting to grid indiscipline and overdrawing power indiscriminately, then the Commission may apply the maximum UI

charge of ₹ 9.00/kWh at grid frequency below 49.7 Hz.

### **Reduction of Step size from 0.02 Hz to 0.01 Hz**

14. The draft amendments to the UI Regulations also provided for reducing the step size from 0.02 Hz to 0.01 Hz in the UI price Vector. With regards to this proposed change, the stakeholders have submitted as follows:

(a) POSOCO has submitted that the frequency step is proposed to be changed from 0.02Hz to 0.01Hz, and actions are being taken by CTU to procure Special Energy Meters with new specification. Procurement, installation, testing and validation may take some time and hence some provisions are required for interim period between notification of the amendment Regulations and data receipt from new meters. Till the commissioning of new meters and trial operation, a separate UI rate table with 0.02 Hz step size may be indicated.

(b) Power Company of Karnataka has submitted that each step in new 0.01 Hz may be difficult in operation and monitoring.

(c) NTPC has submitted that the Commission should consider to retain the higher frequency interval (0.02Hz) for UI rates. Alternatively, a small dead band of say 0.1 Hz may be considered at the two thresholds for applying additional UI, which will provide a small cushion to tide over uncertainties. Additional UI may be applied

below 49.6 Hz up to 49.4 Hz and below 49.4 Hz respectively. This may apply to both over draws and under injection.

(d) NRPC has submitted that in terms of para 1(b)(i) of part-II of Schedule to the Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006, the resolution of inter-face meters ought to be 0.02Hz.

15. It has been explained in the explanatory memorandum to the draft amendments to the UI regulation that it is desirable to specify the UI charges in the step size of 0.01 Hz due to narrowing of operating grid frequency range. However, POSOCO has indicated that actions are being taken by CTU to procure Special Energy Meters with new specification. Procurement, installation, testing and validation may take some time. The Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 also do not provide for installation of SEM of resolution of 0.01 Hz. Under the circumstances, we direct the CTU and the POSOCO to take up the issue of amendment of Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 with CEA. Till the said regulation is amended, CTU is advised to take action for the installation of SEM meters of 0.01 Hz resolution. After CTU has completed the installation of such SEMs, CTU/POSOCO may inform the same to the Commission for notifying the UI price vector conforming to the step size of 0.01 Hz and the date of its coming into



effect. Till such time, the Commission has decided to specify UI price vector in step size of 0.02 Hz. Accordingly, the UI Price Vector shall be as follows:

Average Frequency of the time block(Hz)		UI Rate
Below	Not Below	(Paise per kWh)
	50.20	0.00
50.20	50.18	16.50
50.18	50.16	33.00
50.16	50.14	49.50
50.14	50.12	66.00
50.12	50.10	82.50
50.10	50.08	99.00
50.08	50.06	115.50
50.06	50.04	132.00
50.04	50.02	148.50
50.02	50.00	165.00
50.00	49.98	193.50
49.98	49.96	222.00
49.96	49.94	250.50
49.94	49.92	279.00
49.92	49.90	307.50
49.90	49.88	336.00
49.88	49.86	364.50
49.86	49.84	393.00
49.84	49.82	421.50
49.82	49.80	450.00
49.80	49.78	478.13
49.78	49.76	506.25
49.76	49.74	534.38
49.74	49.72	562.50
49.72	49.70	590.63
49.70	49.68	618.75
49.68	49.66	646.88

49.66	49.64	675.00
49.64	49.62	703.13
49.62	49.60	731.25
49.60	49.58	759.38
49.58	49.56	787.50
49.56	49.54	815.63
49.54	49.52	843.75
49.52	49.50	871.88
49.50		900.00
(Each 0.02 Hz step is equivalent to 16.50 Paise/kWh in the 50.2-50.00 Hz frequency range, 28.50 Paise/kWh in 50 Hz to 49.8 Hz and 28.12 Paise/kwh in frequency in the below 49.8 Hz to 49.5 Hz range.)		

## UI Cap Rates

16. The draft amendments also proposed for review of UI cap rates due to change in the UI price vector. The revised UI Cap rates proposed were as follows:

- a. 407.25 Paise/kWh for all generating stations using coal or lignite or gas supplied under Administered Price Mechanism (APM) as the fuel
- b. 450.0 Paise/kWh for the under draws by the buyer or the beneficiaries in excess of 10% of the schedule or 250 MW, whichever is less.
- c. 450.0 Paise/kWh for the injection by the seller in excess of 120% of the schedule subject to a limit of ex-bus generation corresponding to 105% of the Installed Capacity of the station in a time block and 101% of the Installed Capacity over a day.
- d. 165.00 Paise/kWh for the injection by a generating station other than the hydro generating station in excess of 105%

of the Declared Capacity of the station in a time block or in excess of 101% of the average Declared Capacity over a day.

- e. 165.00 Paise/kWh for the injection by the seller in excess of ex-bus generation corresponding to 105% of the Installed Capacity of the station in a time block or 101% of the Installed Capacity over a day

17. The responses to the proposed amendment were as under:

(a) NTPC has submitted that the Cap rate of 407.25 Paise/kWh / (based on Energy charges of Farakka ₹. 3/kWh) is less as Energy charges of Farakka has increased substantially (average 374.3 P/unit). In view of shortage of coal, this may further increase. NTPC has suggested that Unscheduled Interchange Cap Rate may be specified as 490.91Ps/kWh, corresponding to the frequency interval below 49.80 Hz and not below 49.79 Hz, considering the increase in Energy Charge Rate.

(b) CEA has submitted that the UI cap rate for under drawl in excess of 10% of the schedule should not be more than ₹. 2.5 per unit and seller injection in excess of 120% of the schedule should also be kept to ₹. 2.5 per unit.

18. We have considered the submissions of NTPC and CEA. As regards the submission of NTPC, we are of the view that there is still sufficient margin available even with higher energy charge due to imported coal blending. However, on the UI Price vector the Cap

rate is working out as 421.50 Paise/kWh. In view of this, the Cap rate of 407.25 Paise/kWh for all generating stations using coal or lignite or gas supplied under Administered Price Mechanism (APM) as the fuel may now be raised to 421.50 Paise/kWh. The cap rate for the underdrawls by the buyer or the beneficiaries in excess of 10% of the schedule or 250 MW, whichever is less and for the injection by the seller in excess of 120% of the schedule, subject to a limit of ex-bus generation corresponding to 105% of the Installed Capacity of the station in a time block and 101% of the Installed Capacity over a day, may be retained as 450.0 Paise/kWh. There has been sufficient incentive to support the grid.

19. Amendment has also been proposed to specify the grid frequency for operation of limit of UI Volume from 49.7 Hz to 49.8 Hz. There are no specific comments of the stakeholders in this regard. In our view, it would be necessary to revise the grid frequency for operation limit of UI volume in view of narrowing of operating grid frequency range.

### **Revision of Additional UI Charges**

20. The Additional UI Charges were also reviewed and following additional UI charges were proposed in the draft amendment:

- For over drawal below 49.7 Hz and up to 49.5 Hz -40% of the Unscheduled Interchange Charge of 900.0 Paise/kWh

- For under-injection below 49.7 Hz and up to 49.5 Hz-
  - 20% of the Unscheduled Interchange Charge of 900.0 Paise/kWh
  - 20% of the UI Cap Rate of 407.25 Paise/kWh for the generating stations using coal or lignite or gas supplied under Administered Price Mechanism (APM)
  
- For over drawals below 49.5 Hz - 100% of the UI Charge 900.0 Paise/kWh
  
- For under-injection below 49.5 Hz –
  - 40% of the UI Charge of 900.0 Paise/kWh
  - 40% of the UI Cap Rate of 407.25 Paise/kWh for the generating stations using coal or lignite or gas supplied under Administered Price Mechanism (APM)

21. In response to the proposed amendment, the following responses have been received:

(a) NTPC has submitted that the generating stations may be exempted from additional UI charge in case of forced outages till the revision of declared capacity/injection schedule after unit tripping.

(b) Torrent Power and GMR Energy Ltd., have submitted that the penalty or additional UI should not be imposed on STOA generators and that any additional UI charges should not be imposed for start-up power of plant during the testing period.

(c) BSES has submitted that the additional UI for discoms should be 20 % and 40 % against 40 % and 100 %.

(d) UPPCL has submitted that the additional UI charges are imposed as penalty in discriminatory manner and it should be withdrawn.

(e) Gujrat Urja Vikas Nigam Limited (GUVNL) has submitted that charging of additional UI at the rate of 40% of UI rate (₹ 9/unit) for frequency below 49.7 Hz up to 49.5 Hz is wider band where Discoms/ beneficiaries will start getting instant trouble once frequency descends immediately below 49.7 Hz and this trouble persists for over drawing power at rate of ₹. 12.60 /unit for frequency band 49.7-49.5 Hz. GUVNL has submitted that the Commission may divide this long band into two parts i.e. 49.7-49.6 Hz & 49.6-49.5 Hz and apply 20% of UI rate (₹ 9/unit) for frequency below 49.7 up to 49.6 Hz and then 40% of UI rate (₹ 9/unit) for frequency below 49.6 up to 49.5 Hz. This will provide sufficient signal to the over-drawing entity to procure power from market. The above proposal will also be enough to warn the overdrawing entity not to overdraw further when frequency is further deteriorating. Similarly, charging of additional UI for frequency below 49.5 Hz may be divided into two parts i.e. 49.5-49.2 Hz & below 49.2 Hz and 70% of UI rate (₹. 9 /unit) may be applied for frequency below 49.5 up to 49.2 Hz and then 100% of UI rate (₹ 9 /unit) for frequency below 49.2 Hz. The above submission of charging additional UI for overdrawing of power is in light of the various facts

like load shedding by Utilities/Discoms, Transmission corridor problem, Power evacuation strengthening/up-gradation and for development of power market.

(f) KPTCL has submitted that the penal rates when frequency is below 49.7 Hz and up to 49.5 Hz, works out to be ₹. 12.6/- and below 49.5 Hz, it is ₹. 18.0/- and the existing penal rates for frequency below 49.5 and up to 49.2 Hz ₹. 12.222/- and for frequency below 49.2 Hz the rates are ₹. 17.46/-. There is huge accumulation of penal charges with RPCs due to levy of high penal charges for over drawing constituents and under injecting generators whereas payment for over injection by generators for both CGS and others are paid very less. Instead of this, levying of penal charges may be reduced for overdrawing constituents and under injecting generators and balance the can be achieved.

22. The additional UI charges have been provided to dissuade the beneficiaries and the buyers to overdraw from the grid when grid is under distressed condition. We again reiterate that the beneficiaries are under no compulsion to overdraw from the grid. If they adhere to their respective schedules, then there would be no UI liability or any additional UI liability accruing to them whatever may be the grid condition. As discussed earlier in para 13 above, we have decided to impose additional UI charges at 20% of Max UI Charge of ₹ 9.00/kWh corresponding to the grid frequency of "below 49.5 Hz" for

overdrawal in the frequency range. In view of this, Additional UI charges "below 49.5 Hz" has also been reviewed. The Commission has decided to continue with the existing additional UI charges "below 49.5 Hz and up to 49.2 Hz" and below 49.2 Hz.

23. Accordingly, following additional UI charges have been specified:

- For over drawal below 49.7 Hz and up to 49.5 Hz -20% of the Unscheduled Interchange Charge of 900.0 Paise/kWh
- For under-injection below 49.7 Hz and up to 49.5 Hz-
  - 10% of the Unscheduled Interchange Charge of 900.0 Paise/kWh
  - 10% of the UI Cap Rate of 421.50 Paise/kWh for the generating stations using coal or lignite or gas supplied under Administered Price Mechanism (APM)
- For over draws below 49.5 Hz and up to 49.2 Hz - 40% of the UI Charge 900.0 Paise/kWh
- For under-injection below 49.5 Hz and up to 49.2 Hz –
  - 20% of the UI Charge of 900.0 Paise/kWh
  - 20% of the UI Cap Rate of 407.25 Paise/kWh for the generating stations using coal or lignite or gas supplied under Administered Price Mechanism (APM)
- For over draws below 49.2 Hz - 100% of the UI Charge 900.0 Paise/kWh
- For under-injection below 49.2 Hz –
  - 40% of the UI Charge of 900.0 Paise/kWh
  - 40% of the UI Cap Rate of 407.25 Paise/kWh for the generating stations using coal or lignite or gas supplied under Administered Price Mechanism (APM)



24. This would take care of the concern of the stakeholders having regard to their conduct leading to improvement in the grid frequency. However, if the Commission finds in future that stakeholders are resorting to grid indiscipline, then the Commission may review its decision and may impose higher additional UI charges below 49.7 Hz grid frequency.

### **UI Cap for injection of Infirm Power**

25. The proposed amendments also introduced UI Cap rates for injection of infirm power for generating units for testing and commissioning before COD of units depending upon the type of fuel used for power generation. It was proposed that infirm power injected into the grid by a generator which has not identified a buyer for the infirm power during the testing prior to COD of units/ station from other generating stations shall be paid at UI rates for power injected in to the grid consequent to testing for a period not exceeding 3 months, subject to ceiling of Cap rates corresponding to the fuel used for such generation as specified in the Schedule 'A' of this Regulation. The following UI cap rates were proposed in Schedule 'A' to the draft amendment:

- Domestic coal : ₹ 1.65 /kWh sent out

- APM gas as fuel : ₹ 2.60 /kWh sent out
- Imported Coal/RLNG : ₹ 3.30/kWh sent out
- Liquid Fuel : ₹ 9.00 /kWh sent out

It was also provided that in case imported coal is being blended with the domestic coal then the ceiling rate of infirm power shall be arrived at in proportion to the ratio of blending based on the above rates of domestic and imported coal and shall be subject to a further ceiling of ₹ 1.90 / kWh ex-bus. It was also provided that in case the generating station uses natural gas supplied under Administrative Price Mechanism (APM), Re-gassified Liquid Natural Gas (RLNG) and Liquid fuel in combination for power generation, then the rate of infirm power shall be arrived at in proportion to the ratio of fuel consumption based on the rates specified above.

26. The above provisions were provided in view of the amendment of the clause 7 of Regulation 8 of Central Electricity Regulatory Commission (Grant of Connectivity, Long-Term Access and Medium-Term Open Access in Inter-State Transmission and related matters] Regulations 2009 (hereinafter referred to as "Connectivity Regulations") which provide for limit on the period for injection of infirm power in to the grid for the purpose of testing/ Commissioning of the units and to treat such infirm power injection as UI and to be paid at UI rates subject to ceiling of UI Cap rates as specified in UI Regulation. Therefore, draft amendments to the UI Regulation

introduced the UI Cap rates for injection of infirm power for generating units for testing before COD based on fuel used for power generation.

27. The Commission has decided a maximum period of six month for which injection of infirm power can be permitted before the date of commercial operation. The detailed reasons are given in the Statement of Reasons for the second amendment to the Connectivity Regulations. Therefore, the comments of stakeholders in response to similar provision in draft UI regulations have not been repeated.

28. With regard to the UI Cap rates for injection of infirm power for generating units for testing before COD based on fuel used for power generation, the stakeholders have commented as follows:

(a) Hindustan Electricity Generation Co. Pvt. Ltd. has submitted that presently RLNG in India is benchmarked with JCC at around 14.5% slope. The prevailing market rate for RLNG is around \$18 landed per mmBtu. Also no Gas based Generator has tied up long term gas supply agreements due to high volatility in the RLNG prices. It has been submitted that a mechanism should be devised in order to capture such cases of high price of fuel cost keeping in mind the volatility in the RLNG market.

(b) Southern Regional Power Committee has submitted the following:

- i) A new sentence may please be added that “for UI computation generator shall furnish the blending ratio by Thursday for the past week to RPC Secretariat. If the blending ratio is not communicated, then the ceiling rate would be restricted to ‘1.65/kWh” .(Rate for domestic coal/gas)
- ii) A new sentence may please be added that “for UI computation generator shall furnish the ratio of fuel consumption by Thursday for the past week to RPC Secretariat. If the ratio of fuel consumption is not communicated, then the ceiling rate would be restricted to ‘2.60/kWh” . (rate for APM gas as fuel)

(c) Power Company of Karnataka has submitted that the GCV & Cost considered for arrival of the rate is not specified. In case of generators selected under competitive bidding route, based on levelised tariff, the recovery of short fuel cost is not possible, since quoted tariff shall remain for 25 years. Under such circumstances factoring of cost in the tariff does not arise. Therefore it is suggested that the actual cost payment or maximum ceiling rate, whichever is lower shall be considered. The percentage of fuel and GCV considered for arrival of ₹ 1.90/kWh as ceiling rate is not specified which may be required for calculation of rate in case of different ratio of blending of coal used for infirm power.

(d) NHPC has submitted that nothing has been mentioned in the clause regarding the rate of infirm power from hydro generating stations. It needs to be confirmed that rate of infirm power for hydro stations will be applicable UI rate.

(d) NTPC has submitted that the energy injected as infirm power is proposed to have different UI price ceiling rates depending on fuel. Looking from the point of view of the recipients of such power, differential price does not make sense. Moreover, the cost of such testing is an anticipated expenditure of the generator and paying UI rate for the same is not justified. In fact one could also argue the cost of such testing should be borne entirely by the generator. A common ceiling rate corresponding to the UI rate for the frequency band of 49.98-50.00Hz (₹ 1.55/kWh) may be adequate as the generator has no implication of negative UI. The intent of declaring commercial operation is that as soon as generator is reasonably ready to inject power, it should declare its COD and sell the power through commercial mechanisms. Infirm power should only be allowed for making generator ready for COD. It should not be used as a side mechanism to get additional commercial gains. But because a generator is injecting power into the grid which shall be utilized by customer, it may be compensated, but this should not create any motivation to generate additional commercial gains.

(e) LANCO has submitted that in view of severe coal shortage in the country, some of the developers are forced to use e-auction coal to supplement the coal requirements. Though e-auction coal is indigenous, its rate is almost equal to imported coal. LANCO has requested to consider this aspect before fixing any ceiling rates for the infirm power injected beyond the allowed testing time. However, it is essential to provide more clarity on how the ceiling UI rate will be arrived at in case a combination of fuels are used and an authorized agency should be designated to certify the fuel mix used.

(f) Shree Cement Limited has submitted that the proposed cap is very low as compared to the cost of generation of power. The variable cost of power generation based on domestic coal or imported coal is higher than the cap proposed above. A power plant injecting infirm power into the grid will be incurring loss if the payment for such power is below its variable cost of generation, which in case of imported coal will not be less than ₹ 3.50/unit against cap of ₹ 3.30/ unit proposed. Though the draft regulation incorporates provision for different rates based on utilization of different fuels, it does not specify the mechanism for ascertaining the actual fuel usage by generators. Many generators are using other fuels like pet coke, lignite etc. for which no price has been fixed in the proposed regulations. As such a new category "Others" should also be incorporated to cater to generators using different fuels.

(g) MB Power (MP) Ltd. has submitted that in the current scenario, the fuel price is determined by the market forces which are very dynamic and volatile in nature. Therefore, to provide a ceiling on the rates of infirm power based on various fuels does not appear to be prudent and realistic, and it may cause the project developers substantial financial losses. MB POWER has submitted that instead of capping the rates of infirm power, fuel cost should be allowed as a 100% pass through for the purpose of calculation of rates of infirm power. In this manner, there will be no incentive on the generator to prolong this testing period, however, at the same time; it will not be penalized in the event the actual fuel consumption charges are recovered. An appropriate mechanism may be devised to determine the actual fuel costs incurred, for example, audited statement certified by the equipment supplier/EPC contractor or other engineer conducting the tests and invoices duly certified by the statutory auditor of the generator.

(h) Neyveli Lignite Corporation Limited has submitted that the sale of infirm power at UI rate simplifies the commercial mechanism, since it will not interfere with REA computations. However, if the Commission feels that injection of infirm power for long periods is because of attractive UI rates, the UI rate may be replaced with Energy Cost of respective stations for generators who have not identified purchasers with appropriate amendment to Regulations 11 of Central Electricity

Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009, if warranted.

(i) Torrent Power has submitted that the cap rate for domestic gas should be increased to 2.60/kwh sent out. The cap rate for pit head generating station and non-pithead station should be different, hence, the rate of ₹ 1.65/kwh would be for pithead generating station and for non-pit head generating station, the cap rate should be increased to the extent of actual transportation cost incurred per kwh. The cap rate prescribed for imported RLNG is also very low compared to the actual variable cost and therefore, it should be increased to at least ₹ 5/kwh sent out.

(j) Adani Power Limited (AEL) has submitted that during high frequency conditions, the generator would not be able to recover its fuel cost from UI charges and hence will have to make up for this revenue loss with the help of UI charges during low frequency conditions. Also, the cost of fuel for infirm energy will be very high owing to poor station heat Rate during stabilization period. Now, applying cap on UI charges for injection of infirm power would be an injustice to the genuine generators. Hence, AEL has suggested to retain the current provision related to settlement of injection of infirm power in to the grid.

(k) CEA has suggested that Cap Rates for infirm power injected



during testing prior to CoD of the unit have been specified. However, no Cap Rate has been specified for hydro generating units injecting infirm power. It means that Hydro generating stations can earn upto ₹ 4.50/unit as per Clause 2(c). It has been submitted that the Commission may specify Cap Rates for infirm power injection by hydro generating stations prior to CoD. In this connection, CEA has cited the instances of Unit-3 of Jaypee Karcham Wangtoo HEP and Unit-1 and Unit-2 of Malana II HEP which have been synchronised but have not declared commercial operation. CEA has suggested that UI Cap Rate for infirm injection by hydro stations prior to CoD should be capped at ₹ 1.65/unit.

(l) POSOCO has submitted that to discourage injection of infirm power for prolonged period, and to take care of infirm nature of the injection, UI rate for all generating stations/sellers (irrespective of type/source of fuel) prior to COD may be capped at the rate corresponding to frequency of 50 Hz. which, as per proposed UI rate is equivalent to ₹ 1.65. A uniform cap rate for infirm power is also necessary from the stakeholders' perspective. POSOCO has further submitted that after the generator has declared COD, it is possible that it has a Long Term Access (LTA) to the Inter State Transmission System (ISTS) but no long term PPA. Under such situation, it is possible that the generator continues to inject UI and get paid for at normal rates. In that case, the generators may declare COD of their units right from day one of synchronization and continue to inject under

UI. It has been suggested that this issue be addressed in the UI Regulations possibly by specifying a cap rate, which provides sufficient incentive for harnessing available generation and at the same time discourages continued injection under UI.

29. The Commission is of the view that it would not be feasible to specify one ceiling rate for all types of fuel and therefore, ceiling rates as proposed shall be adopted. No ceiling rate was specified for the hydro generating stations and in our view, the ceiling rate for the hydro generating station shall be ₹ 165 Paise/kWh, the same as for the coal/lignite based generating station. The Commission also finds merit in the contention of CEA and SRPC with regard to the concern about deciding the blending ratio and its verification. The Commission is of the view that it is possible for the generator to arrange sufficient quantity of main fuel like domestic coal or natural gas for the purpose of testing and commissioning activities and as such, there may not be any necessity of blending of imported coal or mixing of gas with RLNG or the liquid fuel for the purpose of testing and commissioning. As such, provision relating to blending of imported coal and mixing of gas with RLNG or the liquid fuel for the purpose of testing and commissioning has been done away with. It is also not feasible to allow actual variable cost as it would not be possible for the Commission to determine it for the merchant generators.

30. As regards the concern of POSOCO, it is clarified that it has been clearly provided in Connectivity Regulations that mere connectivity shall not entitle any entity to interchange power with the grid without seeking open access and as such, a generator has to obtain some form of access after the COD to inject power into the grid.

### **Inter-Regional UI adjustment and Sharing of Inter Regional UI charges**

31. Eastern Regional Load Despatch Centre (ERLDC) has submitted that from 2003 till 3.5.2010, settlement of UI between two asynchronously connected regions was being computed at respective regional UI rate. However, with formation of NEW Grid, the only asynchronous operation was between the Southern and NEW Grid through HVDC Links between SR and ER, and SR and WR. Due to the nature of asynchronous inter-connection between Southern Grid and NEW Grid, a differential UI was being generated and the same was being credited to the inter-regional exchange (IRE) pool account which was shared between the respective regions on 50:50 basis. The benefit so accrued was passed on to the beneficiaries of each region in proportion to their liability to pay the transmission charges. Similar practice was also followed for UI settlement between ER and NR pool for exchange between ER and NR till 2006 when NR Grid was operating asynchronously with rest of the Grid.

32. Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 (Grid Code) came into effect from 3.5.2010. Para 16 of Annexure I of the Grid Code dealing with Complementary Commercial Mechanism provides as under:

“16. Interfaces for Scheduling and UI Accounting In Inter-regional Exchanges:

1. The regional boundaries for scheduling, metering and UI accounting of inter-regional exchanges shall be as follows:

- Eastern Region end of inter-regional links between Eastern Region and Southern, Western and Northern Regions.
- North-eastern end of inter-regional links between Eastern and North Eastern Region
- Western Region end of inter-regional links between Southern and Western Region
- Western Region end of inter-regional links between and Northern and Western Region.

2. No attempt shall be made to split the inter-regional schedules into link-wise schedules (where two regions have two or more interconnections).”

33. ERLDC has submitted that after Grid Code came into force, SRPC unilaterally discontinued the earlier practice of computation of inter-regional UI based on differential frequency. ERLDC has submitted that the intent of para 16 of Annexure I to the Grid Code was to compute energy drawl based only on the energy meter reading of Eastern Region or Western Region ends.

34. ERLDC has further submitted that para 16 of Annexure I does not bar computation of UI charges at the respective frequencies of the asynchronously connected regions. The discontinuation of the existing practice of UI computation methodology by SRPC was thus

in contravention of the objective of achieving optimal economic operation. This was done without any directives from the Commission or intimation to the Commission and without any prior discussions with other RPCs (viz. ERPC or WRPC). Consequently, the differential UI amount is being generated now, instead of being shared on 50:50 basis between SR and ER/WR pools gets entirely credited to the SR UI pool. Such lost benefits for Eastern and Western regional beneficiaries with effect from 3.5.2010 need be compensated by the Southern Region with retrospective effect. It is apprehended that such practice as unilaterally adopted by SRPC may restrict economy exchanges between ER-SR and WR-SR which is detrimental to optimal utilization of national resources. ERLDC has submitted that essentially the transaction is some form of an arbitrage between ER-SR Grid or WR-SR Grid when UI transactions take place over HVDC links, thereby providing merit order dispatch at the instance of instructions issued by ER, WR and SR operators to ensure an optimal dispatch. Thus any benefit accrued needs to be shared between the beneficiaries of these regions.

35. ERLDC has accordingly proposed the following provisions in UI Regulations:

*"The UI transactions between SR-ER and SR-WR may be computed by the respective regions based on UI rates as per the frequency of the respective regions. The differential amount thus accrued by way of such UI inter-change shall be shared on 50:50 basis by the respective regional pools. The accrued UI amount so generated shall be utilized for giving transmission benefits to the beneficiaries located in the respective regions in ratio of their transmission charge liabilities"*

36. SRPC has submitted that Regional Boundaries for scheduling, metering and UI accounting of inter-regional links have been defined as Eastern Region and Western Region-end. SRPC has requested that inter-regional UI between WR and SR, and ER and SR would be at NEW Grid frequency in view of the fact that Grid Code provides metering at ER and WR ends.

37. POSOCO has submitted that the following additional clause may be inserted in the UI Regulations:-

"The regional boundaries for scheduling, metering and UI accounting of inter-regional exchanges shall be as follows:

- Eastern Region end of inter-regional links between Eastern Region and Southern, Western and Northern Regions.'
- North-eastern end of inter-regional links between Eastern and North Eastern Region
- Western Region end of inter-regional links between Southern and Western Region
- Western Region end of inter-regional links between and Northern and Western Region.

"The UI transactions between SR-ER and SR-WR may be computed by the respective RPCs based on UI rates as per the frequency of the respective regions. The differential amount thus accrued by way of such UI inter-change shall be transferred to Power System Development Fund"

38. We have examined the issue in the light of submissions of ERLDC, SRPC and POSOCO. We are of the view that the regional entity responds to the grid frequency of its own region and should

pay or receive UI charges corresponding to the grid frequency of the region. Thus it would suffice if the charges for inter-regional exchanges are computed at the grid frequency of the respective region. Due to difference in grid frequency of the NEW Grid and SR Grid, the UI charges for the inter-regional exchanges would be different in two regions. It would be reasonable if the difference in UI charges are adjusted in UI pool account of the two regions in the ratio of 50:50. Accordingly, it has been provided in clause (8) of Regulation 5 of the UI regulations as under:

"(8) Charges for Inter-regional UI Exchanges between the two asynchronous Regions shall be computed by the respective Regional Power Committees, based on UI rates as per the frequency of the respective Region. The amount to be settled for the inter-regional exchanges shall be average of the UI charges computed for the two regions by way of such inter-change."

## **Other Suggestions**

39. Chhattisgarh State Electricity Regulatory Commission (CSERC) has suggested that the connectivity criteria should form the basis of application of UI rates irrespective of the fact that generating station is a regional entity or an intra-State entity. Accordingly:

1. If a generating station is connected only to the ISTS, there may be general UI rates (charges specified in schedule A of Central Commission UI Regulations).
2. If a generating station is connected only to the State network, UI rate shall be 105% (for over-drawals of under generation) and 95% (for under drawals or over generation)

of of UI rate at the periphery of regional or as per the rates and terms and conditions of UI specified by State Commission.

3. If a generating station is connected both to ISTS and the State network, there shall be general UI rates (charges specified in schedule A of Central Commission Regulation).

40. With regard to the CSERC's suggestion that connectivity criteria should be the adopted for the application of UI Charges, we would like to clarify that UI Regulation is applicable to generating stations, beneficiaries, buyers and sellers connected to the ISTS. UI is computed at the inter-state boundaries as a whole. Intra-state entities' schedule gets clubbed with the State schedule as a whole and net schedule is considered at State boundaries.

41. CSERC has also proposed incorporation of the following provision in the UI Regulations:

"Unless specified the State Commission for all inter-State transactions the mismatch between the scheduled and the actual drawl at drawl point (s) and scheduled and the actual injection at injection points (s) for the seller and buyers (which are intra-State entity) shall be met from the grid and shall be governed by the CERC (UI charges and related matters), Regulation, 2009 and its subsequent amendment:

If the quantum of drawl of beneficiaries of State (as whole) is less than zero (i.e. negative) due to the approved quantum of short-tem open access of the sellers (intra-state entities) of the State, then UI rates and terms and conditions as applicable to the sellers shall be applicable for that particular State."



42. As discussed above, UI is computed at the inter-State boundaries and as such, any State is free to have its own ABT Regulation for the Intra-state entities. In our view, no modification is required in the UI regulations on this account.

43. Some existing provisions in Regulation 5 of the UI regulations got deleted from draft amendment inadvertently and the same are being retained in the final regulations.

44. We direct the Secretary of the Commission to finalise the amendment regulations and notify the same in the Official Gazette.

Sd/-  
**(M Deena Dayalan)**  
Member

sd/-  
**(VS Verma)**  
Member

sd/-  
**(S Jayaraman)**  
Member

sd/-  
**(Dr Pramod Deo)**  
Chairperson

**List of stakeholders/persons who made their submissions in response to the draft amendment**

1. Power System Operation Corporation Limited
2. Torrent Power
3. GMR Energy Limited
4. Power Company of Karnataka Limited
5. Chhattisgarh State Electricity Regulatory Commission
6. Maharashtra State Electricity Distribution Company Limited
7. Neyveli Lignite Corporation Limited
8. Central Electricity Authority
9. National Hydro Power Corporation Limited
10. West Bengal State Electricity Distribution Company Limited
11. Gujarat Aurja Vikas Nigam Limited
12. Andhra Pradesh Power Coordination Committee Transmission corporation Of Andhra Pradesh Limited
13. Tata Power Trading Company Limited
14. Adani Power Limited
15. P. Selvaraj 124, R.S. Road, Pallipalayam, Erode.
16. The Brihan Mumbai Electric Supply & Transport Undertaking
17. Tamil Nadu Generation and Distribution Corporation Limited
18. Southern Regional Power Committee
19. Uttar Pradesh Power Corporation Limited
20. Eastern Regional Load Dispatch Centre