

**Fuel Surcharge for Fourth Quarter of FY 2017-18**

**(January'18-March'18)**

**FINAL REPORT**

**Submitted to**

**Ajmer Vidyut Vitran Nigam Limited**

**Ajmer**

**February- 2018**

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## Background

1. In term of the Regulation 88 of the RERC Tariff Regulation 2014, AVVNL is allowed to recover the variation in the approved and actual variable cost of power purchased. The variation allowed has to be passed on to the consumers of AVVNL on quarterly basis as fuel surcharge.
2. The said provision under the RERC Tariff Regulations, 2014 with respect to the fuel surcharge is reproduced as below:

### **“88. Fuel Surcharge**

*“The Fuel Surcharge (FS) chargeable by the distribution licensee from its consumers for any quarter shall be computed as per the following formula:*

$$FS = C/E \quad \text{Rs./kWh}$$

*Where,*

*C (in Rs. Lakh) = {(Weighted Average Variable Cost of all sources of power purchase during previous quarter in Rs/kWh – Base Weighted Average Variable Cost of all sources of power purchase as approved under Tariff Order for the year under operation in Rs/kWh) x Corresponding Power Purchase from all sources during previous quarter in LU}.*

*E (in Lakh Units) = Energy sold (metered plus estimated) during previous quarter.”*

*Note:*

- *Quarter referred under this formula shall correspond to financial quarter (s) viz Q1 (Apr. to Jun) Q.2 (Jul to Sept), Q3 (Oct to Dec) and Q4 (Jan to Mar).*
- *The variation in power purchase cost due to UI and Hydro based generation and other unapproved purchases shall not be covered under fuel surcharge adjustment.*
- *For the generation stations/power purchase sources, which have single part tariff, 1/3 of the tariff shall be considered as fixed charge and 2/3 of the tariff shall be considered as energy charge for adjustment under this formula.*
- *The cost and quantum of power purchase shall be based on bills paid/credits received during the previous quarter irrespective of period to which it pertains and shall include arrears or refunds, if any, for previous period, not considered earlier.*
- *The rate of Fuel Surcharge shall be worked out in Rs./kWh rounded off next second decimal place.*
- *The Fuel Surcharge per unit for any quarter shall not exceed 10% of weighted average power purchase cost approved by the Commission, or such other ceiling as may be stipulated by the Commission from time to time.*
- *The total Fuel Surcharge recoverable, as per the formula specified above, shall be recovered from the actual sales and in case of un-metered consumers, it shall be recoverable based on estimated sales to such consumers, calculated in accordance with such methodology as may be stipulated by the Commission.”*

## Description

1. The Hon'ble Commission vide its ARR/Tariff order dated 22<sup>nd</sup> September 2016 for FY 2015-16 had approved the sources, quantum and cost of the power to be procured, which has been considered for calculation for the approved weighted average variable cost. The Tariff Order for FY 2017-18 was issued by the Hon'ble Commission on 2<sup>nd</sup> November 2017 and was applicable from November 2017 onwards. Hence the approved figures from the previous Tariff Order have been considered for calculation for October 2017 and the approved figures from the Tariff Order for FY 2017-18 have been considered for November and December 2017.
2. In terms of the Regulation 88 of the RERC Tariff Regulations 2014, the variation in power purchase cost due to UI and Hydro based generation and other unapproved purchases shall not be covered under fuel surcharge adjustment. Further where the Generating Station/ Power purchase source has a single part tariff the tariff would be bifurcated into one-third as fixed charges and two-thirds as variable charges.
3. The calculation of actual weighted average variable cost for the third quarter of FY 2017-18 (Oct'17-Dec'17) which is used to determine the fuel Surcharge for fourth quarter (period from January'18 to March'18), against the RERC approved weighted average variable cost in the Tariff Order for FY 2015-16 (for the month of October'17) and Tariff Order for FY 2017-18 (for November'17 and December'17) is tabulated below:

### Weighted Average Variable Cost

Weighted Avg variable Cost of all sources of power purchase (Rs/kWh)									
S. No.	Sources of Power Purchase	Approved Power Purchase for AVVNL for FY 2015-16		Approved Power Purchase for AVVNL for FY 2017-18		Power Purchase (Oct'17)		Power Purchase (Nov'17-Dec'17)	
		Net Generation	Total variable Cost	Net Generation	Total variable Cost	Net Generation	Total Variable Cost	Net Generation	Total Variable Cost
		(MU)	(Rs. Cr.)	(MU)	(Rs Cr)	(MU)	(Rs Cr)	(MU)	(Rs Cr)
<b>A</b>	<b>NTPC</b>								
	ANTA GTPS	54.89	18.46	34.00	10.00	0.94	0.42	4.51	2.96
	AURIYA GTPS	32.35	12.99	12.00	4.00	0.30	0.19	3.94	3.12
	Bhadla			7.00	3.00			20.35	6.78
	DADRI GTPS	59.97	21.60	54.00	15.00	2.20	0.92	8.12	3.38
	FARAKKA STPS	12.74	3.67	15.00	4.00	1.04	0.27	2.41	0.55
	KAHALGAON II (U 1)	25.05	6.12	31.00	8.00	3.06	0.76	6.37	1.18
	KAHALGAON-2 STPS	130.82	30.29	146.00	34.00	9.40	2.27	30.86	5.63
	RIHAND STPS (unit 1 & 2)	141.50	25.42	153.00	25.00	17.64	2.31	36.77	4.98
	RIHAND 2 STPS	141.07	23.61	202.00	32.00	16.57	2.08	40.01	4.99
	RIHAND STPS III	161.83	26.47	231.00	38.00	21.49	2.72	46.04	5.83
	SINGRAULI STPS	624.47	87.35	592.00	87.00	51.73	8.35	92.57	11.17
	Unchahar I	16.92	4.52	17.00	5.00	1.89	0.56	4.78	1.10
	Unchahar II	40.19	10.72	37.00	11.00	3.04	0.90	11.91	2.81
	Unchahar III (unit 5)	22.60	6.01	25.00	7.00	2.03	0.60	7.33	1.74
	NCTPS II	7.45	2.65	4.00	1.00	-2.19	-0.66	0.14	-0.01

Weighted Avg variable Cost of all sources of power purchase (Rs/kWh)									
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		Net Generation	Total variable Cost	Net Generation	Total variable Cost	Net Generation	Total Variable Cost	Net Generation	Total Variable Cost
		(MU)	(Rs. Cr.)	(MU)	(Rs Cr)	(MU)	(Rs Cr)	(MU)	(Rs Cr)
	Prior Period					0.00	-0.05	0.00	-0.09
	<b>Sub-Total (A)</b>	<b>1471.85</b>	<b>279.88</b>	<b>1560.00</b>	<b>284.00</b>	<b>129.16</b>	<b>21.65</b>	<b>316.11</b>	<b>56.13</b>
<b>B</b>	<b>Lignite Based plant</b>								
	Giral TPS	65.29	6.56			0.00	0.00		
	Barsingsar (Neyveli Lignite Power)	307.60	38.30	356.00	56.00	32.31	3.52	77.09	8.37
	Rajwest Total	1772.73	322.03	1631.00	341.00	147.75	30.87	293.96	61.41
	Prior Period	0	0.00			0.00	68.35	0.00	0.00
	<b>Sub-Total (B)</b>	<b>2145.62</b>	<b>366.89</b>	<b>1987.00</b>	<b>397.00</b>	<b>180.06</b>	<b>102.74</b>	<b>371.04</b>	<b>69.78</b>
<b>C</b>	<b>NPCIL</b>								
	NAPP 1&2	88.46	14.31	92.00	16.00	6.26	1.08	16.33	2.81
	RAPP-I &II	320.59	58.59	241.00	47.33	24.08	4.69	70.90	13.62
	RAPP-III& IV	301.46	55.09	301.00	58.67	27.84	5.35	58.41	11.22
	RAPP-V & VI	190.84	43.36	148.00	35.33	16.43	3.87	33.79	7.97
	Prior Period					0.00	0.00	0.00	0.00
	<b>Sub-Total (C)</b>	<b>901.35</b>	<b>171.35</b>	<b>782.00</b>	<b>157.33</b>	<b>74.62</b>	<b>14.99</b>	<b>179.43</b>	<b>35.62</b>
<b>D</b>	<b>State Gen. &amp; Others</b>								
	STPS (Unit 1 to 6)	1508.39	562.63	1127.00	429.00	114.78	43.70	235.29	74.14
	KTPS (Unit 1 to 7)	1922.35	645.91	1856.00	561.00	170.39	51.53	347.00	92.60
	Ramgarh TPS	129.34	35.05	121.00	22.00	8.17	1.50	17.19	3.20
	Dholpur GTPP	89.28	27.59	27.00	9.00	13.92	4.77	42.15	16.12
	Chhabra-I & II	394.66	86.83	857.00	204.00	50.11	11.93	142.82	34.32
	Chhabra-III	304.60	64.27	424.00	98.00	1.19	0.28	90.35	22.95
	Chhabra Phase 3 Unit IV	356.86	66.16	437.00	101.00	42.57	9.85	82.50	21.54
	Kalisind Unit 1	749.64	183.66	956.00	245.00	93.41	24.59	179.36	46.26
	Kalisind Unit II	118.53	26.93	592.00	151.00	97.13	25.62	120.60	30.87
	Ramgarh project stage 3 unit 4	290.73	78.21	262.00	81.00	28.20	8.85	52.57	14.68
	<b>Sub-Total (D)</b>	<b>5864.38</b>	<b>1777.24</b>	<b>6659.00</b>	<b>1901.00</b>	<b>619.87</b>	<b>182.61</b>	<b>1309.83</b>	<b>356.68</b>
<b>E</b>	<b>Indira Ghandi (jhajjar -unit 1&amp; 2) (Aravali Power)</b>	<b>2.20</b>	<b>-0.09</b>	<b>2.00</b>	<b>1.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.02</b>
<b>F</b>	<b>COASTAL GUJARAT (MUNDRA) unit 1, 2 and 3</b>	<b>694.61</b>	<b>98.82</b>	<b>708.00</b>	<b>103.00</b>	<b>55.05</b>	<b>10.12</b>	<b>109.32</b>	<b>16.54</b>
<b>G</b>	<b>ADANI POWER RAJASTHAN LTD.</b>	<b>2269.24</b>	<b>441.09</b>	<b>2204.00</b>	<b>484.00</b>	<b>-0.69</b>	<b>1.42</b>	<b>198.00</b>	<b>38.85</b>
<b>H</b>	<b>SASAN POWER LTD.</b>	<b>802.72</b>	<b>97.65</b>	<b>724.00</b>	<b>111.00</b>	<b>65.24</b>	<b>8.16</b>	<b>139.59</b>	<b>17.33</b>
<b>I</b>	<b>NVVN Bundled Power</b>	<b>618.78</b>	<b>211.28</b>	<b>674.00</b>	<b>253.00</b>	<b>128.63</b>	<b>46.26</b>	<b>53.54</b>	<b>16.16</b>
<b>J</b>	<b>PTC (DB Power)</b>			<b>140.00</b>	<b>23.00</b>			<b>92.70</b>	<b>14.94</b>

Weighted Avg variable Cost of all sources of power purchase (Rs/kWh)									
S. No.	Sources of Power Purchase	Approved Power Purchase for AVVNL for FY 2015-16		Approved Power Purchase for AVVNL for FY 2017-18		Power Purchase (Oct'17)		Power Purchase (Nov'17-Dec'17)	
		Net Generation	Total variable Cost	Net Generation	Total variable Cost	Net Generation	Total Variable Cost	Net Generation	Total Variable Cost
		(MU)	(Rs. Cr.)	(MU)	(Rs Cr)	(MU)	(Rs Cr)	(MU)	(Rs Cr)
<b>K</b>	<b>PTC (Maruti)</b>			<b>35.00</b>	<b>6.00</b>			<b>96.55</b>	<b>16.37</b>
<b>L</b>	<b>NCES</b>								
	Wind Farms	1215.85	392.48	1405.00	466.00	85.59	28.17	92.79	30.80
	Bio-Mass	149.90	63.65	223.00	98.67	6.85	3.11	16.75	7.57
	Solar	333.11	100.56	814.00	250.00	4.92	2.21	16.06	6.65
	CPPs	0.00	0.00			0.00	0.00		
	<b>Sub-Total (E)</b>	<b>1698.86</b>	<b>556.69</b>	<b>2442.00</b>	<b>814.67</b>	<b>97.36</b>	<b>33.49</b>	<b>125.60</b>	<b>45.01</b>
<b>M</b>	<b>TOTAL (without bilateral trading)</b>	<b>16469.61</b>	<b>4000.79</b>	<b>17917.00</b>	<b>4535.00</b>	<b>1349.31</b>	<b>421.45</b>	<b>2991.71</b>	<b>683.44</b>
<b>N</b>	<b>Other Short term source</b>								
	Bilateral Trading	-2479.95	-661.32	-1632.00	-435.33	0.00	0.00	0.00	0.00
	<b>Sub-Total (F)</b>	<b>-2479.95</b>	<b>-661.32</b>	<b>-1632.00</b>	<b>-435.33</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
	<b>GRAND TOTAL</b>	<b>13989.66</b>	<b>3339.47</b>	<b>16285.00</b>	<b>4099.67</b>	<b>1349.31</b>	<b>421.45</b>	<b>2991.71</b>	<b>683.44</b>
	<b>Weighted Avg Variable Cost (Rs./kWh)</b>		<b>2.39</b>		<b>2.52</b>		<b>3.12</b>		<b>2.28</b>

4. As it can be inferred from the table above that the weighted average power purchase cost as approved by the Commission in the Tariff Order for FY 2015-16 for the month of October'17 is lower than the actual weighted average cost and the weighted average power purchase cost approved in the Tariff Order for FY 2017-18 for the months of November'17 and December'17 is higher than the actual weighted average variable cost. Hence, when computed cumulatively for the quarter, fuel surcharge is recoverable for the fourth quarter (period January'18-March'18) of FY 2017-18.

#### Calculation of Fuel Surcharge:

5. As per the regulation "The Fuel Surcharge (FS) chargeable by the distribution licensee from its consumers for any quarter shall be computed as per the following formula:

$$FS = \frac{C}{E} \text{ Rs./kWh}$$

Where,

$C$  (in Rs. Lakh) = {(Weighted Average Variable Cost of all sources of power purchase during previous quarter in Rs/kWh – Base Weighted Average Variable Cost of all sources of power purchase as

approved under Tariff Order for the year under operation in Rs/kWh) x Corresponding Power Purchase from all sources during previous quarter in LU}.

*E (in Lakh Units) = Energy sold (metered plus estimated) during previous quarter."*

Based on the above mentioned formula, fuel surcharge is computed.

6. The Fuel Surcharge for the third quarter of FY 2017-18 (Oct'17 to Dec'17) was 0.25 Rs/kWh which was applicable during the desired period. The weighted average variable cost as approved by the Hon'ble Commission was 2.39 Rs/kWh, which was lower than the actual weighted variable cost (i.e. 2.63 Rs/kWh) of second quarter of FY 2017-18 (July'17 to Sep'17).
7. The fuel surcharge for the fourth quarter of FY 2017-18 (January'18-March'18) is computed as follows:

Sl. No.	Fuel Surcharge for 4th Quarter (Jan'18-Mar'18)	Units	Oct'17	Nov'17- Dec'17
1	Weighted Avg variable cost of all sources of power purchase during previous Quarter	Rs/kWh	3.12	2.28
2	Base weighted avg variable cost as approved	Rs/kWh	2.39	2.52
3	Power Purchase during Previous Quarter (Oct'17 – Dec'17)	MU	1349.31	2991.71
4	Energy Sold during previous quarter (Oct'17 – Dec'17)	MU	1264.00	2638.34
5	<b>FSA for 4th Quarter of FY 2017-18</b>	<b>Rs/kWh</b>	<b>0.08</b>	

8. The power purchase quantum and cost approved by the Hon'ble Commission in Tariff Order for FY 2015-16 and FY 2017-18 is as follows:

Approved by RERC	FY 2015-16	FY 2017-18
Total Quantum (MU)	16086.81	18158
Total Variable Cost (Rs Cr)	3629.09	4648
Total Fixed Cost (Rs Cr)	1895.23	2110
Total Power Purchase Cost (Rs Cr)	5524.32	6746
<b>Weighted avg Power Purchase Cost (Rs/kWh)</b>	<b>3.43</b>	<b>3.72</b>

### Conclusion:

9. As per above calculation the fuel surcharge of Rs. 0.08/ unit is computed for the fourth quarter (Jan'18 to Mar'18) of FY 2017-18, which is less than the average ceiling limit of Rs. 0.36/kWh approved by the Hon'ble commission (i.e. 10% of the weighted average power purchase cost approved by the Hon'ble Commission in its Tariff Order for FY 2015-16 and FY 2017-18). The fuel surcharge of 0.08 Rs/kWh will be recoverable for fourth quarter of FY 2017-18 (Jan'18 to Mar'18).