ITEMS FOR EVALUATION OF GRADING OF RAILWAY STATIONS BASED ON THEIR PREPAREDNESS FOR ENERGY CONSERVATION AND ENERGY EFFICIENCY

A. Energy Consumption Monitoring:

A1. Have energy meter(s) been installed by the railway for monitoring of energy consumption of the railway station and its associated areas i.e. circulating area, yard, etc.? Yes/ No

A2. (If the answer to Q.No.1 is ‘Yes’) Is the provision of energy meters such that only the aggregate consumption of station and its associated areas i.e. circulating area, yard, colony, etc. available? (if the provision of meters is such that detailed break up of consumption is available, then the answer has to be ‘Yes’)? Yes/ No

A3. In respect of water supply pumps responsible for supply to the station, are independent energy meters provided? Yes/ No

A4. Is there credible evidence to show that the year-on-year variation in railway station’s energy consumption is analysed? Yes/ No

A5. Is the station is covered with web based /online monitoring system? Yes/ No

B. Avoidance of energy wastage/ leakage:

B1. Is the overhead main water supply reservoir (supplying to the station) free from leakage? Yes/ No

B2. Are the water storage tanks (if any) atop the station buildings free from defective float valve, leakage, etc.? Yes/ No

B3. Are there any leaking coach watering points (positioned opposite to the platform)? Yes/ No

B4. Has the railway provided a means for members of the public visiting the station to inform the electrical/ engineering departments of any wastage of electricity/ water that they might notice? Yes/ No

B5. Have any energy accounting type of measures been taken to keep a watch on energy leakage? Yes/ No

B6. Have solar heat rejecting films been provided in the rooms (where ACs are installed and windows are facing the sun)? Yes/ No

B7. (If air-conditioning/ heating is provided) Are spaces provided with air-conditioning/ heating well prepared infrastructurally for energy conservation (i.e. provision of false ceiling, repair of leaky doors/ windows, etc.). Yes/ No

B8. Is there credible evidence to show that checks are excercised to ensure that staff do not bring unauthorized (energy guzzling devices e.g. incandescent lamp, heater) to the workplace? Yes/ No
B9. Whether the delivery water pipe lines to the station are provided with water meters to analyse the consumption Vs requirement? Yes/No

C. Maintenance activities relevant to energy conservation

C1. Is there a practice of cleaning of luminaires (so that there is no loss of illumination due to deposit of dust and other pollutants on the luminaire)? Yes/No

C2. Is there a laid down system for maintenance attention to fans, pumps, etc.? Yes/No

C3. Is there any system of cleaning the solar panels provided for the UTS/PRS by the station staff? Yes/No

C4. Whether the filters of the Air conditioners are cleaned regularly? Yes/No

C5. Whether the thermostats of all the air conditioners & water coolers are set as comfortable zone, i.e. 25°C & 18°C respectively? Yes/No

D. Use of renewable energy and natural lighting

D1. Does the station have a roof-top solar generating system? Yes/No

D2. (If there is hot water requirement) Is solar based water heating being utilized by the station? Yes/No

D3. (If the availability of grid power supply is poor) Does the station make use of renewable energy (with battery backup) to reduce the fuel consumption of DG sets? Yes/No

D4. Does the station have any other system using any means of renewable energy like wind, etc? Yes/No

D5. To what extent the station makes use of natural day lighting in order to avoid the use of artificial lighting (i.e. use of transparent roof sheets, appropriate positioning of windows, etc.). Please rate on a ten point scale. [Please allocate marks – i.e. minimum 1 and maximum 10]

D6. Does the station is provided with solar street light to extract sun light for Platform lighting? Yes/No

E. Energy conservation through Automation

E1. Has Platform lighting automation been provided at the station? Yes/No

E2. Is pump operation automated? Yes/No

E3. (If there is high mast lighting) Is automatic timer provided for automatic switching ON/OFF of lights? Yes/No

E4. Can the timer in E3 automatically (i.e. without the need for changing the settings periodically) infer the sunrise and sunset timings in accordance with the system date? Yes/No
E5. Have occupancy sensors been installed in the waiting halls, office rooms of station staff?  
   Yes/ No

E6. (If escalators are provided) Are escalators provided with a crawling speed provision during 
   no load.  Yes/ No

E7. (If elevators are provided) Are elevators provided with a sleep/ idle mode i.e. fans and 
   lights switch off after a specified period of time to save energy?  Yes/ No

E8. Whether the lifts and escalators are provide with VVVF Drives or not? Yes/ No

E9. Whether the AC plants of PRS, high masts, water coolers are provided with timers to work 
   during counter working hours/train hours only? Yes/ No

E10. Whether the road side stations provided with sensor based LED tube light fittings with 
     automatic dimming feature (in the ration of 30:70) when there are no passengers or trains 
     on platform during night time?  Yes/ No

F. Use of Energy Efficient Luminaires, signages

F1. Are Sodium Vapour luminaires still being used? Yes/ No  [If yes, then it should carry 
     negative marks]

F2. Have energy efficient luminaires like LED, etc been adopted? Yes/ No

F3. Have LED signages been used? Yes/ No

G. Use of star rated products

G1. Have star-rated ACs been installed?

G2. Have star-rated refrigerators been used?

G3. Have star-rated rating fan has been installed and whether the ceiling fans are provided with 
     electronic fan regulators?

H. In-house monitoring of heavy consumption

H1. Does the railway have a system of monitoring the following:
   (a) Lux level at platform (covered and uncovered area) vis-à-vis the norms
   (b) Lux level in concourse vis-à-vis the norms
   (c) Lux level in circulating area vis-à-vis the norms
   (d) Lux level in yard vis-à-vis the norms
   (e) Temperature in air-conditioned/ heated spaces

H2. Has the railway laid down a system of reviewing the hours of running of pumps (vis-à-vis 
     the railway’s estimate of appropriate minimum number of hours for which the pump should 
     run)? Yes/ No
H3. Has the railway laid down a system of reviewing the hours of running of air-conditioners (vis-à-vis the railway’s estimate of appropriate minimum number of hours for which the AC should run)?  Yes/No

H4. Does the railway station possess lux meters and other instruments required for the above? Yes/No

I. In-house monitoring of energy efficiency of high wattage items

I.1 Does the railway have a system of monitoring the energy efficiency of:
(a) Air-conditioners (Cooling Energy Index)  Yes/No
(b) Pumps Yes/No
(c) Fans Yes/No

I.2 Certain overaged assets might be working with some degree of reliability but their energy efficiency might have deteriorated or else it might be far less vis-à-vis the new products currently available in market (e.g. air-conditioners, pumps, etc.). Has effort been made to identify such items (with a view to taking necessary action for their condemnation)? Yes/No

I3. Whether the correct rating of pumps are erected as per the hydraulic data and water requirement.? Yes/No

J. DG Sets:

J1. Is a record of DG set fuel consumption vis-à-vis relevant electrical parameters (V, I, KWHr) maintained? Yes/No

J2. Does the railway have a method of checking if the DG set fuel consumption is commensurate with expected fuel efficiency? Yes/No

J3. Is the sizing of DG set vis-à-vis the load rational (this question is being asked because we tend to procure overly high rating DG set)? Yes/No

J4. Whether the Inverters are provided in the stations to extend power to essential loads during day time and avoid operation of DG Set for less loads.? Yes/No

K. Energy Audit:

K1. Has the railway laid down a system for periodic energy audit of the railway station? Yes/No

K2. Was energy audit ever carried out at the station? Yes/No

K3. Has the administration reviewed the energy audit report and drawn up an action plan? Yes/No

K4. If the answer to K3 is ‘Yes’, then has at least 50% of the action plan been implemented in a period of 2 years thereafter? Yes/No
L. *Power Distribution System, etc.*

L1. Is the contracted Maximum Demand (MD) rational vis-à-vis the peak load?  
Yes/ No

L2. Is the sizing of distribution transformers rational? Yes/ No

L3. Are the distribution transformers star rated? Yes/ No

L4. Is power quality monitored (current and voltage harmonics; unbalance)? Yes/ No

L5. Is the Power Factor (PF) above .95? Yes/ No

L6. Is APFC provided? Yes/ No

L7. If APFC is provided, Is the panel working properly? Yes/ No

L8. Has the railway prescribed a method and periodicity of checking the efficacy of APFC capacitors?

L9. Is the voltage drop vis-à-vis distance (an indicator of adequacy of cable size) monitored? Yes/ No

L10. Is the sub-station having the instrument for harmonics measurement? Yes/ No

L11. Does the sub-station is at the center of the loads to avoid the voltage drops? Yes/ No

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