

# INDIAN INSTITUTE OF TECHNOLOGY, KANPUR

15 July 2015

## NOTE-SHEET

**Minutes of the meeting held on 06.04.2015, 13.04.2015, 25.05.2015, 6.07.2015 of the committee, constituted by the Director, to review the electricity charges, including supplementary electricity charges, to be recovered from students residing in hall of residences.**

Four rounds of meetings were held.

The first meeting was held on 06.04.2015 which was attended by DOIP, Prof. J. Ram Kumar, Chairman COW, Finance officer, S.E, IWD, President Student Gymkhana, Student representative (PG), AR, DOSA, Shri Raghvendra Singh. PIC (Electrical), ADHA, DOSA could not attend the meeting on 06.04.2015

In this meeting, SE, IWD presented the cost of yearly electricity consumption in various halls in year 2011 to 2014 (year wise from Jan to Dec). The FO in consultation with Prof. J. Ram Kumar informed the committee about the yearly recovery of electricity charges in various heads from the students residing in halls. The FO also informed the committee about the charges of electricity being recovered in some of the other IITs for the year 2013.

The committee noted that there is difference of more than Rs. 3.00 Crores between the cost of electricity consumed and recovery made from the students in the year 2014. The difference is primarily because of the revision in tariff from 2007 to 2014 and the increase in consumption.

After the detailed discussion it was agreed that the students would collect the information about the electricity charges being recovered from students in old and new IITs and the same should be presented in the next meeting.

In the second meeting held on 13.04.2015 all members were presents.

Chairman COW presented the details of electricity charges being recovered from the students in other IITs. It was noted by the committee that there is huge difference in electricity charges being recovered amongst various IITs.

PIC (electrical) presented the theoretical calculation of electrical load in all halls based on the light points / fan points in rooms, toilets, corridors, sports facility, common rooms, etc. (i.e. the connected load inside the boundary walled premises of the halls).

After the detailed discussion, the final conclusion on the enhancement in the electricity charges including fixed charges could not be arrived. The student representative suggested to charge the students only for the consumption of electricity, including fixed charges, for residential rooms. They suggested that the electricity consumption for common facilities including toilets should be borne by the Institute. The student representative requested that they will discuss this issue in student forum and shall inform the committee.

The third meeting of the committee was held on 25.05.2015. Chairman COW and student representatives could not attend the meeting. In this meeting, DOIP presented a note which was already circulated beforehand to all members for their feedback. On the basis of this note, the following is noted and recommended for enhancement in electricity tariff:

1. On the basis of information made available by the Institute Works Department on actual electricity charges, it was noted that the total amount paid by the Institute for consumption of electricity in halls is about Rs. 4,71,67,489 in FY2014-15. Out of this, the recovery from shops and canteens of halls is about Rs. 11,31,364. Hence, the net amount paid towards hall related electricity charges by the Institute is Rs. 4,60,36,125. For calculating the fixed charges, electricity duty and protective load, it is considered that the total consumptions in halls is 15% of the total consumption of the Institute.
2. As informed by the FO and Chairman COW, the recovery from the students against the electricity charges is as follows (last revised in 2007):
  - a) Rs. 300/- per student per semester towards electricity, fan and water charges
  - b) Rs. 300/- per student per semester towards supplementary electricity charges
  - c) 16 units per students per month in MEC per semester (@Rs. 6.23 per unit). This is approximately Rs. 400 per semester.

On the basis of this data, it was noted that the students residing in halls are paying approximately Rs. 1000 per regular semester.

3. Assuming 6100 students in halls and using the above information, the present recovery from halls is given in Table 1:

**Table 1: Recovery of electricity charges from halls**

Sr. no.	Head	Calculation	Amount (Rs)
1	Direct electricity charges	6100 x 2 x 600	73,20,000.0
2	Electricity charges through MEC (for nine months)	6100 x 16 x 6.23 x 9	54,72,432.0
3	Electricity charges through MEC (in summer term, for two months and assuming 3500 students)	3500 x 16 x 6.23 x 2.25	7,84,980.0
		<b>TOTAL</b>	<b>1,35,77,412</b>

**Net present deficit for electricity consumptions in halls = Rs. 3,31,53,981**  
**(Rs. 4,60,36,125 – Rs. 1,35,77,412 = Rs. 3,24,58,713)**

4. The above difference will further increase in the FY15-16 because the tariff from 1 April 2014 to October 11, 2014 was Rs. 5.80 per unit (plus ED) and from 12 October 2014 onwards, it has been revised to Rs. 6.40 per unit (plus ED and regulatory charges). Further, as per the recent intimation received, the electricity charges have been increased again. This is expected to enhance charges from Rs. 7.0 per unit to approximately Rs. 7.30 per unit.
5. Analysis of the connected load in all the halls at various locations (i.e. residential rooms, toilets cum bath, corridors, stairs, common room, landscaping light, admin block, mess, canteen, sports activity, badminton court & basketball court, etc.) has revealed that the average load for just three segments- residential rooms, toilets cum bath, and mess is about 85% of the total connected load in halls.
6. Subsidizing the electricity charges for halls is now untenable and cannot continue further. In principle, the institute may absorb up to a maximum of 10% of electricity charges which may be counted towards common areas such as corridors, stairs, common room, etc. and for encouraging community participation. The quantum of absorption by the institute may also be reviewed later. The remaining 90% of the electricity charges in halls need to be borne by hall residents.

The fourth meeting of the committee was held on 06.07.2015. Chairman COW, PIC (Electricals) and Mr. J. Sarangi could not attend the meeting. In this meeting, DOIP presented a revised note for feedback from members. On the basis of detailed discussions in aforementioned meetings, it clearly emerged that the realization of electricity charges from hall residents needs to be urgently revised and implemented at the earliest. The following two models for realization of electricity charges were discussed:

**a) Model-I:**

As per this model, the electricity expenses may be borne equally by students across the halls. This model implies that after accounting for recovery from shops and canteens, coolers and 10% absorption by the Institute, the remaining hall electricity charges will be distributed equally amongst all halls residents. Recovery of the same may be on semester basis and labeled as electricity charges. This may be realized from students at the time of registration. The algorithm for implementation of this model is given in Table 2.

**b) Model-II:**

Detailed analysis of electricity consumption revealed that there was wide variation in electricity consumption amongst halls. Hence, it was suggested that the realization of electricity bills from the hall may be realized in a hall wise manner. For this, the electricity charges can be distributed equally for all residents of a hall. These charges can be realized from residents of that hall just like their monthly mess bill. This arrangement will encourage students of a given hall to implement energy saving measures in their hall. A typical recovery calculation for implementation of this model is given in Table 3.

**Table 2: Model-I for recovery of electricity charges from students in a hall**

Sr. no.	Calculations for proposed electricity charges (Semester basis)	Charges	Units	Unit charges/Factor	Amount (Rs.)
1	Energy charge in hall (Semester basis)		A	B	$C = A * B$
2	Fixed charges for hall ( $\alpha\%$ of Semester charges C; $\alpha = 15\%$ )	C		$\alpha\%$	$C * \alpha\%$
3	<b>Total (D = 1 + 2)</b>				D
4	Electricity duty ( $\beta\%$ of D, $\beta = 7.5\%$ )	D		$\beta\%$	$D * \beta\%$
5	Regulatory charges ( $\gamma\%$ of D, $\gamma = 2.3\%$ )	D		$\gamma\%$	$D * \gamma\%$
6	Protective load charges ( $\delta\%$ of E, $E = X * Y * Z$ ; $\delta = 15\%$ )	E		$\delta\%$	$E * \delta\%$
7	<b>TOTAL (F = 3 + 4 + 5 + 6)</b>				F
8	<b>Recovery</b>				
9	Shops and canteens				G
10	Recovery of electricity related charges from other sources (e.g. coolers, hall office, penalty/fine from misuse, guest rooms, etc.)				H
11	Remaining amount to be paid for halls ( $I = 7 - 9 - 10$ )				I
12	Common area and contribution to community charges, ( $\theta\%$ of I; $\theta = 10\%$ )	I		$\theta\%$	$I * \theta\%$
13	Net amount to be recovered from students ( $J = 11 - 12$ )				J
14	Realization per-semester per student (assume N students)				J/N
15	Semester-wise per student electricity charges (rounded to nearest hundred)				Round (J/N)

**Table 3: Model-II for recovery of electricity charges from students in hall**

Sr. no.	Calculations for electricity charges (hall-wise, monthly basis)	Amount (Rs.)	Units	Unit charges/Factor	Amount Rs.
1.	Energy charge in hall (Monthly basis)		A	B	$C = A * B$
2.	Fixed charges for hall ( $\alpha\%$ of monthly charges C; $\alpha = 15\%$ )	C		$\alpha\%$	$C * \alpha\%$
3.	<b>Total (1 + 2)</b>				D
4.	Electricity duty ( $\beta\%$ of D, $\beta = 7.5\%$ )	D		$\beta\%$	$D * \beta\%$
5.	Regulatory charges ( $\gamma\%$ of D, $\gamma = 2.3\%$ )	D		$\gamma\%$	$D * \gamma\%$
6.	Protective load charges ( $\delta\%$ of E, $E = X * Y * 1$ ; $\delta = 15\%$ )	E		$\delta\%$	$E * \delta\%$
7.	<b>TOTAL (F = 3 + 4 + 5 + 6)</b>				F
8.	<b>Recovery</b>				
9.	Shops and canteens				G
10.	Recovery of electricity related charges from other sources (e.g. coolers, hall office, penalty/fine from misuse, guest rooms, etc.)				H
11.	Remaining amount to be paid by hall ( $I = 7 - 9 - 10$ )				I
12.	Common area and contribution to community charges, ( $\theta\%$ of I; $\theta = 10\%$ )	I		$\theta\%$	$I * \theta\%$
13.	Net amount to be recovered from students ( $J = 11 - 12$ )	J			J
14.	Monthly charges per student (assume K students in the hall)				J/K

Protective load E (Load in KW (X) \* Charge (Y) \* Months (Z) =  $X*Y*Z$ , Annual charges to get fixed charges for hall (Current values of variables:  $\alpha = 0.150$ ,  $\beta = 0.075$ ,  $\gamma = 0.023$ ,  $\delta = 0.150$ ,  $\theta = 0.100$ ,  $X = 9500$ ,  $Y = 240$ ,  $Z = \text{no. of months}$ )

- Fixed charges for hall ( $\alpha\%$  of monthly/semester charges C;  $\alpha$  = average 15%). This number is variable throughout the year and amongst halls. Generally it varies from about 13-20%.
- $E = (\text{Load in KW} * \text{charge per KW} * \text{no. of months})$ . For monthly charges, no. of months = 1.
- For computation of electricity charges, prevailing values of variables such as  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$ ,  $\theta$ , E, etc. will be used.
- At present, the common area charges are taken as 10%, which can be reviewed later.

The IWD will provide monthly information on (i) Units consumed by each hall (ii) Units consumed by Canteens/shops and the corresponding charges. The hall will arrange consumption information on coolers, hall office (office of Warden/Hall office staff), guest house, penalty/fine on misuse, etc. from that hall. This information will be used by the hall to compute electricity charges to be recovered from hall residents for a given month. Generally, no rebate (like mess rebate when student is on leave) will be applicable for hall residents for payment of electricity charges. However, this issue will be handled at the hall level.

### Recommendations:

The following policy is presented for recovery of electricity charges from students residing in halls:

- All efforts should be made to minimize electricity consumption. Use of energy efficient devices and appliances should be encouraged. Community awareness and participation in energy saving methods should be encouraged.
- The institute may absorb up to 10% of electricity charges which may be counted towards common areas and for encouraging community participation. The quantum of absorption may also be reviewed later.
- Realization of electricity charges will be **dynamic** in nature which will get automatically revised on consumption basis (which is linked to number of units, all prevailing charges including duties, fixed charges, protective load charges, any other electricity related charges levied by the government and recovery from various sources).
- After detailed discussion, the committee recommends **Model-II** for implementation. This model may be implemented from 2015-16 II Semester.
- Following procedure is proposed for billing and collection of electricity charges:
  - IWD will prepare monthly electricity consumption information for hall, hall Office (office of Warden/Hall office staff), Canteen and shops in that hall and pass on the same to the hall office.
  - Hall office will pay the electricity bill corresponding to the **Net Electricity charges** through a single cheque to the Accounts Section within **seven days** of receiving the bill from the IWD. At the time of settling the bill with the Accounts section, the hall office should produce the original copy of the electricity bill duly signed by the Warden of the hall. The Accounts section will stamp the original bill and hand over receipt to the hall office. A sample format for raising the electricity bill by the IWD to the hall office is given in Table 4.
  - Collection of electricity charges from students is hall's responsibility. Hall office will also recover all other electricity consumption charges for hall canteen and shops (based on the bill raised by IWD), coolers, guest house charges, any penalty from misuse of electricity, etc. and maintain this information in the office.
- As a consequence of the above proposal, the electricity charges (as described at Sr. no. (2) e.g. fan and water charges, supplementary electricity charges, electricity charges under MEC) will be dropped. However, the hall residents will be charged @ Rs. 5/- per month per student as water charges.

**Table 4: Sample Format for raising the electricity charges by IWD to Hall Office**

**Indian Institute of Technology Kanpur**

**Institute Works Department**

Date: \_\_\_\_\_

Hall no.: \_\_\_\_\_

Month: \_\_\_\_\_

Sr. no.	Details	Units	Amount Rs.
1.	Units consumed by the hall	A1	
2.	Units consumed by shops and canteens in the hall and the amount (bills enclosed)	A2	A3
3.	Units consumed by the hall office <b>(For Information only)</b>	A4	
4.	Units to be paid for by the hall <b>(A = A1 – A2)</b>	A	
5.	Electricity rate per unit	B	
6.	Electricity charges		C = A * B
7.	Fixed charges for the hall <b>(α% of monthly charges C)</b>		C * α%
8.	<b>Total (6 + 7)</b>		D
9.	Electricity duty <b>(β% of D)</b>		D * β%
10.	Regulatory charges <b>(γ % of D)</b>		D * γ%
11.	Protective load charges <b>(δ% of E, E = X * Y x 1)</b>		E * δ%
12.	<b>TOTAL (F = 8 + 9 + 10 + 11)</b>		F
13.	Contribution by Institute to common area/community charges <b>(θ% of F)</b>		F * θ%
14.	Electricity charges to be paid by the hall <b>(J = 12 – 13)</b>		J
15.	Total Electricity charges to be paid by the Hall <b>(K = J + A3)</b>		K

Prevailing values of α =        %, β =        %, γ =        %, δ =        %, θ =        %, E = \_\_\_\_\_ \* \_\_\_\_\_ x 1 = \_\_\_\_\_

**Enclosures**

(1) Separate detailed bills for electricity consumption for Canteen and Shops

(Signature)

Authorized signatory from IWD (AE)

**Copy to:** (i) Accounts section (ii) Estate Office

Cheque to be prepared for amount Rs. \_\_\_\_\_ in favour of **Director, IIT Kanpur** or **Registrar, IIT Kanpur**