

## Observation on Issue # EE 20 – A call for better statistical data

In the first round to this issue, we got response from 7 participants. After review, 4 papers have been selected, which are as follows:

1. Mr. R.V. Nesari have provided data with references on Annual electricity consumption for agricultural pump sets. He had substantiated the annual sales figures of Air conditioning, refrigerator, CFL, motor and annual electricity consumption figures with references. He had also provided data on ceiling fans including organisation of the industry. His efforts and references need to be commended.
2. Mr. Y. S. Sachidananda has provided data with references on Annual electricity consumption for agricultural pump sets. He had also provided data on Industrial consumption including captive generation. He had also worked out electricity balance and provided data on electricity consumption. He had also worked out systematically energy consumptions at the end use and provided data on consumption. His efforts need to be commended.
3. Mr. S. K. Sood had pointed out that the efficiency improvement only through efficient agricultural pump set would not exceed 15 to 20 % and as well as the operating hours would be substantially low at 600 to 1200 hours. He had also given figures of 30 million electric Geysers and consumption of 29,000 GWh. This data is purely from his experience.
4. Mr. G. Subramanyam had done excellent analysis on agricultural pump set at the State level with references. He had suggested that the power consumption per hour is 6.5 kWh, @1800 hours operation in a year 20 -25% improvement in efficiency improvement in pumps alone and agricultural consumption at 184,172 GWh. There is obviously a dispute and inconsistency concerning electricity consumption in agricultural pump sets. Mr. G. Subramanyam's figures differ substantially from the official and other figures. However they are based on a limited detailed field survey, while official figures are calculated and estimated from data submitted by SEB to CEA.

This all proves that power consumption of a very large group of power users (12.5 million irrigation pump sets) is not very well known.

Based on the efforts and veracity of data it is proposed to award the following:

Mr. R. V. Nesari	Rs. 10,000/-
Mr. Y. S. Sachidananda	Rs. 6,000/-
Mr. S.K. Sood	Rs. 2,000/-
Mr. G. Subramanyam	Rs. 2,000/-

Based on the inputs provided the table is updated and the same is inserted in bold. We therefore once again ask our readers to improve on this table and start the second round.

Keep the good work and further improve over it again.

Congratulations to all the winners! Keep up the good work.

## STANDARDS & LABELLING PROGRAMME – ELECTRICITY SAVING POTENTIAL PRIORITY

Equipment (1)	Annual electricity consumption of equipment GWh <sup>1</sup> (2)	Annual sales of equipment in 2002-03 millions (3)	Annual electricity consumption of new stock GWh <sup>2</sup> (4)	Electricity consumption of new stock to total electricity % <sup>3</sup> (5)	Estimated improvement in efficiency of new stock % <sup>4</sup> (6)	Annual electricity savings GWh <sup>5</sup> (7)	Organised sector <sup>6</sup> % (8)	Informal sector <sup>7</sup> % (9)
Industrial motors	<b>99,317<sup>8</sup></b>	<b>4,350 MW</b>	24,618	<b>6.3</b>	5	<b>1,231</b>	98	2
Fluorescent tube lights	?	190	11,096	<b>2.8</b>	10	<b>1,110</b>	90	10
Agricultural pump sets <sup>9</sup>	<b>84,486</b>	0.8	6,000	<b>1.6</b>	<b>15</b>	<b>900</b>	55	45
Refrigerators	25,550	3.4	2,172	<b>0.6</b>	32	695	100	0
Air conditioners	12,113	0.8	2,100	<b>0.5</b>	21	441	85	15
Ceiling & table fans	?	12.5	1,313	<b>0.3</b>	21	276	<b>6</b>	<b>94</b>
Industrial pumps <sup>10</sup>	18,906	<b>8%</b> <sup>11</sup>	3,781	<b>1.0</b>	7	265	90	10
Ballasts	?	30	720	<b>0.2</b>	31	223	30	70
Industrial fans	18,167	15%	2,725	<b>0.7</b>	8	218	85	15
Distribution transformers	12,709	16,600 MVA	843	<b>0.2</b>	24	202	50	50
Geysers (hot water)	?	0.8	864	0.2	17	147	?	?
CFLs (60 W incandescent lamp replacements)	?	<b>1.94</b>	<b>57</b>	<b>0.01</b>	80	<b>40.8</b>	?	?
Compressors	13,137	12%	1,576	<b>0.4</b>	5	79	95	5
<b>Total</b>			<b>57,957</b>			<b>5,845</b>		

<sup>1</sup> Energy Sales was 390,168 GWh in 2002-03

<sup>2</sup> Yearly energy consumption of new stock on business as usual basis including replacement.

<sup>3</sup> Percentage contribution of new stock to total energy sales of 390,168 GWh in 2002-03

<sup>4</sup> Estimated improvement potential in % over old stock by moderately efficient products.

<sup>5</sup> Estimated annual savings if all new stocks would have been more efficient by the % indicated in column 6.

<sup>6</sup> Percentage of equipment manufacturers in the organized sector, meaning large and medium enterprises

<sup>7</sup> Informal Sector refers to equipment manufactured in small scale sector, unorganized assembly sector such as kit pump manufacturers in agriculture pump sets.

<sup>8</sup> Industrial motive load had been taken at 60% of industrial consumption (utility+ captive) @ 165,528 GWh.

<sup>9</sup> Sample calculation for agricultural pump sets is given below. Similar estimates were made for other equipment.

Column 4 = Annual electricity consumption of new stock = column 3 \* 1500 hours per year \* average 5 kWh consumption per hour = 6000 GWh

Column 5 = Electricity consumption of new stock to total electricity = Column 4/ 562572 \*100 = 1.1%

Column 6= Estimated improvement in efficiency of new stock = 5kW pump replaced by 3.1 kW high efficiency pump delivering the same quantity of water = 100\* (5-3.1)/5 = 38%

Column 7 = Annual electricity savings = Column 4\* column 6/100 = 2280 GWh

<sup>10</sup> For industrial pumps, fans and compressors the efficiency improvements are only due to equipment and not motors, to avoid double counting.

<sup>11</sup> Figures in % in these columns represent sales growth rate of the equipment