

7.0 Electrical General services

7.1 Electrical Energy Generated, Purchased & Consumed

a) Elect. Energy Generated from Rly. Stand By Diesel Generating Sets with cost.

| | | 2011-12 | 2012-13 |
|------|---------------------------------------|---------|---------|
| I) | No. of units generated | 291849 | 283740 |
| II) | Total cost of units generated in Rs. | 6338553 | 6747376 |
| III) | Average cost of unit generated in Rs. | 21.72 | 23.78 |

(b) Fuel consumed for Standby Diesel Generating Sets

| | | 2011-12 | 2012-13 |
|------|--|---------|---------|
| I) | Diesel oil consumed in ltrs. | 107657 | 99604 |
| II) | Total cost of Diesel Oil including freight in Rs. | 4165320 | 4414070 |
| III) | Average cost per Kiloliter of oil incl. Freight in Rs. | 38.69 | 44.32 |
| IV) | No. of units generated(KWH) | 291849 | 283740 |
| V) | Average Diesel consumption/Unit KWH generated | 0.36 | 0.35 |
| VI) | Average diesel oil cost per unit(KWH) | 14.27 | 15.55 |

(c) Electrical Energy purchased from outside sources.

| | | 2011-12 | 2012-13 |
|------|--|---------|---------|
| I) | Total Energy purchased for General Services in Million KWH | 115.49 | 110.86 |
| II) | Total amount paid for energy purchased in Rs.(lakhs) | 6443.70 | 7385.60 |
| iii) | Average cost per unit purchased in Rs. | 5.58 | 6.69 |

(d) Electrical Energy consumed.

| | | 2011-12 | 2012-13 |
|------|---|---------------|---------------|
| I) | Total no. of units purchased in Million KWH | 115.49 | 110.86 |
| II) | Total no. of units generated in Million KWH | 0.24 | 0.28 |
| III) | Total Electrical energy consumed for Gen. Services | 115.73 | 111.24 |
| IV) | Break up of total consumption | | |
| a) | Major Workshops | 13.65 | 14.53 |
| b) | Service buildings, pumping installations and non rent buildings | 69.24 | 65.44 |
| c) | Staff quarters | 32.84 | 31.27 |

(e) No. of Generating Sets.

| | | No. | Installed capacity in KVA |
|------|-------------------------------------|-----|---------------------------|
| I) | As on 31-3-2012 | 121 | 12755.5 |
| II) | Addition/Subtraction during 2012-13 | 18 | 652.2 |
| III) | As on 31-3-2013 | 139 | 13407.7 |

7.2 Energy Consuming Equipments.

| | | 2011-2012 | 2012-13 |
|------|---|-----------|---------|
| I) | No. of Internal and External lights (Excl. in train) | 507709 | 517629 |
| II) | No. of fans(Excl. in trains) | 131674 | 133768 |
| III) | No. of motor driven machines over divisions | 2117 | 2129 |
| IV) | No. of Air conditioners including plants | 2935 | 3078 |
| V) | No. of refrigerators & cold storages cabinet including those in coaches | 376 | 452 |
| VI) | No. of water coolers | 1168 | 1230 |
| V) | No. of electric pumping sets | 1619 | 1740 |

7.3 Electrification of stations.

| | | |
|------|---|-----|
| I) | Total no. of Stations/halts on Western Railway on 31/3/2012 | 832 |
| II) | No. of Electrified Stations up to 31/03/2012 | 749 |
| III) | No. of Rly. Stations electrified during 2012-2013 | 0 |
| IV) | No. of Rly. Stations electrified as on 31/3/2013 | 749 |

7.4 Electrification of Staff Quarters.

| | Type | | | | | Total |
|--|-------|-------|------|------|-----------|-------|
| | I | II | III | IV | V & Above | |
| No of electrified quarters as on 31-3-12 | 37820 | 14106 | 1258 | 1218 | 382 | 54244 |
| No. of Qtrs. electrified during 2012-13 | -1755 | -117 | 105 | 34 | -50 | -1243 |
| No of electrified quarters as on 31-3-12 | 36065 | 13989 | 1363 | 1252 | 332 | 53001 |

7.5 Water Coolers

| | No. of W/coolers in service on 31/3/2012 | No. of W/coolers add/rem during 2012-13 | No. of W/coolers in service on 31/3/2013 |
|--------------------------|--|---|--|
| Workshop | 72 | 1 | 73 |
| Running shed | 35 | -1 | 34 |
| Loco shed | 34 | 1 | 35 |
| Running rooms | 83 | 1 | 84 |
| General office | 319 | 8 | 327 |
| Hospital/health unit | 61 | 0 | 61 |
| Rest house | 40 | -1 | 39 |
| Canteens | 32 | 0 | 32 |
| Others | 53 | 0 | 53 |
| On stations | | | |
| Master water coolers | 10 | 4 | 14 |
| Single unit water cooler | 429 | 49 | 478 |
| Total | 1168 | 68 | 1230 |

7.6 Air conditioning of offices, hospitals, administrative buildings (air conditioning plants and window AC units).

| As on 31/3/2012 | Addition/ subtraction during the year 2012-13 | As on 31/3/2013 |
|-----------------|---|-----------------|
| 2117 | 12 | 2129 |

7.7 Battery Charging sets installed at stations and workshops.

| As on 31/3/2012 | Addition/ subtraction during the year 2012-13 | As on 31/3/2013 |
|-----------------|---|-----------------|
| 436 | 13 | 449 |

7.8 Flood light masts.

| As on 31/3/2012 | Addition/ subtraction during the year 2012-13 | As on 31/3/2013 |
|-----------------|---|-----------------|
| 365 | 18 | 347 |

7.9 Electric motors in service at important Mechanical workshops

| Sr. No. | Workshop | Total as on 31/3/12 | | Add/sub during 2012-13 | | Total as on 31/3/2013 | |
|---------|--------------------|---------------------|----------------|------------------------|----------------|-----------------------|----------------|
| | | No. | Capacity in KW | No. | Capacity in KW | No. | Capacity in KW |
| 1 | Parel | 803 | 8103 | 0 | 0 | 803 | 8103 |
| 2 | Dahod | 714 | 5822.707 | 0 | 0 | 714 | 5822.707 |
| 3 | Pratapnagar | 134 | 1884 | 0 | 0 | 134 | 1884 |
| 4 | Sig. & Engg WS SBI | 619 | 3926.23 | 0 | 0 | 619 | 3926.23 |
| 5 | BVP WS | 162 | 936 | 0 | 0 | 162 | 936 |
| 6 | JND WS | 46 | 411 | 0 | 0 | 46 | 411 |

7.10 HT & LT Supply points.

| | As on 31/3/2012 | Addition/ subtraction during the year 2012-13 | As on 31/3/2013 |
|------------------|-----------------|---|-----------------|
| HT Supply Points | 68 | 0 | 68 |
| LT Supply points | 3191 | 406 | 3597 |

7.11 HT & LT Track crossings.

| | |
|---|------|
| No. of track crossing as on 31/3/2012 | 2823 |
| No. of track crossing commissioned during 2012-2013 | 101 |
| No. of track crossing as on 31/3/2013 | 2934 |

7.12 Energy Conservation:

Various measures have been taken on Western Railway for energy conservation on general electrical services as detailed below:

1) Use of Non-Conventional energy sources:

a. Use of solar water heaters:

The need of hot water supply for base kitchens, hospital, hostels, canteens, running rooms, etc. is now being managed with solar water heaters to the extent possible. 123 Nos. of solar water heaters are in service as on 31-3-2013.

b. Use of solar energy for electrification:

During the year 2012-13, 14 L.C. gates have been electrified on solar energy and 4 nos. have been electrified on Hybrid (Wind + Solar) system. As on 31/03/2013, 131 Nos. L.C gates are electrified on Solar energy and 9 nos. have been electrified on Hybrid (Wind + Solar) system.

2) Provision of capacitors at substation and load centres.

1752 nos. of capacitors banks with 13434 KVAR capacities, are in service at various substations and load centres (in workshops) on Western Railway as on 31-3-2013, which has considerably helped in improving the power factor.

3) Use of T-5 energy efficient tube light fittings:

Replacement of conventional T-12/T-8, 40/36W tube light fittings with energy efficient T-5, 28W fittings is being carried out on Western Railway. 44861 nos. of T-5 fittings have been provided on Western Railway till 31.3.2013.

4) Use of CFL lamps in place of ICL:

Replacement of incandescent 100/60/40W lamps with energy efficient 11/20W Compact fluorescent lamps is being carried out on Western Railway. 30405 nos. of CFL lamps have been provided on Western Railway till 31.3.2013

5) Provision of electronic/photo electric timers:

Electric timer/photo electric time switches are being provided in the feeding circuits of circulating areas, tower lights in yards and street lights etc, for timely automatic switching 'ON' or 'OFF' the light with consequent avoidance of wastage in energy 576 such time- switches are in service.

6) Utilisation of partial lighting in station platforms:

At all electrified stations arrangements for 30% and 100% lighting for all the platforms have been made and only 30% lighting used during non-train timings with consequent savings in energy consumptions.