

# **NATIONAL ENERGY CONSERVATION AWARD - 2016 (Railway Workshops)**

## **Award for Excellence in Energy Conservation and Management**

### **OBJECTIVE**

To give national recognition to the selected Railway Workshops units who have made systematic and serious attempts for efficient utilization and conservation of energy during the years 2014-15 and 2015-16.

### **THE AWARDS**

First and second prizes are proposed to be given in each sub-sector in the form of a Silver Plaque with appropriate citation on such awards. The third prize will be in the form of "Certificate of Merit". The performance of Railway Workshops Units would be judged through the questionnaire (format enclosed) which would be evaluated by an Award Committee.

### **ELIGIBILITY**

The scheme is open to all Railway Workshops units

### **Criteria for Judging Merit**

- a) Evaluation of the nominations will be done in two phases, based on the Evaluation and Weight age criteria as given in Annexure-A.
- b) In the first phase, evaluation will be made on the basis of the preliminary information, as required in Part - I and the best 10% of the participating Railway Workshops Units (subject to minimum of 4 units) would be short listed.
- c) These shortlisted Railway Workshops Units would then have to submit the details of the savings made and the projects implemented, as required in Part-II within 8 days from the date of intimation by BEE.
- d) **The members of the Award Committee or their nominees may visit participating units for verification of data supplied, if felt necessary and it will be obligatory on the part of the participating Railway Workshops units to provide necessary co-operation. The units have to bear all the expenditure in this connection.**
- e) The Committee's decision would be final and no appeal would be entertained.

### **Instructions for Filling up the 'Award Questionnaire'**

- a) The data required for the questionnaire pertains to the accounting years 2014-15, 2015-16. If calendar year is the accounting year, then data should pertain to the years 2014 and 2015
- b) **The enclosed questionnaire is only a format and thus information sought should be separately computer printed or neatly typed or to be downloaded from Website: [www.beeindia.gov.in](http://www.beeindia.gov.in)**
- c) **The answers to the questions should be precise and specific and should be supplied in total compliance with the questionnaire format. The deviations may lead to improper evaluation or the rejection of the nomination.**

- d) The information sought under any head should be highlighted under the same and no separate annexure should be attached.
- e) Each and every query mentioned in the questionnaire needs to be answered. Even, if answer is 'NO' or 'NOT APPLICABLE' the same may be stated, instead of ignoring it.
- f) The questionnaire should be filled in by a competent and responsible person of the Railway Workshops Unit. The duly filled-in questionnaire should be signed by the Chief Executive of the Railway Workshops unit.

**Submission of nomination:**

Filled in questionnaire should reach the office of

**Director General  
Bureau of Energy Efficiency  
4<sup>th</sup> Floor, Sewa Bhawan  
R. K. Puram, New Delhi-110 066  
Tel. No.: 011-2617 9699 (5 lines)  
Fax No.: 011- 2617 8328, 2617 8352**

Latest by **28<sup>th</sup> September, 2016**

**Note:**

1. The current year's Questionnaire is a revised version and contains some changes at appropriate places. Therefore, please do not use the last year's Questionnaire while submitting your application for consideration of Award
2. You may download the Questionnaire from [www.beeindia.gov.in](http://www.beeindia.gov.in)
3. The filled in application can also be e-mailed at [ecaward2016@beenet.in](mailto:ecaward2016@beenet.in), [ecaward16@gmail.com](mailto:ecaward16@gmail.com) and [ecaward2016@rediffmail.com](mailto:ecaward2016@rediffmail.com) followed by submission of duly signed hard copy by post/courier at BEE office address.

**NATIONAL ENERGY CONSERVATION AWARD - 2016****(Railway Workshops )****"Award Questionnaire"**

|             |   |                                   |                                       |                                      |   |
|-------------|---|-----------------------------------|---------------------------------------|--------------------------------------|---|
| 1           | Name of the Railway Workshops Unit  |                                   |                                       |                                      |   |
| 2 (a)       | Complete address of Unit's location<br>(including Chief Executive's name & designation)<br>with mobile,telephone,fax nos. & e-mail<br>(All details to be submitted)   |                                   |                                       |                                      |   |
| 2 (b)       | Year of Establishment   |                                   |                                       |                                      |   |
| 3 (a)       | Name, designation, address, mobile, telephone,fax nos.<br>& e-mail of responsible person who could be contacted in<br>connection with the application for Award (All details to be<br>submitted)  |                                   |                                       |                                      |   |
| 3 (b)       | Name, designation, address, mobile, telephone,fax nos.<br>& e-mail of Certified Energy Manager who has been<br>designated as Energy Manager of the plant. Whether ISO<br>50001 Energy Management System Cretified (Yes/No).<br>In case Yes, pl indicate certification date and attached a<br>copy of certificate  |                                   |                                       |                                      |   |
| 4           | <b>Production and capacity utilization details</b>  |                                   |                                       |                                      |   |
| <b>Year</b> | <b>Products manufactured<br/>(Please list all the major products)</b>   | <b>Units<br/>(Please specify)</b> | <b>Installed<br/>Capacity<br/>(a)</b> | <b>Actual<br/>Production<br/>(b)</b> | <b>% Capacity<br/>Utilisation<br/>(b/a) x 100</b> |
| 2014-15     |   |                                   |                                       |                                      |   |
| 2015-16     |   |                                   |                                       |                                      |   |
| 5           | <b>Energy Consumption details</b>   | <b>2014-15</b>                    |                                       | <b>2015-16</b>                       |   |
| 5.1         | <b>Electricity Consumption Units (Lakhs kWh/ year)</b>  |                                   |                                       |                                      |   |
| (A)         | <b>Purchased Electricity (Lakhs kWh/ year)</b>  |                                   |                                       |                                      |   |
| (B)         | <b>Own Generation (Lakhs kWh/ year)</b>   |                                   |                                       |                                      |   |
| a)          | <b>Through DG sets (Lakhs kWh/ year)</b>  |                                   |                                       |                                      |   |
| b)          | <b>Through Steam and/or gas turbine route<br/>(please specify)(Lakhs kWh/ year)</b>   |                                   |                                       |                                      |   |
| c)          | <b>Electricity supplied to the grid/ others (specify)<br/>(Lakhs kWh/ year)</b>   |                                   |                                       |                                      |   |
| (C)         | <b>Own generated electricity consumption within the<br/>plant (Lakhs kWh/ year)</b><br>[a + b – c]  |                                   |                                       |                                      |   |
| (D)         | <b>Total consumption of electricity<br/>(purchased + own generated electricity consumption<br/>within the plant)<br/>(Lakhs kWh/ year)</b><br>(A + C)   |                                   |                                       |                                      |   |
| (E)         | <b>Total Electricity Consumption in MTOE(Metric tonne<br/>of oil equivalent)</b><br>[(5.1(D)*860)/100]  |                                   |                                       |                                      |   |
| 5.2         | <b>Fuel Consumption for process heating</b>   | <b>2014-15</b>                    |                                       | <b>2015-16</b>                       |   |
|             | <p>Note:1. It should not include fuel used for self generation of electricity and as a Raw Material and/or industrial Units using fuel for Cogeneration Plant</p> <p>2. For computing fuel consumption for process heating in case of steam being used from a cogeneration plant , the following relation may be used: Fuel consumption for process heating, kg/year= (steam quantity used for process heating, kg/year(enthalpy of steam, kcal/kg - boiler feed water enthalpy, kcal/kg)) / (Boiler efficiency xGCV of fuel, kcal/kg). For different steam pressure extractions, the above relation to be repeated</p> |                                   |                                       |                                      |   |
| (A)         | <b>Coal</b>   |                                   |                                       |                                      |   |
| (i)         | Quantity used for process heating (tonnes/ year)  |                                   |                                       |                                      |   |
| (ii)        | Weighted Av. Gross Calorific value (GCV) (kCal/ kg)   |                                   |                                       |                                      |   |
| (iii)       | Total heat value of coal used ( <b>Million kCal/year</b> )<br>[A (i) x A (ii)]/1000   |                                   |                                       |                                      |   |
| (B)         | <b>Other purchased solid fuels (pl. specify)provide data on similar lines as indicated under 'Coal'</b>   |                                   |                                       |                                      |   |
| (C)         | <b>Furnace Oil (FO)</b>   | <b>2014-2015</b>                  |                                       | <b>2015-2016</b>                     |   |
| (i)         | Quantity used for process heating (kL/ year)  |                                   |                                       |                                      |   |
| (ii)        | Av. GCV (kCal/ kg)  |                                   |                                       |                                      |   |
| (iii)       | Av. Heat value (kCal/ litre)<br>0.95 x C(ii)  |                                   |                                       |                                      |   |
| (iv)        | Total heat value of furnace oil (Million kCal/year)<br>[C(i) x C(iii)]/1000   |                                   |                                       |                                      |   |

|             |   |   |  |  |                            |               |
|-------------|---|---|--|--|----------------------------|---------------|
| (D)         | Diesel/ Other oils (Purchased) (if any)Provide data on similar lines as indicated under ‘Furnace Oil’   |   |  |  |                            |               |
| (E)         | Natural Gas   | 2014-15   | 2015-16  |  |                            |               |
| (i)         | Quantity used for process heating (Lakh m <sup>3</sup> / year)  |   |  |  |                            |               |
| (ii)        | Av. GCV (k Cal/ m <sup>3</sup> )  |   |  |  |                            |               |
| (iii)       | Total heat value (Million kCal/year) [E(i) x E(ii)]/10  |   |  |  |                            |               |
| (F)         | Any other purchased gas (Say LPG etc.)  |   |  |  |                            |               |
| (G)         | Gas generated as by product/ waste in the plant and used as fuel  |   |  |  |                            |               |
| (i)         | Name_____   |   |  |  |                            |               |
| (ii)        | Quantity (Lakh m <sup>3</sup> / year)   |   |  |  |                            |               |
| (iii)       | Av. GCV (kCal/ m <sup>3</sup> )   |   |  |  |                            |               |
| (iv)        | Total heat value (Million kCal/year) [G(ii) x G(iii)]/10  |   |  |  |                            |               |
| (H)         | Solid waste generated in the plant and used as fuel   |   |  |  |                            |               |
| (i)         | Name_____   |   |  |  |                            |               |
| (ii)        | Quantity (tonnes/ year)   |   |  |  |                            |               |
| (iii)       | Weighted Av. Gross Calorific value (GCV) (kCal/ kg)   |   |  |  |                            |               |
| (iv)        | Total heat value used (Million kCal/year) [H(ii) x H(iii)]/1000   |   |  |  |                            |               |
| (I)         | Liquid effluent / waste generated in the plant and used as fuel   |   |  |  |                            |               |
| (i)         | Name_____   |   |  |  |                            |               |
| (ii)        | Quantity (kL/ year)   |   |  |  |                            |               |
| (iii)       | Av. GCV (kCal/ kg)  |   |  |  |                            |               |
| (iv)        | Av. Heat value (kCal/ litre) {Sp. gravity x I(iii)}   |   |  |  |                            |               |
| (v)         | Total heat value ,MkCal/year (Million kCal/year) [I(ii) x I(iv)]/1000   |   |  |  |                            |               |
| 6           | Total thermal energy consumption in Million kCal/ year  | 2014-15   | 2015 - 16  |  |                            |               |
| (a)         | 5.2[ A (iii) + C (iv) +E (iii)+ G (iv)+ H(iv)+ I (v) ... etc.]  |   |  |  |                            |               |
| (b)         | Total Thermal energy consumption in MTOE per year [6(a)/10]   |   |  |  |                            |               |
| 7           | Achievement of energy savings from implementation of new Energy Efficiency Projects during the year 2015-16 (The energy savings achieved shall only from the projects which have been implemented during 2015-16) |   |  |  |                            |               |
|             | Year  | Annual Electricity Saving (Lakh kWh)  | Annual Fuel Savings  |  |                            |               |
|             |   |   | Coal (Metric Tonnes)   | FO/LSHS/HSD/RFO (kL)   | Gas (Lakh m <sup>3</sup> ) | Total (MkCal) |
| (a)         | 2015- 16  |   |  |  |                            |               |
|             | Year  | Annual Energy Savings (Rs. Lakhs)   |  | One time investment (Rs. Lakhs)  |                            |               |
| (b)         | 2015-16   |   |  |  |                            |               |
| 8           | Energy consumption per unit production of 'major energy consuming product(s)' and accounting of energy consumption  |   |  |  |                            |               |
| Year        | Specific Electrical Energy Consumption In kWh/tonne<br>[Total Electrical Energy Consumption in kWh/Actual Production in tonne] (i)  | Specific Thermal Energy Consumption In Million kCal/tonne<br>[Total Thermal Energy Consumption in Million kcal/Actual Production in tonne] (ii) | Specific Electrical Energy Consumption Reduction over 2014-15<br>[8(a) (i) - 8(b) (i)]/ 8(a) (i) | Specific Thermal Energy Consumption Reduction over 2014-15<br>[8(a) (ii) - 8(b) (ii)]/ 8(a) (ii) |                            |               |
| (a) 2014-15 |   |   | -  | -  |                            |               |
| (b) 2015-16 |   |   |  |  |                            |               |

MTOE=Metric Tonne of Oil Equivalent  
1 kWh = 860 kCal  
1 MTOE =10<sup>7</sup> kCal  
1 Mkcal = 10<sup>6</sup> kCal

## 9 Summary

Please summarize the information and data provided in this questionnaire as per the format given below:

### NATIONAL ENERGY CONSERVATION AWARD –2016 SUMMARY SHEET

Unit Name ..... Sub-Sector .....

| a. Specific Energy Consumption (SEC) Reduction during the period 2014 - 2016<br>(S.No. 8) |  |   |   |  |  |  |
|---|--|---|---|--|--|--|
| Year  | Product                                    | Specific Electrical Energy Consumption kWh/ tonne       | % Reduction over 2014 - 2015                      | Specific Thermal Energy Consumption Million kCal/ tonne      | % Reduction over 2014 - 2015   |  |
| 2014 - 2015   |  |   | --  |  | --   |  |
| 2015 - 2016   |  |   |   |  |  |  |
|   |  |   |   |  |  |  |
| b. Absolute Savings and its percentage over previous year energy consumption              |  |   |   |  |  |  |
|   | Elect. Saving (Lakh kWh) in 2015-16<br>(i) | Thermal (Fuel) Saving (Million kCal) in 2015-16<br>(ii) | Elect.Consumption ( lakh kWh) in 2014-15<br>(iii) | Thermal (Fuel) Consumption (Million kCal) in 2014-15<br>(iv) | % Elect.Saving (savings achieved/ electricity consumption of previous year)<br>(i) / (iii) x 100 | % Thermal (Fuel) Saving (savings achieved/ thermal energy consumption of previous year)<br>(ii)/ ( iv) x 100 |
|   |  |   |   |  |  |  |

I, ..... Solemnly declare that to the best of my knowledge the information given in the Award Questionnaire (National Energy Conservation Award-2016) thereto is correct and complete.

(Signature of the Chief Executive)

Name & designation of the

Chief Executive.....

Mobile No. ....

Date:

Place:

Organization Seal .....

**PART-II (To be submitted after intimation by BEE)**  
**NATIONAL ENERGY CONSERVATION AWARD - 2016**  
**(Railway Workshops)**  
**"Award Questionnaire"**

|   |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|
| 1 | Name of the Railway Workshops Unit   |  |  |  |  |  |  |  |
| 2 | Complete address of Unit's location<br>(including Chief Executive's name & designation)<br>with mobile, telephone, fax nos. & e-mail   |  |  |  |  |  |  |  |
| 3 | Name, designation, address, mobile, telephone, fax nos.<br>& e-mail of responsible person who could be contacted in<br>connection with the application for Award   |  |  |  |  |  |  |  |
| 4 | Please provide details in the following format on major energy efficiency improvement projects/ measures including in-house R&D efforts, technology innovation, energy substitution and renewable energy systems commissioned during the year 2015-2016 giving energy savings achieved. (please also fill-up the Part II - Annexure for the Energy Conservation Measures implemented during the year 2015-2016). |  |  |  |  |  |  |  |

| Year of Commissioning of the projects | Project description | Achievement of Annual energy savings in 2015-16   |               |            |                             |                           | Investment incurred on the project<br>Rs. (Lakhs) |  |
|---------------------------------------|---------------------|---|---------------|------------|-----------------------------|---------------------------|---|--|
|                                       |                     | Electricity   | Fuels*        |            |                             | Total savings (Rs. Lakhs) |   |  |
|                                       |                     | (Lakh kWh)  | Coal (tonnes) | F.Oil (kL) | Gas (lakh Nm <sup>3</sup> ) | Total fuel (MTOE)         |   |  |
|                                       |                     | (i) Please list the projects title names which were implemented during the year                     |               |            |                             |                           |   |  |
|                                       |                     | (ii) Please mention the achievement of energy saving against each projects in the suitable columns. |               |            |                             |                           |   |  |
| 2015-2016                             |                     |   |               |            |                             |                           |   |  |
|                                       |                     |   |               |            |                             |                           |   |  |
|                                       |                     |   |               |            |                             |                           |   |  |
|                                       |                     |   |               |            |                             |                           |   |  |
|                                       |                     |   |               |            |                             |                           |   |  |
|                                       |                     |   |               |            |                             |                           |   |  |

\* Delete or add fuels as the case may be

I, ..... Solemnly declare that to the best of my knowledge the information given in the Award Questionnaire (National Energy Conservation Award-2016) thereto is correct and complete.

Date:  
Place:

(Signature of the Chief Executive)

Name & designation of the Chief Executive .....  
Mobile No. ....

Organisation Seal .....

**DOCUMENTS ATTACHED:**

1. Copies of Certificate pertaining to statutory requirements such as safety and pollution control for the period 2015-16 are enclosed.
2. A brief write up of the unit (not more than 3-4 pages) along with photographs depicting equipment / locations where energy efficiency activities have been undertaken and a CD containing the same is attached (Sample writeup may be seen at [www.beeindia.gov.in](http://www.beeindia.gov.in))

**Note: The Part-II and Part-II-Annexure to be kept ready and to be dispatched immediately after the intimation sent by BEE**

| <b>NATIONAL ENERGY CONSERVATION AWARD - 2016</b>             |  |                     |
|--|--|---------------------|
| <b>Evaluation and weightage criteria - Railway Workshops</b> |  |                     |
| <b>S. No.</b>  | <b>ITEM</b>  | <b>Max 50 marks</b> |
|  |  |                     |
| <b>1</b>   | <b>ENERGY SAVINGS - Electrical and Thermal</b>                                 |                     |
| i  | Electrical Energy (EE) savings in 2015-16                                      |                     |
|  | % savings in EE over the previous year energy consumption(2014-15)             | (20 marks)          |
| ii   | Thermal energy savings in 2015-16  |                     |
|  | % savings in Thermal Energy over the previous year energy consumption(2014-15) | (20 marks)          |
| <b>2</b>   | <b>SPECIFIC ENERGY ( Elect.&amp;Therm.) CONSUMPTION REDUCTION</b>              |                     |
|  | % SEC reduction during 2015-16 over 2014-15                                    | (8 marks)           |
| <b>3</b>   | <b>ISO 50001 EnMs Certification</b>  | (2 marks)           |

- NOTE:**
1. The above evaluation and weightage criteria is common for all the Railway Workshops Units. If due to some peculiar characteristics of the participating Units, the application of the above criteria may not be feasible. Therefore, Award Committee reserves the right to modify the criteria, which shall be uniformly applied to all the participating Ordnance Factories.
  2. The distribution of weightage between specific electrical and thermal energy consumption reduction may be modified for a particular Unit by the Award Committee
  - 3 The Railway Workshops having negative specific energy consumption reduction shall not be considered.
  - 4 For all the evaluation criteria, if the difference between the first and second Unit in the particular criteria is more than 10% in the percentage score, then the second best Unit will be awarded 10% less marks than that of the first unit and prorate will start from that Unit onward. Similarly, if the difference between second and third Unit is also found to be more than 10% the above methodology will be followed till the completion of the evaluation criteria of all the units
  - 5 If it is found that for a unit, % SEC reduction is exceptionally high mainly due to increased capacity utilization or changes in the manufactured product combination and is affecting the weightage of other Units, Award Committee reserves the right to modify the Evaluation & Weightage criteria for that Unit.

(To be submitted along with Part –II after intimation by BEE)

**Energy Conservation Measure implemented in 2015-16**(To be filled up separately for each Energy Conservation Measure implemented and to be e-mailed at [ecaward2016@beenet.in](mailto:ecaward2016@beenet.in), [ecaward16@gmail.com](mailto:ecaward16@gmail.com) and [ecaward2016@rediffmail.com](mailto:ecaward2016@rediffmail.com))

|   |                      |                  |   |   |       |
|---|----------------------|------------------|---|---|-------|
| ID to be filled by BEE  | Title of the measure |                  | Sector .....                                |   |       |
| Year: 2015-16   |                      |                  | Technology .....                            |   |       |
| Description of the energy conservation measure:                     |                      |                  |   |   |       |
| Picture/ sketch/ drawing before modification<br>(if available)      |                      |                  | Picture/ sketch/ drawing after modification |   |       |
|   |                      |                  |   |   |       |
| Agency that executed the project (with complete address and email): |                      |                  |   |   |       |
| Total investment, Rs.   |                      |                  | Year of implementation:                     |   |       |
| First year energy cost savings, Rs.                                 |                      |                  |   |   |       |
| First year other savings, Rs.                                       |                      |                  |   |   |       |
| On annual basis   | Electricity<br>(kWh) | Coal<br>(Tonnes) | Gas<br>(Nm <sup>3</sup> )                   | Oil<br>(kL)   | Other |
| Energy consumption before   |                      |                  |   |   |       |
| Energy consumption after  |                      |                  |   |   |       |
| Energy tariff, Rs/ kWh/ Tonnes/ Nm <sup>3</sup> / kL ...            |                      |                  |   |   |       |
| Plant/ Establishment complete address:                              |                      |                  |   | We authorise Bureau to use this information for dissemination |       |
| Contact person who could be contacted for more information:         |                      |                  |   |   |       |
|   |                      |                  |   | Signature   |       |
|   |                      |                  |   | Date  |       |

**Note:** Please submit this sheet separately for each Energy Conservation Measure implemented in 2015-16 and a CD containing the above information may be enclosed.