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Ministry of Power

Notification

New Delhi, the 30th March, 2012

G.S.R. 269(E).- In exercise of the powers conferred by clauses (f),(g), (k), (la)and (laa) of section 56, read with clauses (g) and (o) of section 14, sub-section (1) of section14Aand section 14B of the Energy Conservation Act, 2001 (52 of 2001), the Central Government hereby makes the following rules, namely:-

1. Short title and commencement.- (1) These rules may be called the Energy Conservation (Energy Consumption Norms and Standards for Designated Consumers, Form, Time within which, and Manner of Preparation and Implementation of Scheme, Procedure for Issue of Energy Savings Certificate and Value of Per Metric Ton of Oil Equivalent of Energy Consumed) Rules, 2012.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. Definitions.-(1) In these rules, unless the context otherwise requires, -

(a) "Act" means the Energy Conservation Act, 2001;

(b) "baseline year" means the year in which the base level of energy consumption is used as a reference point for establishment and assessment of performance with regard to compliance of energy consumption norms and standards under rule 4 and rule 6 respectively;

(c) "certification" means the process of certifying the verification report or check-verification report by the accredited energy auditor to the effect that the entitlement or requirement of energy savings certificate is quantified accurately in relation to compliance of energy consumption norms and standards by the designated consumer during the target year;

(d) "check-verification" means an independent review and ex-post determination by the Bureau through the accredited energy auditor, of the energy consumption norms and standards achieved in any year of the three year cycle which have resulted from activities undertaken by the designated consumer with regard to compliance of the energy consumption norms and standards;

(e) "cycle" means the period of three years available to a designated consumer to comply with the energy consumption norms and standards;

(f) "energy consumption norms and standards" means the specific energy consumption of the designated consumer for the specified year notified under clause (g) of section 14;

(g) "Form" means the form annexed to these rules;

(h) "Rules 2007" means the Energy Conservation (the form and manner for submission of report on the status of energy consumption by the designated consumers) Rules, 2007 notified in the Official Gazette vide number G.S.R 174 (E), dated the 2nd March, 2007;

(i) "Rules 2008" means the Energy Conservation (Form and Manner and Time for Furnishing Information With Regard to Energy Consumed and Action Taken on Recommendations of Accredited Energy Auditor) Rules, 2008 notified in the Official Gazette vide number G.S.R 486(E), dated the 26th June, 2008;

(j) "Schedule" means the Schedule annexed to these rules;

(k) "section" means a section of the Act;

(l) "specific energy consumption" means the ratio of the net energy input into the designated consumers' boundary to the total quantity of output exported from the designated consumers' boundary, calculated as per the following formula:-

specific energy consumption =

$$\frac{\text{net energy input into the designated consumers' boundary}}{\text{total quantity of output exported from the designated consumers' boundary}}$$

and expressed in terms of the metric ton of oil equivalent (toe)/per unit of product;

(m) "target year" means the year by which a designated consumer shall achieve compliance with the energy consumption norms and standards;.

(n) "verification" means a thorough and independent evaluation by the accredited energy auditor of the activities undertaken by the designated consumer for compliance with the energy consumption norms and standards in the target year compared to the energy consumption norms and standards in the baseline year and consequent entitlement or requirement of energy savings certificate;

(o) "year" means the financial year beginning on the 1st day of April and ending on the 31st day of March following.

(2) Words and expressions used herein and not defined but defined in the Act shall have the meanings respectively assigned to them in the Act.

3. Establishment of energy consumption norms and standards.-(1)The Central Government, in consultation with the Bureau, shall establish, amend or rescind the energy consumption norms and standards for designated consumers as notified under clause (g) of section 14.

(2) The energy consumption norms and standards shall be specific for every designated consumer and shall be determined as under:-

(a) where energy audit of the designated consumer' plant has been completed, energy saving measures and action plan for their implementation has been finalised in consultation with the energy manager of the plant under regulations 4 and 5 of the Bureau of Energy Efficiency (Manner and Intervals of Time for Conduct of Energy Audit) Regulations, 2010,the energy consumption norms and standards shall be based on the timely submission of Form 2 and Form 3 under Rules 2008;

(b) where energy audit of the designated consumers' plant has not been completed or undertaken, the energy consumption norms and standards shall be determined taking into account the following factors, namely:-

(i) average rate of reduction in specific energy consumption across all the designated consumer sectors' determined on the basis of the analysis of data of the last three years;

(ii) policy objectives of keeping the target of reducing the specific energy consumption a few percentage points above the average rate of reduction keeping in view the incentive provided through the issue of energy savings certificate.

(3) Where the energy consumption norms and standards have been determined in accordance with clause (a) or clause (b) of sub-rule (2), the said methodology shall not be reviewed after the commencement of the energy consumption norms and standard notified under clause (g) of section 14.

(4) The designated consumers shall achieve compliance with the energy consumption norms and standards as notified under clause (g) of section 14 within a period of three years from the date of commencement of the said notification.

4. Procedure for establishment of energy consumption norms and standards.-(1) For the purpose of establishment of energy consumption norms and standards, the technical committee set up by the Bureau shall-

(a) calculate specific energy consumption in the baseline year and projected specific energy consumption in the target year covering different forms of net energy going

into the boundary of the designated consumers' plant and the products leaving it over the relevant cycle on a gate-to-gate basis;

(b) in calculating the net energy input to the plant,-

(i) convert the calorific values of all forms of energy sources into a single unit, namely, ton of oil equivalent using the conversion formulae specified in the Government of India, Ministry of Power notification number S.O.394(E), dated the 12th March, 2007;

(ii) consider all forms of energy that is, electricity, solid fuel, liquid fuel, gaseous fuel, or any other form of energy imported into the plant for consumption as energy for production of output;

(iii) not take into account energy consumed in the colony attached to the plant, temporary or major construction work, and for outside transportation system or energy consumed through renewable energy sources not connected to the grid;

(iv) take into account the energy exported out of the designated consumers' boundary;

(v) if any designated consumers' plant does not have disaggregated figures for energy consumed, consider the net energy consumed for calculation both in baseline year and in the target year:

Provided that the said designated consumer shall give adequate reasons that it was not feasible to make adjustment for energy consumed in the colony, temporary or major construction work:

Provided further that such designated consumer shall make necessary arrangements for disaggregation of data for energy consumption to ensure that actual energy consumed for production is considered in the next cycle;

(vi) where more than one product is produced, select the main product produced or an equivalent product worked out from the product mix as per standard practice prevalent in the concerned designated consumers sector:

Provided that where the production of the said main product is stopped, the designated consumer shall inform the necessary details in that regard to the Bureau and the concerned state designated agency;

(c) calculate the specific energy consumption for the baseline year as well as for the target year and normalise it by taking into account the capacity utilisation, mix of grid and captive electricity, and any other factor which affects energy consumption as specified in the Schedule;

(d) calculate the annual specific energy consumption in the baseline year by verifying the data in the previous three years, year-wise, using the data submitted by the designated consumers' under Rules 2007 and if verified, under Rules 2008;

(e) calculate the effect of capacity utilisation and other factors if any, on the specific energy consumption for the previous three years;

(f) calculate the specific energy consumption, production, capacity utilisation, in the baseline year by taking the average of the previous three years in the first cycle and for subsequent cycles, the provisions of rule 14 shall apply;

(g) take into consideration the effect on capacity utilisation or the plant load factor or average energy consumption in the target year on account of any of the following factors, namely:-

(i) natural disaster; or
(ii) rioting or social unrest; or
(iii) major change in the Government policy including environmental standards; or
(iv) impact of market (shortage of raw material or sales) in any of the previous three years.

(2) The said technical committee shall prepare a report containing designated consumer-specific basis of methodology referred to in sub-rule 2 of rule 3, consultation with the designated consumers, and submit the said report to the Bureau.

(3) The Bureau shall examine the report submitted under sub-rule (2) and finalise its report containing its recommendation regarding the energy consumption norms and standards for each designated consumers' plant.

(4) The details regarding methodology used, formulae adopted, exceptions considered, principles adopted, for preparation of energy consumption norms and standards shall be as specified in the Schedule.

(5) The Bureau shall submit the report referred to in sub-rule (3) to the Central Government.

(6) The Central Government after considering the said report shall by notification,-

(a) establish and specify the energy consumption norms and standards for every designated consumers' plant under clause (g) of section 14;

(b) give direction to all designated consumers for compliance with the energy consumption norms and standards under clause (n) of section 14and inform the Bureau and all the State designated agencies.

5. Form, manner and time for preparation of scheme for implementation of efficient use of energy and its conservation.-(1) Every designated consumer, within three months of the issue of notification under sub-rule (6) of rule 4 shall submit a scheme to State designated agency with a copy to Bureau, which may include -

(a) action plan containing *inter-alia*, a brief description of identified energy saving measures to comply energy consumption norms and standards by the target year;

(b) the estimated cost of each identified energy saving measures;

(c) implementation plan to achieve energy consumption norms and standards through implementation of energy saving measures or through purchase of energy savings certificates.

6. Assessment of performance.-(1) Every designated consumer, within three months of the conclusion of the target year from the baseline year shall submit to the State designated agency, with a copy to the Bureau, the performance assessment document in Form 'A' covering the performance for the relevant cycle specifying the compliance with energy consumption norms and standards, duly verified together with certificate in Form 'B' given by the accredited energy auditor and accompanied by the following documents, namely:-

(a) copy of unique number of registration given to the designated consumer;

(b) proof of timely submission of reports in Form 1 under Rules 2007 for the previous three years;

(c) proof of timely submission of reports in Form 1, Form II and Form III under Rules 2008 along with copies thereof including the reports for the target year;

(d) details of energy savings measures implemented for compliance with the energy consumption norms and standards in Form II and Form III of Rules 2008, for each year, covering the relevant cycle enclosing therewith, a brief about the year-wise energy savings measures, details of investment made, photographs in support of measures implemented in each year, if

feasible, and percentage improvement in energy savings achieved in every year following the baseline year until the target year;

(e) details of energy consumption norms and standards of the designated consumers in the baseline year, achievement made in every year following the baseline year and upto the target year together with the opinion of the accredited energy auditor on the achievement of energy consumption norms and standards, entitlement or requirement of energy savings certificates along with the details of calculation and correctness of entitlement or requirement duly certified by the accredited energy auditor;

(f) name and particulars of the energy manager, his date of appointment, details of duties performed including initiatives undertaken for improvement in energy conservation and energy efficiency.

(2) The designated consumer, within three months after the end of first or second year of the relevant cycle, may submit performance assessment document in Form 'A' to the State designated agency, with a copy to the Bureau, for issuance of proportionate energy savings certificates covering the performance for a period of not less than one year from the date of notification specifying the energy consumption norms and standards, duly verified together with certificate in Form 'B' given by accredited energy auditor along with the documents mentioned in sub-rule (1).

(3) The accredited energy auditor shall independently evaluate each activity undertaken by the designated consumer for compliance with the energy consumption norms and standards and entitlement or requirement of energy savings certificate, to ensure that they meet with the requirements of these rules.

(4) The accredited energy auditor, in order to assess the correctness of the information provided by the designated consumer regarding the compliance with energy consumption norms and standards shall-

(a) apply standard auditing techniques;

(b) follow the rules and regulation framed under the Act;

(c) integrate all aspects of verification, and certification functions;

(d) make independent technical review of the opinion and decision of the verification team;

(e) also take into consideration, a situation where a particular activity may or may not form part of the activities related to the compliance with the energy consumption norms and standards, and the procedure for the assessment shall include,-

(A) document review, involving-

(i) review of data and its source, and information to verify the correctness, credibility and interpretation of presented information;

(ii) cross checks between information provided in the audit report and, if comparable information is available from sources other than those used in the audit report, the information from those other sources and independent background investigation;

(B) follow up action, involving-

(i) site visits, interviews with personnel responsible in the designated consumers' plant;

(ii) cross-check of information provided by interviewed personnel to ensure that no relevant information has been omitted or, over or under valued;

(iii) review of the application of formulae and calculations, and reporting of the findings in the verification report.

(5) The accredited energy auditor shall report the results of his assessment in a verification report and the said report shall contain,-

(a) the summary of the verification process, results of assessment and his opinion along with the supporting documents;

(b) the details of verification activities carried out in order to arrive at the conclusion and opinion, including the details captured during the verification process and conclusion relating to compliance with energy consumption norms and standards, increase or decrease in specific energy consumption with reference to the specific energy consumption in the baseline year;

(c) the record of interaction, if any, between the accredited energy auditor and the designated consumer as well as any change made in his assessment because of the clarifications, if any, given by the designated consumer.

(6) If the accredited energy auditor records a positive opinion in his verification report, the Bureau shall consider that all the requirements with regard to the compliance with energy consumption norms and standards, entitlement about issue or liability to purchase energy savings certificate have been met.

(7) After submission of duly verified Form 'A' by designated consumer, state designated agency may convey its comments, if any, on Form 'A' to the Bureau within fifteen days of the last date of submission of Form 'A'.

7. Procedure for monitoring and verification.-(1) The designated consumer in consultation with the accredited energy auditor, shall put in place transparent, independent and credible monitoring and verification arrangements for energy consumption and production based on the Bureau of Energy Efficiency (Manner and Intervals of Time for Conduct of Energy Audit) Regulations, 2010 for compliance with the energy consumption norms and standard, and the said arrangements shall include,-

(a) preparation and maintenance of quarterly data reports by the designated consumers-

(i) on the performance of the plant and production processes;

(ii) on the internal field audits of plant and production processes for the purpose of identification of factors inhibiting improvements in energy efficiency and conservation, and taking of measures to reduce energy consumption and to improve energy efficiency.

(b) preparation and maintenance of yearly data reports by the designated consumers-

(i) on the performance of plant and production processes;

(ii) on the outcome of internal field audits of plant and production processes identifying factors inhibiting improvements in energy efficiency and its conservation, and taking of measures to reduce energy consumption and improve energy efficiency and measures taken to improve the efficiency of the production processes during each year;

(iii) regarding a year-wise report on production achieved, energy consumed, and specific energy consumption achieved, specific energy consumption reduction achieved, measures adopted for energy conservation and quantity of energy saved;

(c) preparation and maintenance of the end of the cycle data reports on production achieved, energy consumed, specific energy consumption achieved, specific energy consumption reduction achieved, measures adopted for energy conservation and quantity of energy saved.

(2) All the activities undertaken by the designated consumers under these rules shall be scrutinised by the accredited energy auditor for the purpose of preparation of verification report and the designated consumer shall furnish the full and complete data, provide necessary documents and other facilities required by the accredited energy auditor for the purpose of performing the function of verification under these rules.

8. Check-verification.-(1) The Bureau may on its own, or on receipt of a complaint regarding any error or inconsistency or misrepresentation, within one year from the date

of submission of the compliance report or within six months from the date of issue of energy savings certificates, whichever is later, shall initiate action for review of compliance report in accordance with the provision of sub-rule (2).

(2) The Bureau shall initiate action in accordance with the following procedure, namely-

(a) a notice shall be issued to the designated consumer as well as to the accredited energy auditor who had submitted the verification report with a copy to relevant state designated agency, to provide comments in reply to the said notice within ten working days from the date of receipt of aforesaid notice;

(b) the comments furnished by the designated consumer and accredited energy auditor shall clearly state that-

(i) they stand by the compliance report and verification report submitted by them and submit a confirmation report giving point wise replies with necessary documents in response to the said notice; or

(ii) they accept the errors or inconsistencies or misrepresentation pointed out in the aforesaid notice and shall give detailed explanations in respect of each point in the notice and work out the impact of such errors or inconsistencies or misrepresentation on the submitted compliance report;

(c) within ten working days from the date of the receipt of the comments referred to in clause (b),Bureau shall after taking into consideration the said comments, decide to undertake or not to undertake review and the Bureau shall record the reasons in writing for its decision;

(d) where the Bureau, in consultation with state designated agency, decides to undertake review,

(i) it shall appoint an accredited energy auditor, who has not performed the verification functions with respect to the concerned designated consumer, to conduct the check-verification;

(ii) on a complaint, the said check-verification shall be carried out at the cost of the complainant;

(e) where the Bureau decides not to undertake the said review, the designated consumer, his accredited energy auditor, and the complainant shall be informed in that regard in writing.

(3)The check-verification process shall involve assessment to ensure that, –

(a) the activities relating to the compliance with energy consumption norms and standards have been performed and the issue or purchase of energy savings certificate are in accordance with the provisions of these rules;

(b) the monitoring and verification process are in accordance with the provisions of rule 6;

(c) the details of the data and the activities referred to in rule 7 are evaluated and conclusion made that errors, omissions or misrepresentations or aggregation thereof in the said data do not affect the energy consumption norms and standards achieved by the activities and issue or purchase of energy savings certificates by more than the threshold limit specified in the Schedule.

(4) The said accredited energy auditor shall assess and verify that the activities performed by the designated consumer for compliance with the energy consumption norms and standards are in accordance with these rules, and the assessment and check-verification process shall involve–

(a) a review of the documents as well as the on-site assessment referred to in rule 6to verify that the activities performed to comply with the energy consumption norms and standards are in accordance with these rules and in case the aforesaid accredited energy auditor decides that it was not possible or appropriate to make a site visit, then he shall record reasons in writing in this regard;

(b) a review of both quantitative and qualitative information on the energy consumption norms and standards, the quantitative information comprising of the reported data in 'Form A', and the qualitative information comprising of information on internal management controls, calculation procedures, procedures for transfer of data, frequency of energy consumption norms and standards achieved every year following the baseline year until the target year, reports and review of internal field audit of calculations or data transfers;

(c) a review of previous verification reports;

(d) a review of any other information and documents relevant to or having a bearing on the activities performed under these rules;

(e) a review of the monitoring and verification process referred to in rule 7.

(5) The designated consumer shall furnish full and complete data, provide necessary documents and other facilities required by the accredited energy auditor for the purpose of performing the function of check-verification under these rules.

(6) The accredited energy auditor in-charge of check-verification function shall report the results of his assessment in a check-verification report and the said report shall contain,-

(a) the summary of the verification process, results of his assessment and his opinion along with the supporting documents;

(b) the details of check-verification activities carried out in order to arrive at the conclusion and opinion including the details captured during the verification process and conclusion relating to compliance with energy consumptions norms and standards, increase or decrease in specific energy consumption with reference to the specific energy consumption in the baseline year, entitlement about the issue or liability to purchase energy savings certificate.

(7) If the accredited energy auditor records in his check-verification report, a positive opinion, it shall be concluded that all the requirements with regard to the compliance with energy consumption norms and standards and the issue or purchase of energy savings certificates have been met.

(8) If the accredited energy auditor records in his check-verification report, a negative opinion, the effect of such opinion on the energy consumption norms and standards, issue or purchase of energy savings certificate, the liability of the accredited energy auditor in giving the verification report and amount of the unfair gain gained by the designated consumer as a result of such verification report shall be calculated by the accredited energy auditor conducting the check-verification.

(9) The accredited energy auditor in-charge of check-verification shall submit his report with due certification in Form 'C' to the Bureau and the concerned State Designated Agency.

(10) Where the verification report given by the accredited energy auditor secures an unfair or undue gain due to the deficiencies or inconsistencies or errors or misrepresentation by the designated consumer, the quantum of such gain shall be calculated having regard to the following factors, namely:-

(a) the value of the amount payable by such designated consumer shall be as worked out in the verification report plus twenty-five per cent. of such value because of unfair practice used by the said designated consumer for obtaining unfair advantage;

(b) the amount of metric ton of oil equivalent of energy specified because of unfair gain identified due to check-verification;

(c) cost of check-verification.

(11) The State designated agency may furnish its comments on the report within ten days from the receipt of the report from the said accredited energy auditor and in case no comments are received from the concerned state designed agency, it shall be presumed that they have no comments to offer in the matter.

(12) The Bureau after the expiry of ten days referred to in sub-rule (11), shall issue show cause notice to the designated consumer as well as to his accredited energy auditor specifying the deficiencies or inconsistencies or errors or misrepresentation noticed against the designated consumer and his accredited energy auditor.

(13) The designated consumer as well as his accredited energy auditor shall submit their replies to the said show cause notice within a period of fifteen working days to the officer of the Bureau who has issued that show cause notice.

(14) The Bureau after examining the said replies to the show cause notice referred to in sub-rule (13), shall forward the report to the concerned State designated agency specifying the following details for the purpose of initiating the penalty proceedings, namely:-

(a) the number of energy savings certificates wrongfully obtained by the designated consumer on the basis of verification report found to be wrong and false on check-verification;

(b) the number of energy savings certificates which the designated consumer was liable to purchase for non-compliance with the energy consumption norms and standards as found in the check-verification report;

(c) details of the misrepresentation, if any and the unfair gain due to such misrepresentation;

(d) the cost of check- verification.

(15) The State designated agency within two months from the date of the receipt of the report referred to in sub-rule (9) shall initiate-

(a) action to recover from the designated consumer the loss to the Central Government by way of unfair gain to the designated consumer;
(b) penalty proceedings against the persons mentioned in the said report, under intimation to the Bureau;
(c) register complaint for such fraudulent unfair gain if designated consumer does not pay penalty and loss to the exchequer in the specified time mentioned in the penalty proceedings.

(16) Where the check-verification has been initiated on the basis of a complaint received by the Bureau, the cost of check-verification shall be borne by the complainant,

in case it was found on check-verification that the designated consumer has submitted correct information in Form 'A'.

(17) Where the check-verification has been initiated on the basis of a complaint received by the Bureau, the cost thereof shall be borne by the designated consumer in case it was found on check-verification that the designated consumer has submitted false and incorrect information in Form 'A'.

9. Procedure regarding compliance with energy consumption norms and standards and issue of energy savings certificate.-(1) A firm registered under the Indian Partnership Act, 1932 (9 of 1932) or a company incorporated under the Companies Act, 1956 (1 of 1956) or any other legal entity competent to sue or to be sued or enter into contracts shall be entitled to undertake verification and check-verification regarding compliance with the energy consumption norms and standards and issue or purchase of energy savings certificate if it,-

(a) has at least one accredited energy auditor whose name is included in the list of the accredited energy auditors maintained by the Bureau under regulation 7 of the Bureau of Energy Efficiency (Qualifications for Accredited Energy Auditors and Maintenance of their List) Regulations, 2010;

(b) has at least three energy auditors;

(c) has adequate expertise of field studies including observations, probing skills, collection and generation of data, depth of technical knowledge and analytical abilities for undertaking verification and check-verification;

(d) has a minimum turnover of ten lakhs rupees per annum in at least one of the previous three years or in case of a newly formed organisation, a net worth of ten lakhs rupees.

(2) The Bureau shall invite applications from the firms, companies and other legal entities to undertake the work of verification and check-verification for the purpose of preparing a panel of such firms, companies and other legal entities.

(3) The applications referred to in sub-rule (2) shall be accompanied by a certificate of registration or incorporation as the case may be.

(4) The applications so received shall be scrutinised in accordance with the provisions of sub-rule(1) and a panel of eligible applicants shall be prepared which shall be displayed on the web site of the Bureau, that is, www.bee-india.nic.in.

(5) The selected applicants shall be issued a certificate of empanelment in support their selection to undertake the function of verification and check-verification as accredited energy auditor.

(6) A unique identification number shall be issued to the accredited energy auditors referred to in sub-rule (5).

10. Obligations of accredited energy auditor.- (1) For the work of verification or check verification, the accredited energy auditor shall constitute a team comprising of a team head and other members including experts:

Provided that a person who was in the employment of a designated consumer within the previous four years, shall not be eligible to perform the work of verification or check-verification for such designated consumer;

Provided further that any person or firm or company or other legal entity, who was involved in undertaking energy audit in any of the designated consumer within the previous four years, shall not be eligible to perform the work of verification or check-verification for such designated consumer.

(2) The accredited energy auditor shall ensure that persons selected as team head and team members must be independent, impartial and free of potential conflict of interest in relation to activities likely to be assigned to them for verification or check-verification.

(3) The accredited energy auditor shall have formal contractual conditions to ensure that each team member of verification and check-verification teams and technical experts act in an impartial and independent manner and free of potential conflict of interest.

(4) The accredited energy auditor shall ensure that the team head, team members and experts prior to accepting the assignment inform him about any known, existing, former or envisaged link to the activities likely to be undertaken by them regarding verification and check verification.

(5) The accredited energy auditor must have documented system for determining the technical or financial competence needed to carry out the functions of verification and check -verification and in determining the capability of the persons referred to in sub-rule (2), the accredited energy auditor shall consider and record among other things the following aspects, namely:-

(a) complexity of the activities likely to be undertaken;
(b) risks associated with each project activity;
(c) technological and regulatory aspects;
(d) size and location of the designated consumer;
(e) type and amount of field work necessary for the verification or check-verification.

(6) The accredited energy auditor shall have documented system for preparing the plan for verification or check-verification functions and the said plan shall contain all the

tasks required to be carried out in each type of activity, in terms of man days in respect of designated consumers for the purpose of verification and check -verification.

(7) The names of the verification or check-verification team members and their bio-data shall be provided by the accredited energy auditor to the concerned designated consumer in advance.

(8) The verification or check-verification team shall be provided by the accredited energy auditor with the concerned working documents indicating their full responsibilities with intimation to the concerned designated consumer.

(9) The accredited energy auditor shall have documented procedure-

(i) to integrate all aspects of verification or check-verification functions;
(ii) for dealing with the situations in which an activity undertaken for the purpose of compliance with the energy consumption norms and standards or issue of energy savings certificate shall not be acceptable as an activity for the said purposes.

(10) The accredited energy auditor shall conduct independent review of the opinion of verification or check-verification team and shall form an independent opinion and give necessary directions to the said team if required.

(11) In preparing the verification and check-verification reports, the accredited energy auditor shall ensure transparency, independence and safeguard against conflict of interest.

(12) The accredited energy auditor shall ensure the confidentiality of all information and data obtained or created during the verification or check verification report.

(13) In assessing the compliance with the energy consumption norms and standards and issue of energy savings certificates, the accredited energy auditor shall follow the provisions of the Act, rules and regulations made thereunder.

(14) After completion of the check-verification, the accredited energy auditor shall submit the check-verification report, together with the certificate in Form-'C', to the Bureau.

11. Recommendation for issue of energy savings certificates.- (1) The Bureau on satisfying itself about the correctness of verification report, and check-verification report, wherever sought by it, send its recommendation under clause (aa) of sub-section (2) of section 13 to the Central Government, based on the claim raised by the designated consumer in Form 'A', within ten working days from the last date of submission of said Form 'A' by the concerned state designated agency, for issuance of energy savings certificates under section 14A and the recommendation shall specify.-

(a) the exact number of energy savings certificates to be issued to the designated consumer and the entitlement for such energy savings certificates after determining by the following formula:

(i) for thermal power plant sector:

number of energy savings certificates =
(heat rate notified for the target year
− heat rate as acheived in the target year)
× production in the baseline year in million kwh/10

(ii)for other sectors:

number of energy savings certificates =
(specific energy consumption notified for the target year
− specific energy cosnumption as acheived in the target year)
× production in the baseline year

(b) the identity of the concerned designated consumers;

(c) the certification that all the requirements for issue of energy savings certificates have been complied with, by the designated consumer and his entitlement has been certified in the verification report by the accredited energy auditor.

(2) The designated consumer may seek issue of energy savings certificates in proportion of its performance achieved during the first or second or target year with respect to compliance with the energy consumption norms and standards and the Bureau on satisfying itself about the correctness of verification report, and check-verification report, wherever sought by it, send its recommendation under clause (aa) of sub-section (2) of section 13 to the Central Government, based on the claim made by the designated consumer in Form 'A', for issue of energy saving certificates not exceeding eighty percent. of the entitlement in a year other than the target year under section 14A.

(3) The total amount of energy savings certificates recommended under sub rule (2) shall be adjusted against the entitlement on conclusion of the target year as per the following formulae:-

(A) for thermal power plant sector:

(i) energy savings certificate to be issued after year 1 =
{[heat rate in the baseline year − (heat rate in the baseline year −
heat rate notified for the target year) ÷ 3] −

heat rate achieved in year 1} × 80% ×
production in million kwh in the baseline year/10;

(ii) adjusted heat rate after year1 =
heat rate notified for target year –
(energy savings certificates issued in year 1 ÷
productionin million kwh in the baseline year)x10;

(iii) energy savings certificate to be issued after year 2 =
{[heat rate in the baseline year – (heat rate in the baseline year –
heat rate adjusted after year1) × 2 ÷ 3] – heat rate achieved in year 2} ×
80% × production in million unit in the baseline year/10;

(iv) adjusted heat rate after year2 = heat rate adjusted after year1 –
(energy savings certificates issued in year 2 ÷
production in million in the baseline year)$x10$

(v) energy savings certificate to be issued in the target year =
{[heat rate in the baseline year – (heat rate in the baseline year –
heat rate adjusted after year2)] –
heat rate achieved in the target year} ×
production in million kWh in the baseline year/10;

(vi) total number of energy savings certificates issued in the cycle =
energy savings certificates issued in year 1 +
energy savings certificates issued in year 2 +
energy savings certificates issued in target year.

(B) for other sectors:

(i) energy savings certificate to be issued after year 1 =
{[specific energy consumption in the baseline year –
(specific energy consumption in the baseline year –
specific energy consumption notified for the target year) ÷ 3] –
specific energy consumption achieved in year 1} × 80% ×
production in the baseline year;

(ii) adjusted specific energy consumption after year1 =
specific energy consumption notified for target year −
(energy savings certificates issued in year 1 ÷
production in the baseline year);

(iii) energy savings certificate to be issued after year 2 =
{[specific energy consumption in the baseline year −
(specific energy consumption in the baseline year −
specific energy consumption adjusted after year1) × 2 ÷ 3] −
specific energy consumption achieved in year 2} × 80% ×
production in the baseline year;

(iv) adjusted specific energy consumption after year2 =
specific energy consumption adjusted after year1 −
(energy savings certificates issued in year 2 ÷
production in the baseline year)

(v) energy savings certificate to be issued in the target year =
{[specific energy consumption in the baseline year −
(specific energy consumption in the baseline year −
specific energy consumption adjusted after year2)] −
specific energy consumption achieved in the target year} ×
production in the baseline year;

(vi) total number of energy savings certificates issued in the cycle =
energy savings certificates issued in year 1 +
energy savings certificates issued in year 2 +
energy savings certificates issued in target year.

12. Procedure for issue of energy savings certificate.-(1) The Central Government, on the receipt of recommendation from the Bureau under rule 10, shall on satisfying itself in this regard, issue energy savings certificates of required value to the concerned designated consumer within fifteen working days from the date of receipt of such recommendation from the Bureau.

(2) The energy savings certificate shall be issued in electronic form.

(3) The value of one energy savings certificates shall be equal to one metric ton of oil equivalent of energy consumed.

(4) The designated consumer who has been issued energy savings certificates may sell them through the power exchange.

(5) The designated consumer who has been issued the energy savings certificates during the current cycle may use them for the purpose of banking until the next compliance cycle.

(6) The energy savings certificates issued in a cycle period shall remain valid till the completion of the compliance period of the next cycle.

(7) The energy savings certificates purchased by a designated consumer for the purpose of compliance with the energy consumption norms and standards shall after their submission to the Bureau stand expired.

13. Compliance of energy consumption norms and standards.- (1) The designated consumer for the purpose of achieving the compliance with the energy consumption norms and standards during the target year, in the relevant cycle shall take the following action and after completing the said action, furnish the status of compliance to the concerned state designated agency with a copy to the Bureau in Form 'D' by the end of five months from the last date of submission of Form 'A'-

(a) by implementation of energy conservation and energy efficiency improvement measures or;

(b) where the measures implemented in terms of clause (a) are found inadequate for achieving compliance with the energy consumption norms and standards, the designated consumer shall purchase the energy savings certificates equivalent in full satisfaction of the shortfall in the energy consumption norms and standards worked out in terms of metric ton of oil equivalent.

14. Establishment of new baseline for next cycle.- The energy consumption norms and standards achieved by the designated consumer on the completion of the target year, as mentioned in the compliance report in Form-'D' shall be the baseline for establishment of new plant specific energy consumption norms and standards for designated consumers for the next cycle.

15. Obligations of the designated consumers.-The designated consumers shall,-

(a) for assessment of their performance for compliance with the energy consumption norms and standards, get the work of verification done through accredited energy auditors;

(b) take all measures including implementation of energy efficiency projects recommended by the accredited energy auditor and good practices prevalent or in use in the concerned industrial sector so as to achieve the optimum use of energy in their plant ;

(c) furnish the full and complete data, provide necessary documents and other facilities required by the accredited energy auditor for the purpose of performing the function of verification and check-verification.

16. Specification of value of energy.-(1) The value of per metric ton of oil equivalent of energy consumed shall be determined by applying the following formula, namely:-

$$P=Wc \times Pc+Wo \times Po+Wg \times Pg + We \times Pe$$

Where-

P =price of one metric ton of oil equivalent(1toe);

Pc=average price of delivered coal;

Po=price of fuel oil as declared by Indian Oil Corporation Limited;

Pg=price of gas as declared by Gas Authority of India Limited;

Pe = average price of one unit of electricity for industrial sector in the States of Chattisgarh, Gujarat, Maharashtra, Madhya Pradesh and Tamil Nadu as specified by the respective State Electricity Regulatory Commission;

all prices shall be as on 1st April of the year for which value of energy is being specified.

$$\text{Weightage of coal (Wc)} = \frac{\text{amount of coal consumed across all designated consumers in the baseline year (in toe)}}{\text{total energy consumption across all designated consumers in the baseline year(in toe)}'}$$

$$\text{Weightage of oil (Wo)} = \frac{\text{amount of oil consumed across all designated consumers in the baseline year (in toe)}}{\text{total energy consumption across all designated consumers in the baseline year(in toe)}'}$$

$$\text{Weightage of gas (Wg)} = \frac{\text{amount of gas consumed across all designated consumers in the baseline year (in toe)}}{\text{total energy consumption across all designated consumers in the baseline year(in toe)}'}$$

$$\text{Weightage of electricity (We)} = \frac{\text{amount of electricity consumed across all designated consumers in the baseline year (in toe)}}{\text{total energy consumption across all designated consumers in the baseline year(in toe)}}$$

(2) The value of per metric ton of oil equivalent of energy consumed for the purpose of these rules shall be rupees 10154 for the year 2011-12.

(3) The value of per metric ton of oil equivalent of energy consumed shall be reviewed every year for the purpose of sub-rule (2).

Form – A
(See rule 5)
PERFORMANCE ASSESSMENT DOCUMENT

(To be filled by designated consumer)

1.	Name of designated consumer		
2.	Registration number		
3.	Sector		
4.	Sub-sector		
5.	Accredited energy auditor		
	Name		
	Registration number		
6.	List of documents submitted		
a.	Baseline data (three years)	Submitted/Not submitted	Date of submission
b.	Form I () Specify the year in the bracket	Submitted/Not submitted	Date of submission
c.	Form I ( ) Specify the year in the bracket	Submitted/Not submitted	Date of submission
d.	Form I ( ) Specify the year in the bracket	Submitted/Not submitted	Date of submission
e.	Form II	Submitted/Not submitted	Date of submission
f.	Form III	Submitted/Not submitted	Date of submission

7.	Target			
	Year	Notified target specific energy consumption for the cycle	Energy savings certificates issued	Revised target specific energy consumption for the cycle
		toe/ton of product or Net Kcal/kWh	Nos	toe/ton of product or Net Kcal/kWh
a.	Mention the year ( )		-	
b.	Mention the year ( )			
c.	Mention the year ( )			-

8.	Specific energy consumption		
a.	Specific energy consumption (baseline)		toe/ton or Net kcal/kWh
b.	Production (baseline)		ton or Million kWh
c.	Revised target SEC (from 7.b)		toe/ton or Net kcal/kWh
d.	Target after normalisation, if any		toe/ton or Net

					kcal/kWh	
e.	Achieved specific energy consumption				toe/ton or Net kcal/kWh	
f.	Energy savings certificates				nos	
9.	Energy Efficiency Project implemented during current cycle					
	Project	Year of Implementation	Annual Energy consumption (before)	Annual Energy consumption (after)	Energy tariff	Investment
a.						
b.						
c.						
d.						
e.						
f.						

Note 1: Form A may be filled in accordance with the following guidelines, namely:-

GUIDELINES

1. Name of designated consumer: As per notification under clause (g) of section 14.
2. Registration No: As provided at the time of registration for this portal
3. Sector:
    - Aluminium
    - Cement
    - Chlor Alkali
    - Fertilizer
    - Iron and Steel
    - Pulp and Paper
    - Textile
    - Thermal Power Plant

4. Sub Sector:

Sector	Basis for Sub-sector	Sub-Sector
Thermal Power Plant	Fuel Based	Coal, Gas, Oil
Cement	Process Based	Dry, Wet
Iron and Steel	Operation Based	Integrated, Sponge Iron
Fertilizer	Feedstock Based	Natural Gas, Naptha
Aluminum	Product Based	Refinery, Smelter
Pulp and Paper	Raw Material Based	Wood, Agro, Recycled Fibre
Textile	Operation Based	Spinning, Processing, Composite, Fiber yarn
Chlor-Alkali	Technology Based	Membrane cell, Mercury

5. Name of accredited energy auditor: As selected by designated consumer from list of accredited energy auditor empanelled by Bureau of Energy Efficiency.

6. List of documents submitted:

(a) Baseline data (three years): Submitted to Bureau of Energy Efficiency for Target Calculations

(b) Form I mention the year ( ): As per filing, attach acknowledgement of submission i.e. after completion of 1st year after notification

(c) Form I mention the year ( ): As per filing, attach acknowledgement of submission i.e. after completion of 2nd year after notification

(d) Form I mention the year ( ): As per filing, attach acknowledgement of submission i.e. after completion of target year

(e) Form II: As per filing, attach acknowledgement of submission

(f) Form III: As per filing, attach acknowledgement of submission

7. Target: Enter target as notified by Government of India under clause (g)of section 11 (target specific energy consumption). Enter energy savings certificates, if any, issued in last three years). Adjusted target calculated as per formulae mentioned in rules.

8. Specific energy consumption (SEC)

(a) Specific Energy Consumption (Baseline): As notified by Government of India as aforesaid.

(b) Production (Baseline): As notified by Government of India as aforesaid.

(c) Revised target specific energy consumption (from 7.b): if any (in metric ton of oil equivalent /unit production), or as notified by Government of India or enter 8.a

(d) Target after normalisation, if any: as notified by Government of India as aforesaid (in metric ton of oil equivalent /unit production) and calculated as specified in the schedule, else enter 8.c

(e) Achieved specific energy consumption: Achieved specific energy consumption in the year of submission of Form 'A'

(f) energy savings certificates: calculate as per formulae provided in the rule 10.

9. Project implemented during current cycle: Energy efficiency projects implemented by designated consumers during last three years. Attach photograph of energy savings projects implemented.

Undertaking

I/We undertake that the information supplied in this Performance Assessment Document is accurate to the best of my knowledge and if any of the information supplied is found to be incorrect and such information result into loss to the Central Government or State Government or any of the authority under them or any other person affected, I/we undertake to indemnify such loss.

I /We agree to extend necessary assistance in case of any enquiry to be made in the matter.

Signature
Name
Designation
For and behalf of
Name of the Firm/Company/Organisation
SEAL of the Firm /Company/Organisation

Form B
(See rule 5)
CERTIFICATE OF VERIFICATION

I/We _____the accredited energy auditor, have undertaken a thorough independent evaluation of the activities undertaken by M/s. _____,a designated consumer for compliance with the energy consumption norms and standards specified under the Government of India Ministry of Power notification number_____, dated the _____during the target year compared to the baseline year and consequent entitlement or requirement of energy savings certificates and certify that-

(a) the verification of the data collection in relation to energy consumed and specific energy consumption per unit of production in the baseline year and in the target year in Form 1under Rules 2007 or Rules 2008, has been carried out diligently and truthfully;

(b) the verification of the identified energy efficiency measures, and the progress of their implementation given in Form II and Form III under Rules 2008 has been carried out diligently and truthfully;

(c) the verification of the compliance with energy consumption norms and standards during the target year has been carried out diligently and truthfully;

(d) the verification of the total amount of energy saved, year-wise, after the baseline year and until target year or otherwise and request made by the designated consumer, the entitlement of _____ (Nos) energy savings certificate (s) required to be issued or purchased by him have been carried out diligently and truthfully;

(e) all reasonable professional skill ,care, and diligence have been taken in verifying the various verification activities, findings and conclusions, documents, reports, preparing the documents including the performance assessment document in Form 'A' and verification report and the contents thereof are a true representation of the facts.

Signature:
Name of accredited energy auditor for verification
Designation:

SEAL

Form C
(See rule 7)
Certificate of Check – Verification

I/We _____the accredited energy auditor, have undertaken a thorough independent evaluation of the activities undertaken by M/s. _____,a designated consumer for compliance to the energy consumption norms and standards specified under the Government of India, Ministry of Power notification numbers _____, dated the _____during the target year compared to the baseline year and consequent entitlement or requirement of energy savings certificates, mentioned in the Performance Assessment Document in Form 'A' and compliance of energy consumption norms and standard document in Form 'D' and certify that-

(a) the check-verification of the data collection in relation to energy consumed and specific energy consumption per unit of production in the baseline year and in the target year in Form 1under Rules 2007 or Rules 2008, has been carried out diligently and truthfully;

(b) the check-verification of the identified energy efficiency measures, and the progress of their implementation given in Form II and Form III under Rules 2008 has been carried out diligently and truthfully;

(c) the check-verification of the compliance with energy consumption norms and standards during the target year has been carried out diligently and truthfully;

(d) the check-verification of the total amount of energy saved, year-wise, after the baseline year and until target year or otherwise and request made by the designated consumer, the entitlement of _____ (Nos) energy savings certificate (s) required to be issued or purchased by him have been carried out diligently and truthfully;

(e) all reasonable professional skill, care, and diligence have been taken in check-verifying the various verification activities, findings and conclusions, documents, reports, preparing the documents including the information given in the Performance Assessment Document in Form 'A' and verification report submitted by the accredited energy auditor appointed by the designated consumer ..... for verification and the contents thereof are a true representation of the facts.

Signature:
Name of accredited energy auditor for check-verification
Designation:

SEAL

Form-D

(See rule 12)

COMPLIANCE OF ENERGY CONSUMPTION NORMS AND STANDARD DOCUMENT

(To be filled in by designated consumer)

1.	Name of designated consumer		
2.	Registration number		
3.	Sector		
4.	Sub-sector		
5.	List of documents submitted		
a.	Performance Assessment Document (Form 'A')	Submitted/Not Submitted	Date of Submission
6.	Compliance		
a.	Energy Savings Certificates		Issued/Recommended for purchase
b.	Energy Savings Certificates submitted for compliance		If recommended for purchase
c.	Balance Energy Savings Certificates		Nos

Note 1: Form D may be filled in accordance with the following guidelines:-

GUIDELINES

1. Name of designated consumer: As per notification from Government of India (GoI) under clause (g) of section 14
2. Registration number: As per E-filing
3. Sector:
   - Aluminium
   - Cement
   - Chlor Alkali
   - Fertilizer
   - Iron and Steel
   - Pulp and Paper
   - Textile
   - Thermal Power Plant
4. Sub Sector:

Sector	Basis for Sub-sector	Sub-Sector
Thermal Power plant	Fuel Based	Coal, Gas, Oil
Cement	Process Based	Dry, Wet
Iron and Steel	Operation Based	Integrated, Sponge Iron
Fertilizer	Feedstock Based	Natural Gas, Naptha
Aluminum	Product Based	Refinery, Smelter
Pulp and Paper	Raw Material Based	Wood, Agro, RCF
Textile	Operation Based	Spinning, Processing, Composite, Fiber yarn
Chlor-Alkali	Technology Based	Membrane cell, Mercury

5. List of Documents submitted:

   (a) Performance assessment document: Submitted to Bureau of Energy Efficiency for issue of energy savings certificates.

6. Compliance

   (a) Energy savings certificates: Enter +ve value if energy savings certificates issued to designated consumer or enter -ve value in case recommended for purchase of energy savings certificates

   (b) Energy savings certificates submitted for compliance: If designated consumer is recommended for purchase of energy savings certificates, then enter value of energy savings certificates submitted by designated consumer for compliance of

energy consumption norms and standards- saving target of designated consumer.

(c) Balance energy savings certificates:- Numbers of energy savings certificates balance. If balance is ZERO than DC is in accordance for compliance of energy saving target and if balance is -ve than DC will be recommended for penalty.

Undertaking

I/We undertake that the information supplied in compliance with energy consumption and standard documents in this Form 'D' is accurate to the best of my/our knowledge and if any of the information supplied is found to be incorrect and such information result into loss to the Central Government or State Government or any of the authority under them or any other person affected, I/we undertake to indemnify such loss.

I/we agree to extend necessary assistance in case of any enquiry is made in the matter.

Signature
Name
Designation
For and behalf of
Name of the Firm/Company/Organisation
SEAL of the Firm/Company/Organisation

Schedule

[See rules 2, 4 and 7]

1. Determination of baseline specific energy consumption.-

1.1 Specific energy consumption (See rule 2(l))

(a) The specific energy consumption (SEC) gives the indication of efficient utilisation of different sources of energy in a plant operational boundary to produce one unit of product, which is defined as the ratio of total energy input to plant boundary and the quantity of products produced and specific energy consumption of an industry shall be calculated based on Gate-to-Gate concept with the following formula:-

Specific Energy Consumption =

$$\frac{\text{Net energy input into the designated consumers' boundary}}{\text{Total quantity of output exported from the designated consumers' boundary}}$$

and expressed in terms of the metric ton of oil equivalent (toe)/per unit of product;

Note: value to be rounded to three decimal places.

Table 1: Definition of product to calculate specific energy consumption

Sector	Main product	Unit
Cement	Cement	ton
Fertilizer	Urea	ton
Iron and Steel (Integrated)	Crude Steel	ton
Iron and Steel (Sponge Iron)	Sponge Iron	ton
Aluminium (Refinery)	Alumina	ton
Aluminium (Smelter)	Molten Aluminium	ton
Aluminium (Integrated)	Molten Aluminium	ton
Pulp and Paper (Pulping)	Pulp	ton
Pulp and Paper (Only Paper Making)	Paper	ton
Pulp and Paper (Pulp and Paper)	Paper	ton
Textile (Spinning)	Yarn	Kg
Textile (Composite)	Yarn/Fabric	kg
Textile (Fibre)	Fibre	kg
Textile (Processing)	Fabric	kg
Chlor-Alkali	Equivalent Caustic Soda	ton
Power Plant	Electricity	Million kWh

1.2 Gate-to-Gate designated consumer boundary (sector-specific)

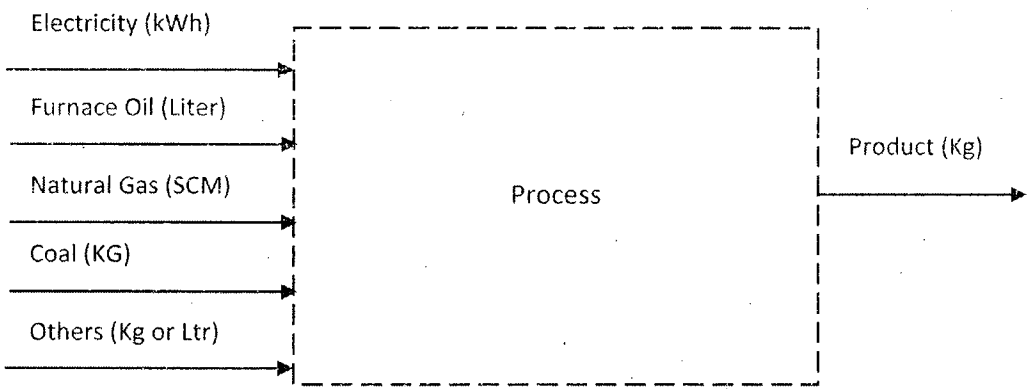
(a) As the specific energy consumption (SEC) is calculated on a Gate-to-Gate concept, the plant boundary shall be selected in such a manner that the total energy input and the above product defined in Table 1, is be fully captured and the entire designated consumers' plant. The colony, residential complex and transportation system, mining operations in case of Iron and Steel, Aluminum and Cement sectors are not part of designated consumers 'boundary.

(b) Once the designated consumers' boundary has been fixed, the same boundary shall be considered for entire cycle, and any change in the said boundary such as capacity expansion, merger of two plants, division of operation etc. shall be duly intimated to the Bureau of Energy Efficiency.

(c) The following designated consumers' boundaries will be considered in the first cycle:-

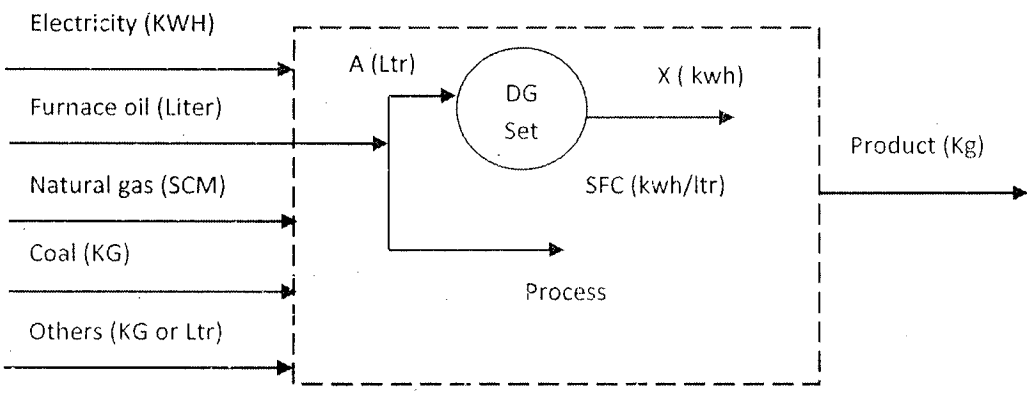
Case -I: All energy purchased and consumed:-

- Electricity is purchased from the grid



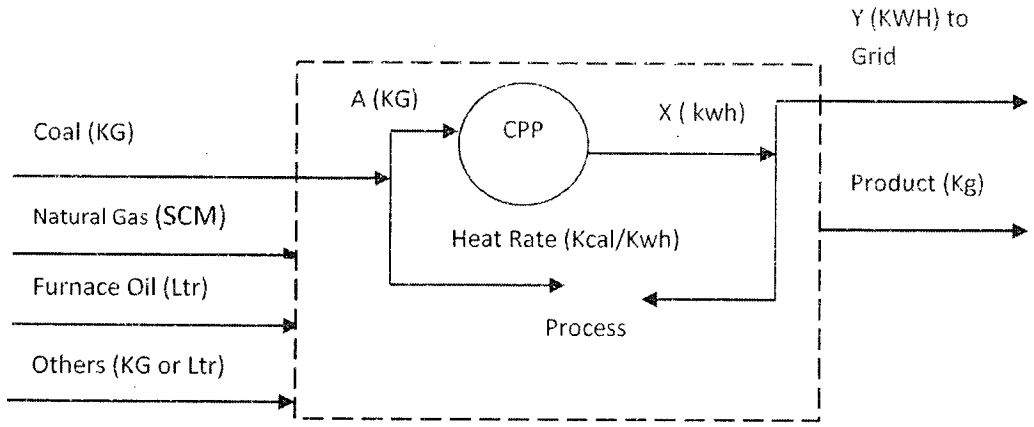
Case -II: Electricity partially generated by diesel generating(DG) set ,other energy purchased and consumed:-

- Electricity is purchased from the grid and generated by DG set



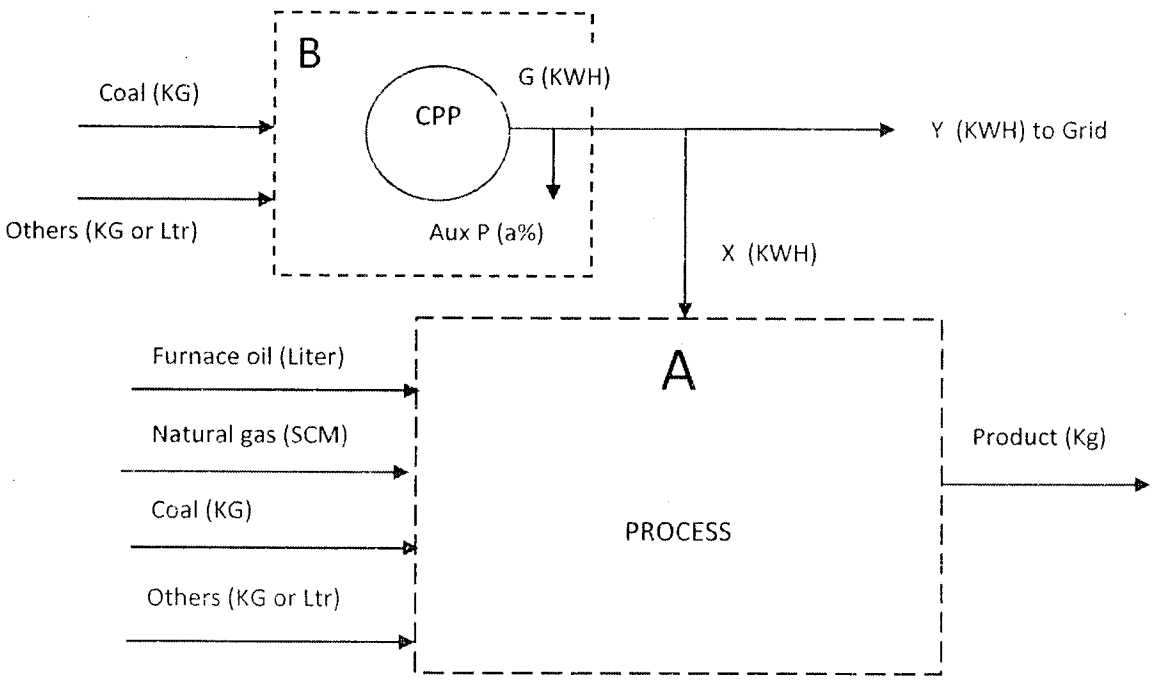
Case -III: Electricity generated by captive power plant and other energy purchased and consumed, electricity partially sold to grid:-

- Electricity is generated by coal based captive power plant, partially sold to grid-



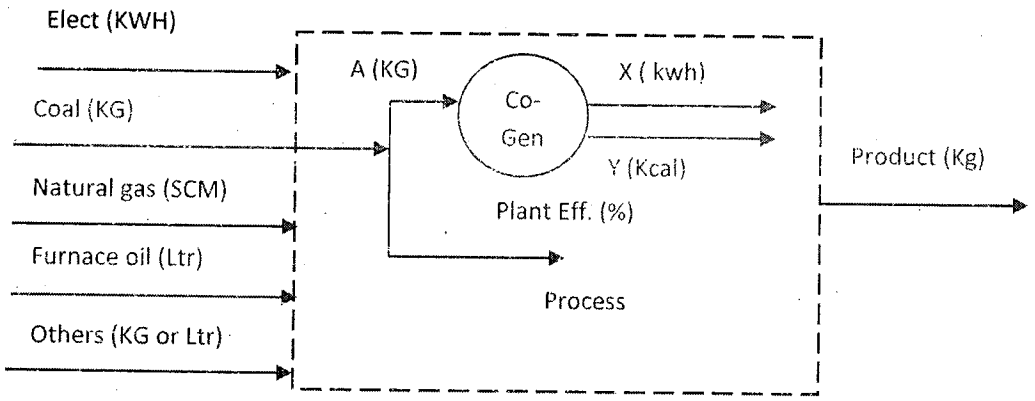
Case -IV: Electricity generated by captive power plant(CPP), other energy purchased and consumed, electricity partially sold to grid from captive power plant:-

- Electricity is generated by coal based captive power plant, partially sold to grid and captive power plant is in separate boundary-

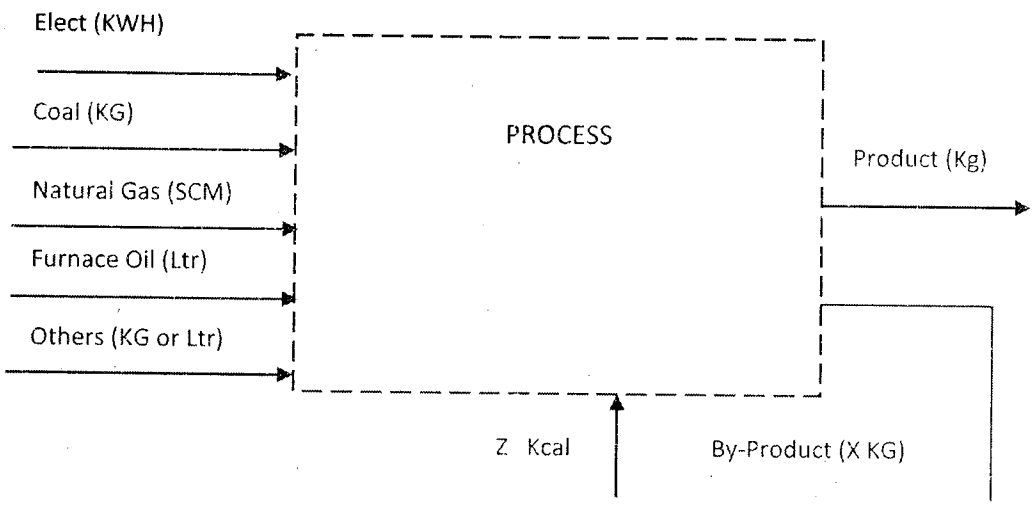


Case -V: Energy purchased and consumed, electricity and heat partially generated through co-generation plant

- Electricity and heat are generated by co-generation Plant-



CASE -VI: Energy purchased and consumed, heat energy partially met by waste or by-product of the process-



1.3 Methodology for calculating baseline specific energy consumption.-

(a) During the first cycle designated consumer having more than five years life, data for the previous three years, namely, 2007-08, 2008-09, 2009-10 shall be considered provided the capacity utilization is uniform. Normalisation, in a suitable statistical approach, shall be done in case of abnormality in capacity utilisation in any of the aforesaid three year (s).

(b) During the first cycle designated consumer having more than five years life and less than three years data has been reported, the same shall be considered provided the capacity utilisation is uniform and if the capacity utilisation is abnormally low in any of the aforesaid three year(s), the same shall not be considered.

(c) During the first cycle,designated consumer having less than five years life and less than three years data has been reported, the available year's data shall be considered provided the capacity

utilisation is uniform. If the capacity utilisation is abnormally low in any of the year(s), the same shall not be considered.

(d) During the first cycle, in case of new designated consumer, the data shall be considered for those years where the capacity utilisation is greater than seventy percent. (70%) and if only one year data is reported, the same shall be considered irrespective of the capacity utilisation.

(e) In the next cycle, baseline specific energy consumption shall be calculated in accordance with the provisions of rule 14.

(e) Few additional sector specific information like process technology, process flow, raw material, product mix etc. shall also be collected.

(f) All forms of energy shall be converted into a single form i.e. metric ton of oil equivalent (toe) by the use of standard engineering conversion formula and the following general guiding principle shall be used in this regard:-

(i) The reported gross calorific value (GCV) of fuels by the designated consumer, shall be considered for estimating the equivalent thermal energy.

(ii) If gross calorific value (GCV)is not reported, then the values mentioned in the Government of India, Ministry of Power, notification number S.O 394(E), dated the 12th March, 2007 shall be considered. Any other information as required shall be taken from standard industrial practice.

(iii) The equivalent thermal energy of the electricity supplied to the grid shall be deducted from the total energy input to the designated consumers' boundary. The following expression shall be used:-

Equivalent thermal energy (kCal)=Electricity supplied to grid(kWh) x national average heat rate in kCal/kWh in the baseline year.

National average heat rate in year 2009-10 was 2717 kCal/kWh.

(iv) Total energy input to the designated consumers' boundary shall be estimated with the following expression:-

$$\text{Energy input (toe)} = \frac{\text{Fuel consumed quantity (kg)} \times \text{gross calorific value (kCal/kg)}}{10^{7}}$$

(v) Once the total energy input to the designated consumers' boundary is estimated, the specific energy consumption shall be calculated by dividing the product quantity.

1.4 Procedure for normalisation of specific energy consumption.-

(a) Variable factors as described in rule 4 may affect the energy consumption and 'Normalisation Factors' shall be considered in those cases. Capacity utilisation is one of the most important parameters to have a normalisation factor. The reported specific energy consumption(SEC) shall be normalised after incorporating the normalisation factor.

Normalized specific energy consumption = f (Reported SEC, normalization factors).

(b) The specific energy consumption shall be normalised, during baseline and target periods, based on statistical procedures.

(c) The normalisation procedure is proposed to be applied if the capacity utilisation or Plant Load Factor (PLF) has a deviation of more than thirty per cent. It shall be applied only if capacity utilisation has deviated due to uncontrollable factors described in rule 4, and duly declared by the designated consumer with authentic proof or self certifications.

(d) The normalisation shall be done by performing a statistical analysis of the specific energy consumption and production data by-

(i) plotting the production versus energy consumption curves;

(ii) performing statistical analysis to represent the relationship between the production and energy consumption;

(iii) extrapolating the above relationship to generate capacity utilisation versus energy consumption and capacity utilisation versus specific energy consumption data for a suitable range of capacity utilisation values;

(iv) the average capacity utilisation shall be used to identify the corresponding specific energy consumption value;

(v) the normalised specific energy consumption shall be the value as computed in the previous step;

(e) The "capacity utilisation" referred to in clauses (c) to (d) shall be replaced by "Plant Load Factor" in case of designated consumers in the thermal power plant sector;

(f) The above calculation determines the normalised specific energy consumption for the designated consumers.

2. Thermal power plant sector.-

2.1 The designated consumers for the thermal power plant sector shall be grouped based on the fuel used and they are as under:-

2.2 The energy consumption norms and standards for power stations shall be specified in terms of specific percentage of their present deviation of net operating heat rate, based on the average of previous three years, namely, 2007-8,2008-9,2009-10 for the first cycle ,and for cycles thereafter in accordance with the provision of rule 14from the net design heat rate. The power stations shall be grouped into various bands according to their present deviations, of operating heat rate from design heat rate and for power stations with higher deviations the energy consumption norms and standards shall be established at lower level and shall be grouped taking into account percentage deviation as under:-

Deviation in net station heat rate from design net heat rate	Reduction target for percentage deviation in the net station heat rate
Upto five per cent.	Ten per cent (10%)
More than five per cent and upto ten percent	Seventeen per cent. (17%)
More than ten per cent. and upto twenty percent	Twenty-one per cent. (21%)
More than twenty per cent.	Twenty-four per cent (24%).

2.5 Correction factor considered for effect on heat rate due to coal quality:

(a) Average "ash", moisture, and gross calorific value for the previous three years in case of baseline for first cycle and as per rule 14 for consequent cycles and specified year in case of target year, shall be taken into account for the baseline year and correction factor shall be worked out based on the following boiler efficiency formula:-

$$\text{Boiler Efficiency} = \frac{92.5}{\text{G.C.V}} \quad [50 * A + 630 (M + 9 H)]$$

Where:

A= Ash percentage in coal

M= Moisture percentage in coal

H= Hydrogen percentage in coal

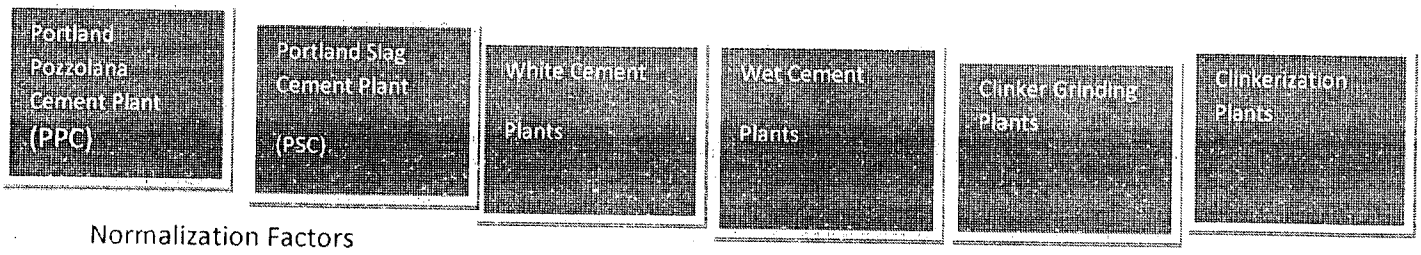
G.C.V= Gross calorific value in kcal/kg

Station heat rate (Kcal/kWh) = Turbine heat rate or Boiler efficiency

(b) The permissible error shall be ±0.05% in terms of toe for the purpose of determining entitlement of energy savings certificates.

3. Cement sector.-

3.1 For establishment of energy consumption norms and standards for designated consumers in the cement sector, the designated consumers shall be grouped based on similar major output or product with the available data to arrive at a logical and acceptable spread of specific energy consumption among the designated consumers which shall be grouped as under:-



Normalization Factors

3.2 Equivalent major grade of cement production.-The various product mixes shall be converted in to equivalent major grade of cement product by the designated consumer by using the following formulae:-

(i) Conversion of Ordinary Portland Cement (OPC) production equivalent to major product

$$Equivalent\ major\ product = \frac{OPC\ \ produced\ (Lakh\ ton) X\ Conversion\ \ factor\ of\ OPC}{Conversion\ \ factor\ of\ \ major\ \ product}$$

[Lakh ton]

(ii) Conversion of Portland Pozzolana (PPC) production equivalent to major product

$$Equivalent\ major\ product = \frac{PPC\ \ produced\ (Lakh\ ton) X\ Conversion\ \ factor\ of\ PPC}{Conversion\ \ factor\ of\ \ major\ \ product}$$

[Lakh ton]

(iii) Conversion of Portland Slag Cement (PSC) or any other variety of cement production equivalent to major product

$$Equivalent\ \ major\ \ product = \frac{PSC\ or\ any\ other\ \text{var}\ iety\ cement\ \ produced\ (Lakh\ ton) X\ Conversion\ \ factor\ of\ PSC\ or\ any\ other\ \text{var}\ iety\ \ cement}{Conversion\ \ factor\ of\ \ major\ \ product}$$

[Lakh ton]

(iv) Conversion of total exported clinker to major product

$$Equivalent\ major\ product = \frac{Total\ \ \text{exp}\ orted\ clin\ \text{ker}\ (Lakh\ ton)}{Conversion\ \ factor\ of\ \ major\ \ product}$$ [Lakh ton]

Where: Total exported clinker= [Clinker exported to other plants + clinker exported to clinker stock over and above the opening stock,]

(v) Conversion of total imported clinker to major product

$$Equivalent\ major\ product = \frac{Total\ \ imported\ \ clin\ \text{ker}\ (Lakh\ ton)}{Conversion\ \ factor\ of\ \ major\ \ product}$$ [Lakh ton]

Where: Total Imported clinker= [Clinker Imported from other plants + clinker Imported from clinker stock, equivalent to the quantity by which the clinker opening stock gets reduced]

(vi) Total equivalent major product of cement

It can be arrived at by summing up all the different grades of cements equivalent to major product calculated above:

Total Equivalent major product of Cement = a(i) +a(ii) +a(iii) + a(iv) [Lakh ton]

Note: S.no. a(v) is already accounted in major product

3.3 Calculation for Gate to Gate specific energy consumption (SEC)

(i) Total thermal energy consumption

Total thermal energy consumption is to be calculated as:-

Total thermal energy consumption= [Fuel consumed (Lakh ton) X Gross calorific value of respected fuel (kcal/kg) X 100]

[Million kcal]

(ii) Total electrical energy consumption

Total electrical energy consumption is to be calculated as:-

Total electrical energy consumption= [{(Total electricity purchased from grid (Lakh kWh) X 860(kcal/kWh)-electricity exported to grid (Lakh kWh) X 2717 (kcal/kWh)}/10]

[Million kcal]

Where: - 2717 kcal/kWh is national average heat rate.

(iii) Notional/ Normalisation energy for imported electricity from grid

Notional energy for imported electricity= [Imported electricity (lakh kWh) x (3208-860) (kcal/kWh)] /10

[Million kcal]

Where: - 3208 kcal/kWh is weighted average heat rate of all designated consumers in cement sector.

(iv) Notional/ Normalisation energy Required for grinding of exported clinker

It is calculated by using following formula:

Notional energy required = {Total exported clinker to major product (Lakh ton) x Electrical SEC of cement grinding (kWh/ton of cement) x Weighted average heat rate (kcal/kWh)}/10

[Million kcal]

Where: -Weighted average heat rate (kcal/kWh) = [{Imported electricity (Lakh kWh) X 3208 (kcal/kWh)} + {diesel generation (lakh kWh) x diesel generator heat rate (kcal/kWh)} + {Captive power plant generation (lakh kWh) x Captive power plant heat rate (kcal/kWh)}] /[Imported electricity (Lakh kWh) +diesel generation (Lakh kWh) +Captive power plant generation (Lakh kWh)]

(v) Notional/ Normalisation energy required for clinkerisation of imported clinker

It is calculated by using following formula:

Notional energy required = [Total clinker imported (Lakh ton) x {Thermal SEC of clinkerization kcal/kg clinker) x 1000+electrical SEC of clinkerization (kWh/ton of clinker)x Weighted average heat rate (kcal/kWh)}/10]

[Million kcal]

(vi) Gate to Gate (GtG) energy consumption

GtG energy consumption =b(i) +b(ii) +b(iii) +b(iv) +b(v) [Million kcal]

(vii) Gate to Gate (GtG) specific energy consumption

$$\text{GtG SEC} = \frac{GtG\ energy\ consumption\ (Million\ kCal)}{Total\ equivalent\ major\ product\ of\ cement\ (Lakh\ ton)\ X100}$$

[kcal/kg of equivalent cement]

3.4 The permissible error shall be ±0.05% in terms of toe for the purpose of determining entitlement of energy savings certificates.

4 Aluminum sector.-

4.1 For establishment of energy consumption norms and standards for designated consumers in the Aluminum sector, the designated consumers shall be grouped based on similar major output or product with the available data to arrive at a logical and acceptable spread of specific energy consumption among the designated consumers which shall be grouped as under:-

Refinery	Smelter	Integrated	Sheet

4.2 The permissible error shall be ±0.05% in terms of toe for the purpose of determining entitlement of energy savings certificates.

5 Iron and Steel sector.-

5.1 For Establishment of Energy consumption norms and standards in the Iron and Steel sector, the Designated consumers are grouped based on similar characteristics with the available data to arrive at a logical and acceptable spread of specific Energy consumption among the designated consumers which may be grouped as under:-

5.2 The entire sector can be sub divided in the following 8 sub-sector as detailed below:

5.3 Integrated Steel Plant

A) Integrated Steel Plant:- The energy indices of the major integrated steel plants captured from the annual reports and reported during the baseline audits have been taken for the below calculations. The Gate to Gate Specific Energy Consumption may be calculated as follows-

Gate to Gate Specific Energy Consumption (SEC) = Energy index of the plant Submitted to Ministry of Steel (kcal/tone of crude steel).

As regards the total energy consumed in plant for these major integrated steel plants, the following formula can be given-

Total Energy Consumed in Plant

Total Energy Consumption (Mkcal) = [Total Thermal Energy (Mkcal) +{Purchased Electricity from Grid (MkWh) *860 kcal/kWh} – {Exported Electricity to grid (MkWh) * Captive Power Plant Heat Rate kcal/kWh}].

Where, Total Thermal Energy (Mkcal) =[Fuel Quantity used (tonne) *Gross Calorific Value of Fuel (kcal/kg)]/1000

5.4 Sponge Iron

B) Sponge Iron:- for this sub sector only those plants are considered which are standalone sponge Iron plants with no downstream products. The gate to gate SEC may be given as follows:

Gate to Gate Specific Energy Consumption (Mkcal/ tonne) = Total Energy Consumption (Mkcal) / Production of Sponge Iron (tonne)

5.5 Sponge Iron with Steel Melting Shop

C) Sponge Iron with Steel Melting Shop:- for this sub sector those plants are considered which are sponge Iron plants with SMS (Steel Melting Shop). The gate to gate SEC may be given as follows:

In this Group first we convert sponge iron to Steel melting shop and again equivalent Steel Melting Shop to sponge iron as follows-

Specific Energy Consumption of Coal for sponge Iron =Tonne of Coal Consumption/Tonne of sponge iron Electrical Specific Energy Consumption for sponge Iron =kWH/Tonne of Sponge Iron.

Thermal Specific Energy Consumption for Sponge Iron ={(Tonne/Tonne* Gross Calorific Value of Coal)+(kWH/Tonne)* CPP Heat Rate kcal/kWh)}

Electrical Specific Energy Consumption for Steel Melting Shop = kWH/Tonne of Steel Melting Shop.

Steel Melting Shop Equivalent to

Sponge Iron Production =[{(kWH/Tonne)*CPPHeat Rate}*production of Steel melting shop] / (Total Specific Energy Consumption of Sponge Iron)

Total Equivalent Sponge Iron

Production (Tonne) = Production of Sponge Iron (Tonne) + Steel Melting Shop production equivalent to sponge iron (Tonne)

(Gate to Gate SEC) Gate to Gate Specific Energy

Consumption (Mkcal/Tonne) = Total Energy consumed (Mkcal)/ Total Equivalent Sponge Iron Production (Tonne)

5.6 Sponge Iron with Steel Melting shops and other

D) Sponge Iron with Steel Melting Shop and others:- for this sub sector those plants are considered which are sponge Iron plants with SMS (Steel Melting Shop) and other products like Ferro Manganese, Silicon Magnanese, Pig Iron etc. . The gate to gate SEC may be given as follows:

In this subsector first we convert equivalent Steel melting shop to Sponge Iron and thereafter equivalent Ferro Alloy is converted to sponge Iron by given formulae.

Equivalent Ferro Alloy Manganese

to Sponge Iron =[{Electrical SEC of Ferro Manganese(kWH/Tonne)*Heat Rate}*Production of Ferro Alloy Ferro Manganese}/(Total Specific Energy Consumption of Sponge Iron)

Equivalent Ferro Alloy

Sponge Iron Manganese to Sponge Iron =[{Electrical SEC of Sponge iron Manganese(kWH/Tonne)*Heat Rate}*production of Ferro Alloy Sponge iron Manganese}/(Total Specific Energy Consumption of Sponge Iron)

(Pig Iron to Sponge Iron) Equivalent Pig Iron to

Sponge Iron =[{Electrical SEC of Pig Iron (kWH/Tonne)*CPP Heat Rate}*production of Ferro Alloy Pig Iron}/(Total Specific Energy Consumption of Sponge Iron)

(Total Sponge Iron) Total Equivalent Sponge

Iron Production = Total energy Sponge Iron +Ferro Manganese to Sponge Iron + Sponge Iron Manganese to Sponge Iron + Pig Iron to Sponge Iron

G to G SEC, Gate to Gate Specific Energy

Consumption = Total Energy consumed/ Total Equivalent Sponge Iron Production

5.7 Ferro Alloy

E) Ferro Alloy:-

In this Group we have converted all products as regards equivalent to Ferro alloy (Sponge iron Manganese) by given formula-

Equivalent Ferro Alloy Manganese to Ferro Alloy Sponge iron

Manganese = (Electrical SEC of Ferro Manganese * Production of Ferro Manganese)/ Electrical SEC of Sponge iron Manganese)

Equivalent Ferro alloy Sponge iron Manganese

to Ferro Alloy Sponge iron Manganese = (Electrical SEC of Sponge iron Manganese * Production of Sponge iron Manganese)/ Electrical SEC of Sponge iron Manganese)

Equivalent Ferro Chrome to Ferro Alloy Sponge iron

Manganese = (Electrical SEC of Ferro Chrome * Production of Ferro Chrome)/ Electrical SEC of Sponge iron Manganese)

Equivalent Pig Iron to Ferro Alloy Sponge iron

Manganese = (Electrical SEC of Pig Iron * Production of Pig Iron)/ Electrical SEC of Sponge iron Manganese)

Total Equivalent Ferro Alloy

Sponge iron Manganese Production =(Ferro Manganese to Ferro sponge iron Manganese) +(Fe Sponge iron Manganese equivalent to Ferro Sponge iron Manganese) +(Ferro Chrome equivalent to Ferro Sponge iron Manganese) + (Pig Iron to Ferro Sponge iron Manganese)

Gate to Gate Specific Energy Consumption =Total Energy consumption (Mkcal))/ Total Equivalent Ferro Alloy Sponge iron Manganese Production

5.8 Ferro Chrome

F) Ferro Chrome:-The Gate to Gate SEC for this subsector is given as follows-

Gate to Gate Specific Energy Consumption

of Ferro Chrome =Total Energy Consumption (Mkcal)/Total Ferro Chrome Production (Tonne).

5.9 Mini Blast Furnace

G) Mini Blast Furnace:-The G to G SEC for this subsector is given as follows-

Gate to Gate Specific Energy Consumption

of Mini Blast Furnace =Total Energy Consumption (Mkcal)/Total Production (Tonne).

5.10 Steel Processing Unit

H) Steel Processing Units:- This subsector contributes towards the many such steel processing plants like rerolling, wiredrawing, cold rolling, hot rolling etc.

The Gate to Gate SEC for this subsector is given as follows-

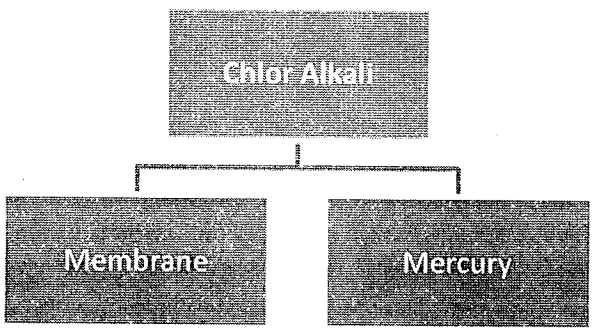
Gate to Gate Specific Energy Consumption

of Steel Processing Unit = Total Energy Consumption (Mkcal)/ Total Production of Steel Processing Unit (Tonne).

5.11 The permissible error shall be ±0.05% in terms of toe for the purpose of determining entitlement of energy savings certificates

6 Chlor-Alkali sector.-

6.1 For establishment of energy consumption norms and standards in the Chlor-Alkali sector, the designated consumers shall be grouped based on similar characteristics with the available data to arrive at a logical and acceptable spread of specific energy consumption among the designated consumers which may be grouped as under:-



6.3 Correction factors developed for variability:

(a) Product mix

Caustic Soda	1.0 of Equivalent Caustic Soda
Liquefied Chlorine (T)	0.0615 of Equivalent Caustic Soda
Compressed Hydrogen (Lac NM^3)	13.889 of Equivalent Caustic Soda
Solid Flakes (T)	0.219 of Equivalent Caustic Soda

(b) Membrane and Electrode Life

60 kWh/tonne per year is added into specific energy consumption in the baseline year for each plant. For example:

Addition of 60 kWh per year: 60 kWh x 860 kCal (In case of Non CPP plants) x 3 years / 10000000 MTOE/tonne

Addition of 60 kWh per year: 60 kWh x 2717kCal (In case of CPP plants) x 3 years / 10000000 MTOE/tonne

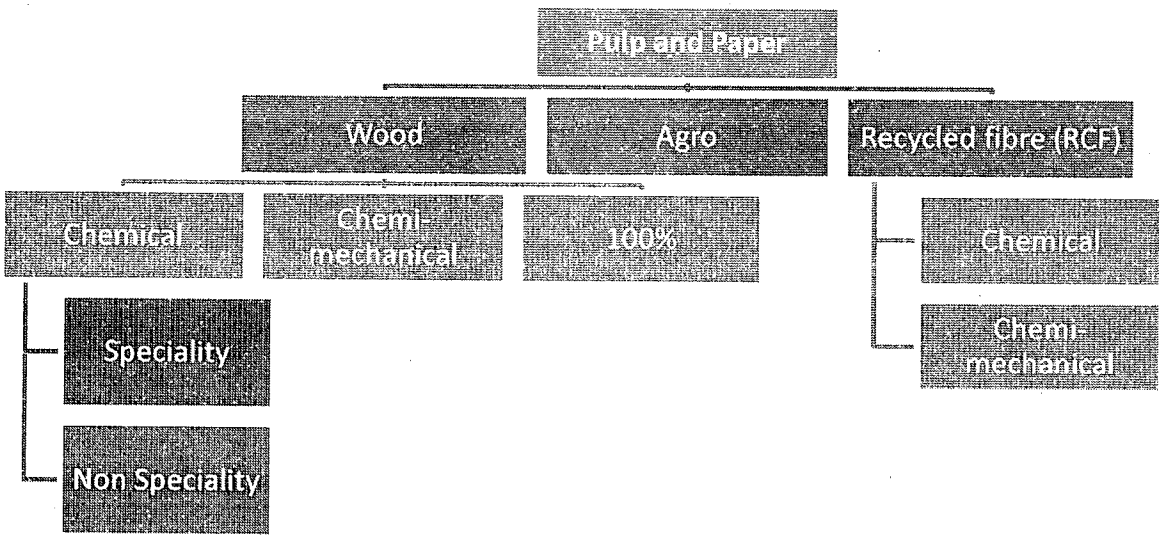
6.4 The permissible error shall be ±0.05% in terms of toe for the purpose of determining entitlement of energy savings certificates

7 Pulp and Paper sector.-

7.1 For establishment of energy consumption norms and standards in the Pulp and Paper sector, the designated consumers shall be grouped based on similar characteristics with the available data to arrive at a logical and acceptable spread of specific energy consumption among the designated consumers and the following guidelines shall be applied to group the designated consumers based on similarity in input raw material and product output on the basis of availability of consistent data:-

(i) The input raw materials are Wood, Agro and Recycled Fibre (RCF);
(ii) The process outputs are of Chemical Pulping, Chemi-mechanical Pulping and 100% market pulping
(iii) The product output of specialty paper, non-specialty paper and newsprint.

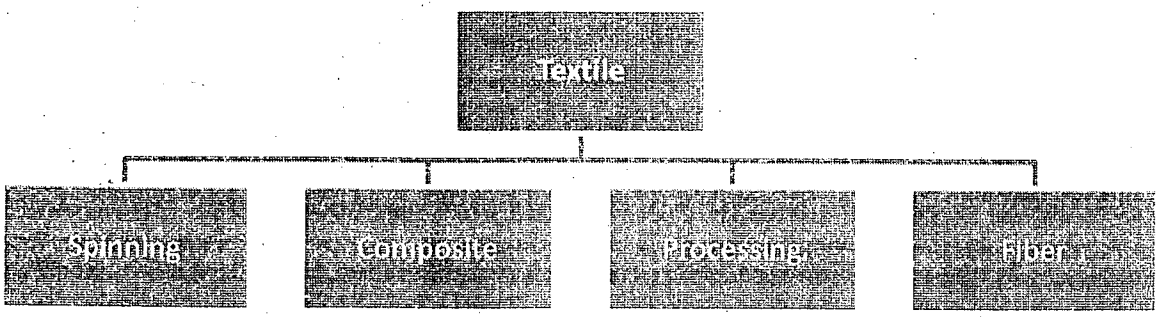
7.2 The groups made for Pulp and Paper sector under are: -



7.3 The permissible error shall be ±0.05% in terms of toe for the purpose of determining entitlement of energy savings certificates.

8 Textile sector.-

8.1 For establishment of energy consumption norms and standards in the Textile sector, the designated consumers shall be based on similar characteristics with the available data to arrive at a logical and acceptable spread of specific energy consumption among the designated and the group made are as under:-



8.2 The designated consumers whose production is measured in meters of cloth, the average grams per square meter (GSM) as 125 and average width as 44 inches shall be assumed for weight calculations.

8.3 The permissible error shall be ±0.05% in terms of toe for the purpose of determining entitlement of energy savings certificates.

9 Fertilizer sector.-

9.1 In Fertilizer Sector, for manufacturing of Urea fertilizer, out of total energy consumed at designated consumer plant boundary, stoichiometric energy of 2.53 Million Gcal/MT Urea is contained in urea product and goes out as such. Thus, the net energy utilized in urea manufacture is total energy input at designated consumers' boundary reduced by 2.53 Million Gcal/MT Urea. The figure is worked out by considering heat energy of ammonia as 4.46 Million Gcal/MT Ammonia and specific consumption 0.567 MT of Ammonia / MT Urea.

9.2 The permissible error shall be ±0.05% in terms of toe for the purpose of determining entitlement of energy saving certificates.

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