

**International Civil Aviation Organization (ICAO) Carbon Offsetting and Reduction  
Scheme for International Aviation (CORSA)**

**Application Form for Emissions Unit Programmes**

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## **SECTION I: ABOUT TIS ASSESSMENT**

### **Background**

ICAO Member States and the aviation industry are implementing the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA). Together with other mitigation measures, CORSA will help achieve international aviation's aspirational goal of carbon neutral growth from the year 2020.

Aeroplane operators will meet their offsetting requirements under CORSA by purchasing and cancelling CORSA eligible emissions units. The ICAO Council determines CORSA eligible emissions units upon recommendations by its Technical Advisory Body (TAB) and consistent with the CORSA Emissions Unit Eligibility Criteria (EUC).

In March 2019, the ICAO Council unanimously approved the CORSA Emissions Unit Eligibility Criteria for use by TAB in undertaking its tasks<sup>1</sup>. TAB conducted its first cycle of assessment in 2019, and its recommendations were considered by the Council in March 2020.

Now, ICAO invites emissions unit programmes<sup>2</sup> to apply for the second cycle of assessment by the TAB, which will involve collecting information from each programme through this programme application form and supplementary materials and requested evidence.

Through this assessment, the TAB will develop recommendations on the list of eligible emissions unit programmes (and potentially project types) for use under the CORSA, which will then be considered by the ICAO Council.

This form is accompanied by, and refers to, Appendix A “*Supplementary Information for Assessment of Emissions Unit Programmes*”<sup>3</sup>, containing the EUC and *Guidelines for Criteria Interpretation*. These EUC and Guidelines are provided to inform programmes' completion of this application form, in which they are cross-referenced **by paragraph number**.

This form is also accompanied by Appendix B “*Programme Assessment Scope*”, and Appendix C “*Programme Exclusions Scope*”, which request all applicants to identify the programme elements<sup>4</sup> they wish to submit for, or exclude from, TAB's assessment.

This form also requests *evidence of programme procedures or programme elements*. These evidentiary documents enable TAB to a) confirm that a given procedure or program element is *in place*, b) more fully comprehend the programme's summary responses, and c) archive the information as a reference for potential future assessments.

Programme responses to this application form will serve as the primary basis for the assessment. Such assessment may involve e.g. clarification questions, live interview(s) with TAB, and a completeness check of the application, as further requested.

**Translation:** The working language of the assessment process is English. Translation services are not available for this process. If the programme documents and information are not published in English, the programme should fully describe in English (*rather than summarize*) this information in the fields provided in this form, and in response to any additional questions. Where this form requests *evidence of programme procedures*, programmes are strongly encouraged to provide these documents in English, to provide for accuracy and comprehension. Where this is not possible due to time constraints or document length, the programme may

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<sup>1</sup> Available on the ICAO CORSA website: <https://www.icao.int/environmental-protection/CORSA/Pages/CORSA-Emissions-Units.aspx>

<sup>2</sup> “Emissions Unit Programme”, for the purposes of TAB's assessment, refers to an organization that administers standards and procedures for developing activities that generate offsets, and for verifying and “issuing” offsets created by those activities. For more information, please review the TAB FAQs on the ICAO CORSA website: <https://www.icao.int/environmental-protection/CORSA/Pages/TAB.aspx>

<sup>3</sup> Available on the ICAO CORSA website: <https://www.icao.int/environmental-protection/CORSA/Pages/TAB.aspx>

<sup>4</sup> At the “activity type” level (e.g., sector(s), sub-sector(s), and/or project “type(s)”)

provide such documents in their original language in a readily translatable format (e.g., Microsoft Word). Those programmes that need to translate documents prior to submission may contact the ICAO Secretariat regarding accommodation.

**Disclaimer:** The information contained in the application, and any supporting evidence or clarification provided by the applicant including information designated as “business confidential” by the applicant, will be provided to the members of the TAB to properly assess the programme and make recommendations to the ICAO Council. The application and such other evidence or clarification will be made publicly available on the ICAO CORSIA website for the public to provide comments, except for information which the applicant designates as “business confidential”. The applicant shall bear all expenses related to the collection of information for the preparation of the application, preparation and submission of the application to the ICAO Secretariat and provision of any subsequent clarification sought by the Secretariat and/or the members of the TAB. Under no circumstances shall ICAO be responsible for the reimbursement of such or any other expenses borne by the applicant in this regard, or any loss or damages that the applicant may incur in relation to the assessment and outcome of this process.

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## **SECTION II: INSTRUCTIONS**

### **Submission and contacts**

A programme is invited to complete and submit the form, and accompanying evidence, through the ICAO CORSIA website no later than close of business on **20 April 2020**. Within seven business days of receiving this form, the Secretariat will notify the programme that its form was received.

If the programme has questions regarding the completion of this form, please contact ICAO Secretariat via email: [officeenv@icao.int](mailto:officeenv@icao.int). Programmes will be informed, in a timely manner, of clarifications provided by ICAO to any other programme.

### **Form basis and cross-references**

Questions in this form are derived from the CORSIA emissions unit eligibility criteria (EUC) and any *Guidelines for Criteria Interpretation* introduced in Section I (above). To help inform the programme's completion of this form, each question includes the paragraph number for its corresponding criterion or guideline that can be found in [Appendix A "Supplementary Information for Assessment of Emissions Unit Programmes"](#).

### **Form completion**

The programme should respond to all questions in this application form. A "complete" response involves three components: a) a written summary response, b) selection of the "YES" check box if a procedure is fully *in place*, and c) supporting evidence.

- a) **Written summary responses:** The programme is encouraged to construct written summary responses in a manner that provides for general comprehension of the given programme procedure, independent of supporting evidence. TAB will confirm each response in the supplementary evidence provided by the programme. Please note that written summary responses should be provided in all cases—supporting evidence (described in *c*) below) should not be considered as an alternative to a complete summary response.
- b) **"YES" check box:** Each question is accompanied by a check box for the programme to indicate the status of a given procedure or programme element. Here, programmes should accurately represent the status of its procedures and programme elements. Please note that an unselected check box does not, in itself, disqualify an application from further assessment; it will be taken into account when TAB reviews the programme's accompanying information.

The programme *should* select the "YES" check box if a procedure or element is *in place*.

The programme *should not* select the check box in the following instances:

1. The procedure in question is *not relevant to the programme's application* (if, e.g., the question applies to activity(ies) that the programme is not submitting for assessment, or an alternative approach is taken to the procedure or element in question). In such cases, please provide justification in the written summary response.
  2. The procedure in question is *not yet in place, but the programme is planning to introduce such a procedure*. In such cases, please describe any such plans in the written summary response, according to form instructions.
  3. The procedure in question is *not in place*. In such cases, please provide justification in the written summary response.
- c) **Supporting evidence:** Most questions in this form request *evidence of programme procedures or programme elements*. Such evidence may be found in programme standards, requirements, or guidance documents; templates; programme website or registry contents; or in some cases, in specific methodologies. To help manage file size, the programme should limit supporting documentation to that

which directly substantiates the programme’s statements in this form.

Regarding such requests for evidence, programmes can substantiate their responses in any of these ways (**in order of preference**):

1. web links to supporting documentation included along with the written summary response; with instructions for finding the relevant information within the linked source, if necessary;
2. copying/pasting information directly into this form (no character limits) along with the written summary response;
3. attaching supporting documentation to this form at the time of submission, with instructions for finding the relevant information within the attached document(s);

### **Form scope**

The programme may elect to submit for TAB assessment all, *or only a subset*, of the activities supported by the programme. The programme is requested to identify, in the following Appendices, the activities that it wishes to submit for, or exclude from, TAB’s assessment:

In **Appendix B “Programme Assessment Scope”**, the programme should clearly identify, at the “activity type” level (e.g., sector(s), sub-sector(s), and/or programme/project “type(s)”), elements that the programme **is submitting for TAB’s assessment** of CORSIA eligibility; as well as the specific methodologies, protocols, and/or framework(s) associated with these programme elements; which *are* described in this form.

In **Appendix C “Programme Exclusions Scope”**, the programme should clearly identify, at the “activity type” level (e.g., sector(s), sub-sector(s), and/or programme/project “type(s)”), any elements the programme **is not submitting for TAB’s assessment** of CORSIA eligibility, which *are not* described in this form; as well as the specific methodologies, protocols, and/or framework(s) associated with these programme elements.

### **Programme revisions**

Where the programme has any plans to revise the programme (e.g., its policies, procedures, measures, tracking systems, governance or legal arrangements), including to enhance consistency with a given criterion or guideline, please provide the following information in response to any and all relevant form question(s):

- a) Proposed revision(s);
- b) Process and proposed timeline to develop and implement the proposed revision(s);
- c) Process and timeline for external communication and implementation of the revision(s).

### **“Linked” certification schemes**

This application form should be completed and submitted exclusively on behalf of the programme that is described in Part I of this form.

Some programmes may supplement their standards by collaborating with other schemes that certify, e.g., the social or ecological “co-benefits” of mitigation. The programme can reflect a linked scheme’s procedures in responses to this form, where this is seen as enhancing—i.e. going “above and beyond”—the programme’s own procedures.

For example, the programme may describe how a linked scheme audits sustainable development outcomes; but is not expected to report the linked scheme’s board members or staff persons.

Programmes should clearly identify any information provided in this form that pertains to a linked certification scheme and/or only applies when a linked certification scheme is used.

### **Disclosure of programme application forms**

Applications, including information submitted in Appendices B and C, and other information submitted by applicants will be publicly available on the ICAO CORSIA website, except for materials which the applicants designate as business confidential.

The public will be invited to submit comments on the information submitted, including regarding consistency with the emissions unit criteria (EUC), through the ICAO CORSIA website, for consideration by the TAB in its assessment.

## **SECTION III: APPLICATION FORM**

### **PART 1: General information**

#### **A. Programme Information**

Programme name: Perform, Achieve and Trade (PAT) scheme

Administering Organization<sup>5</sup>: Bureau of Energy Efficiency, Ministry of Power, Government of India

Official mailing address: 4th Floor, Sewa Bhawan, R.K. Puram Sector -1, New Delhi -110066, India

Telephone #: 011-26766700

Official web address: [www.beeindia.gov.in](http://www.beeindia.gov.in)

#### **B. Programme Administrator Information**

Full name and title: Mr. Abhay Bakre, Director General

Employer / Company (*if not programme*): Bureau of Energy Efficiency

E-mail address: [dg-bee@nic.in](mailto:dg-bee@nic.in)

Telephone #: 011-26766701

#### **C. Programme Representative Information (*if different from Programme Administrator*)**

Full name and title: Dr. Ashok Kumar, Director

Employer / Company (*if not Programme*): Bureau of Energy Efficiency

E-mail address: [kumara@beenet.in](mailto:kumara@beenet.in)

Telephone #: 011-26766711

#### **D. Programme Senior Staff / Leadership (*e.g., President / CEO, board members*)**

List the names and titles of programme's senior staff / leadership, including board members:

1. Mr. Abhay Bakre, Director General
2. Dr. Ashok Kumar, Director
3. Mr. S.K. Khandare, Director
4. Mr. Saurabh Diddi, Director
5. Mr. Milind Deore, Director
6. Mrs. Vineeta Kanwal, Director

Provide an organization chart (in the space below or as an attachment) that illustrates, or otherwise describes, the functional relationship a) between the individuals listed in D; and b) between those individuals and programme staff / employees; and c) the functions of each organizational unit and interlinkages with other units.

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<sup>5</sup> Name of the business, government agency, organization, or other entity that administers the Emissions Unit Programme, *if different from "Programme Name"*.

## PART 2: Programme summary

### A. Introduction:

Perform, Achieve and Trade (PAT) scheme is one of the initiatives under National Mission for Enhanced Energy Efficiency (NMEEE) which is one of the eight missions under National Action Plan on Climate Change (NAPCC). PAT is a regulatory instrument to reduce Specific Energy Consumption (SEC) in energy intensive sectors, with an associated market-based mechanism to enhance the cost effectiveness through certification of excess energy saving which can be traded. The energy intensive sectors including the thermal power plants, cement, iron and steel, petroleum refinery and fertilizer are the major players under the scheme. As stated above, PAT is also a mechanism to achieve emissions reduction in energy intensive industries consequent to reduction in Specific Energy Consumption (SEC).

The assessment of SEC in the baseline year and projected SEC in the target year include different forms of energy going into the boundary of the designated consumers' plant and the products leaving the plant boundary over a particular cycle. SEC is calculated on a "Gate-to-Gate" concept which is pictorially shown below in Figure 1. The SEC of an industry on Gate-to-Gate concept is calculated with the following formula:

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

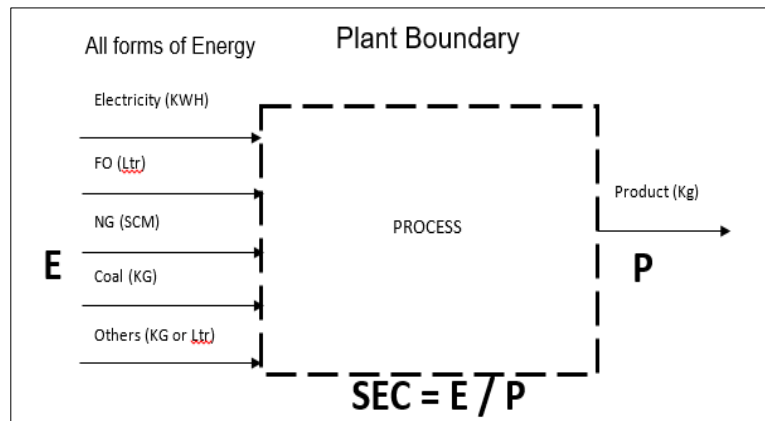


Figure 1. Gate-to-Gate Concept to calculate SEC

### B. Implementation mechanism

The industries that are eligible to participate under PAT scheme are notified in the Gazette of India based on minimum threshold annual energy consumption. PAT scheme is implemented on a cyclic basis and each cycle is of three years. In each PAT cycle, specific energy consumption reduction targets are assigned to industries or Designated Consumers (DCs).

C. Section 14A (1) of Energy Conservation Act 2001 confers power to Central Government to issue energy savings certificate to the designated consumer whose energy consumption is less than the prescribed norms and standards. Energy Conservation Rules, 2012 (PAT Rules 2012) notified on 30th March 2012 by Ministry of Power, has specified that the ESCerts to be issued/entitled to purchase will be in electronic form and tradable on Power Exchanges only. BEE has developed an online portal called PATNet through which the DCs can upload their forms and ESCerts can be electronically issued/entitled to purchase. The Central Electricity Regulatory Commission (CERC) is the market regulator for trading of ESCerts



and the Power System Operation Corporation Limited (POSOCO) is functioning as Registry for ESCerts.

**D. Identification of potential sectors:**

The Central Government based on the recommendations of Bureau of Energy Efficiency (BEE) notified industrial units and other establishments having annual energy consumption more than the threshold in thirteen industrial sectors viz. Aluminum, Cement, Chlor- Alkali, Fertilizer, Iron & Steel, Paper & Pulp, Thermal Power Plant, Textile, Railways, Refineries, DISCOMs, Petrochemicals and Commercial Buildings (Hotels) as Designated Consumers (DCs).

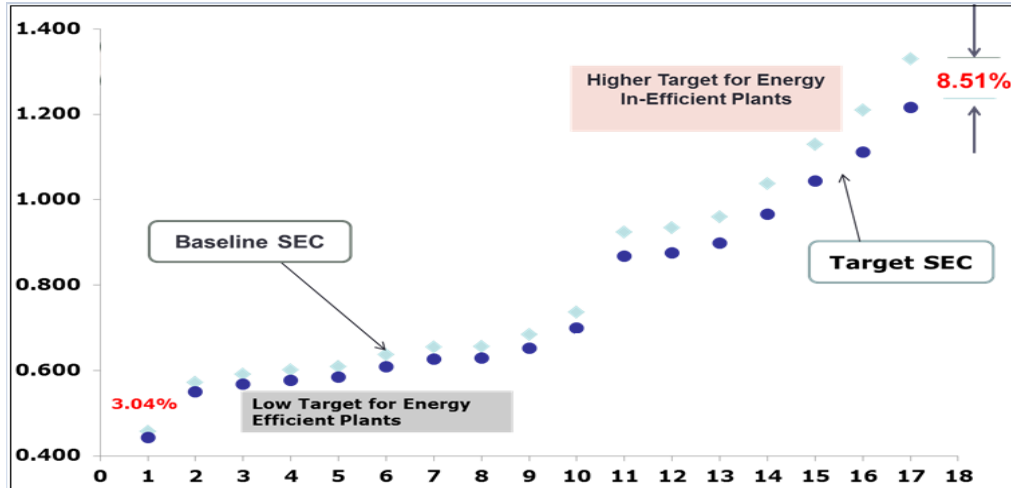


**E. Setting of Energy Consumption Norms and Standards:**

Bureau of Energy Efficiency had conducted sector specific studies to perform situational analysis. The studies showed that there is a wide bandwidth of SEC within an industrial sector that indicated large energy-savings potential in the sector. The wide bandwidth is also a reflection of the differences in the energy-saving possibilities amongst plants because of their varying vintage, production capacity, raw material quality, and product-mix. Such a wide variation also makes it difficult to specify a single benchmark SEC for the sector as a whole. Older plants will find the benchmark impossibly high if it is set at the level of newer plants, newer plants will find it trivial if it is set at the level of older plants. The broad bandwidth of SEC within a sector, and the inability of all plants to achieve a sectoral benchmark SEC, suggests that SEC improvement norms had to be set for individual plants.

These SEC improvement targets are based on the composite metric of trend of energy intensity reduction, energy-savings potential of the plants and domestic and international commitments. While assigning the targets, the scheme well recognizes that the higher the energy efficiency (or the lower the SEC), the lower the energy-savings potential. Thus, it became evident that it is not feasible to define a single norm/standard for all designated consumers unless there is significant homogeneity amongst units in a sector. Therefore, under PAT, the energy efficiency improvement targets fixed are “unit specific”. Each DC is

mandated to reduce its SEC by a certain value, based on its current SEC (or baseline SEC) within the sectoral bandwidth. A pictorial representation is provided below:



**F. Setting up of targets for Designated Consumers:**

The target reduction for each DC is based on the prevailing levels of energy efficiency, so that energy efficient units will have lower target of, as compared to less energy efficient units which will have higher targets. Each DC is given a mandatory target of SEC reduction with a time period of three years from the date of notification by the Central Government. DCs which are able to achieve SEC level that are lower than their targets can receive Energy Savings Certificates (ESCerts) for their excess savings. On the other hand, the DCs which fail to achieve the given targets either through their own actions or through purchase of ESCerts are liable to financial penalty under the Energy Conservation Act, 2001. The ESCerts are traded at the power exchanges or bought by other units under PAT who can use them to meet their compliance requirements.

**Note: A detailed note about the programme covering various implementation stages and other necessary information is attached herewith as Annexure-1.**

### **PART 3: Emissions Unit Programme Design Elements**

*Note*—where “evidence” is requested throughout *Part 3* and *Part 4*, the programme should provide web links to documentation. If that is not possible, then the programme may provide evidence of programme procedures directly in the text boxes provided (by copying/pasting the relevant provisions) and/or by attached supporting documentation, as recommended in “SECTION II: INSTRUCTIONS—*Form Completion*”.

*Note*—“*Paragraph X.X*” in this form refers to corresponding paragraph(s) in Appendix A “Supplementary Information for Assessment of Emissions Unit Programmes”.

*Note*—Where the programme has any plans to revise the programme (e.g., its policies, procedures, measures, tracking systems, governance or legal arrangements), including to enhance consistency with a given criterion or guideline, provide the following information in response to any and all relevant form question(s):

- Proposed revision(s);
- Process and proposed timeline to develop and implement the proposed revision(s);
- Process and timeline for external communication and implementation of the revision(s).

#### Question 3.1. Clear methodologies and protocols, and their development process

**Provide evidence<sup>6</sup> that the programme’s qualification and quantification methodologies and protocols are in place and available for use, including where the programme’s existing methodologies and protocols are publicly disclosed: (Paragraph 2.1)**

The policies, methodologies and qualifications of the programme have been derived from the Energy Conservation (EC) Act, 2001. The Energy Conservation Act 2001 empowers Bureau of Energy Efficiency (BEE) to put in place the policies, rules and regulations to improve energy efficiency in energy intensive industries. The programmes’ existing methodologies and protocols have been notified in the Energy Conservation Rules notified by the Government of India vide notification number G.S.R. 269 (E) dated 30th March 2012. Thus, the entire framework of the PAT scheme revolves around the Energy Conservation Act 2001 and the Energy Conservation Rules which are available in the public domain.

Additional information in this regard is mentioned in the Annexure-1 attached herewith which also consists of the web-links for accessing the said information.

**Summarize the programme’s process for developing further methodologies and protocols, including the timing and process for revision of existing methodologies: (Paragraph 2.1)**

Revision of target setting methodology, revision in timelines of submission of various documents for compliance purpose is done through discussions with the various Technical experts of the respective sectors for which BEE has constituted Technical Committee’s.

Also time to time amendments are also made in the Energy Conservation Rules in order to smoothly operate the entire scheme. The Energy Conservation Rules, 2012 have been amended in the year 2016 and 2018 vide gazette notifications and are also available in the public domain.

Additional information in this regard is mentioned in the Annexure-1 attached herewith which also consists of the web-links for accessing the said information.

**Provide evidence of the public availability of the programme’s process for developing further methodologies and protocols: (Paragraph 2.1)**

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<sup>6</sup> For this and subsequent “evidence” requests, evidence should be provided in the text box (e.g., web links to documentation), and/or in attachments, as recommended in “SECTION II: INSTRUCTIONS—*Form Completion*”.

The documents for accessing the process for developing further methodologies and protocols can be accessed from the web-links mentioned in the end of the Annexure-1 attached with the application Form.

### Question 3.2. Scope considerations

**Summarize the level at which activities are allowed under the programme (e.g., project based, programme of activities, jurisdiction-scale): (Paragraph 2.2)**

The Perform, Achieve and Trade (PAT) scheme involves participation from energy intensive industries of India. It covers about 50% of the total industrial energy consumption of India and includes sectors such as Thermal Power Plant, cement, Iron & Steel, Textile, Fertilizer, Railways, Refineries etc.

**Summarize the eligibility criteria for each type of offset activity (e.g., which sectors, project types, and geographic locations are covered): (Paragraph 2.2)**

The sectors that have been included under the PAT scheme are as per the Schedule given in the Energy Conservation Act, 2001. The Designated Consumers (DCs) that are notified as a part of the programme for mandatorily reducing the Specific Energy Consumption (SEC) from these sectors are selected based on their annual energy consumption (in toe). If the annual energy consumption of any industry of the sectors as mentioned in the table below is equivalent or more than the threshold set for the sector, the industry is likely to be notified as a Designated Consumer.

S. No.	Sector	Annual energy consumption Norm to be DC (toe) *
1.	Aluminium	7500
2	Cement	30000
3.	Chlor- Alkali	12000
4.	Fertilizer	30000
5.	Iron and Steel	20000
6.	Pulp and Paper	20000
7.	Textile	3000
8.	Thermal Power Plant	30000
9	Zonal Railways Railway Workshops	70000 30000
10.	Refineries	90000
11.	DISCOMs	86000
12	Petrochemicals	90000
13	Commercial Buildings (Hotel)	500

\* toe: tonne of oil equivalent

**Provide evidence of the Programme information defining a) level at which activities are allowed under the Programme, and b) the eligibility criteria for each type of offset activity, including its availability to the public: (Paragraph 2.2)**

The evidence citing the information regarding level at which activities are allowed under the programme and eligibility criteria is available in public domain and the web-links for accessing the said information are given at the end of Annexure-1 attached herewith.

### Question 3.3. Offset credit issuance and retirement procedures

Are procedures in place defining how offset credits are... (Paragraph 2.3)

- a) issued?  YES
- b) retired / cancelled?  YES
- c) subject to discounting (if any)?  YES

Are procedures in place defining... (Paragraph 2.3)

- d) the length of crediting period(s)?  YES
- e) whether crediting periods are renewable?  YES

**Provide evidence of the procedures referred to in a) through e) (if any, in the case of “c”), including their availability to the public:**

The procedure for issuance of Energy saving Certificate (ESCerts) or credit issuance is defined in the Energy Conservation Rules. The Rule includes the procedures for issuance of ESCerts which is to be done in electronic form, value of one energy saving certificate, banking of ESCerts etc. It may also be noted that Regulations for the development of market in energy for exchange of transferable and sellable ESCerts has been notified by Central Electricity Regulatory Commission (CERC) vide gazette notification in May 2016. The same is also available in public domain.

Since the ESCerts are issued on actual energy saving based on audited information and data, there is no discounting.

Regarding the length of the crediting period, it may be noted that ESCerts are issued to a Designated Consumers through measures adopted over a period of 3 years i.e. the length of one PAT cycle. Each PAT cycle is of three years and after completion of three years, a new cycle starts with a new baseline for the Designated Consumers. An issued ESCert has a life till the end of the compliance of the subsequent cycle.

Additional information in this regard is mentioned in Point IX of the Annexure-1 attached herewith. Evidence for the procedures can be accessed from the web-links given at the end of the Annexure-1.

### Question 3.4 Identification and Tracking

Does the programme utilize an electronic registry or registries? (Paragraph 2.4.2)  YES

**Provide web link(s) to the programme registry(ies) and indicate whether the registry is administered by the programme or outsourced to a third party (Paragraph 2.4.2):**

The Registry is directly managed by the programme.

The PAT programme utilizes an electronic registry for the purpose registration of Eligible entities, maintenance of records etc. With regard to the PAT programme, the functions of Registry are performed by NLDC operating under Power System Operation Corporation Limited (POSOCO) as per the notification of the Central Government vide notification no 10/4/2015 dated January 05, 2016.

Weblink to the programme registry: <https://registry.escerts.gov.in/>

**Does the programme have procedures in place to ensure that the programme registry or registries...:**

- a) have the capability to transparently identify emissions units that are deemed ICAO-eligible,

in all account types ? (Paragraph 2.4.3)  YES

It may be noted that the ESCerts are issued through an online platform and the Registration is also done electronically i.e. on an electronic platform. The same process would also be followed to issue emission units under CORSIA.

- b) identify, and facilitate tracking and transfer of, unit ownership/holding from issuance to cancellation/retirement? (Paragraphs 2.4 (a) and (d) and 2.4.4)  YES
- c) Identify unit status, including retirement/cancellation, and issuance status (Paragraph 2.4.4)  YES
- d) assign unique serial numbers to issued units? (Paragraphs 2.4 (b) and 2.4.5)  YES
- e) identify in serialization, or designate on a public platform, each unique unit's country and sector of origin, vintage, and original (and, if relevant, revised) project registration date? (Paragraph 2.4.5)  YES
- f) are secure (i.e. that robust security provisions are in place)? (Paragraph 2.4 (c))  YES

**Summarize and provide evidence of the procedures referred to in a) through f), including the availability to the public of the procedures referred to in b), d), and f):**

The PAT programme utilizes an electronic platform for issuance of Energy Saving Certificates and the procedures regarding issuance, retirement etc. have been defined in the Energy Conservation Rules (Refer to point IX of the Annexure). The Ministry of Power, Government of India, in the year 2016 had assigned the functions of a Registry of Energy Saving Certificates (ESCerts) trading under PAT programme to Power System Operation Corporation (POSOCO). In continuation to the above, the Central Electricity Regulatory Commission (Terms and Conditions for Dealing in Energy Savings Certificates) Regulations were notified in May 2016. Central Electricity Regulatory Commission (CERC) is the market regulator for trading of ESCerts.

**List any/all international data exchange standards to which the programme's registry(ies) conform: (Paragraph 2.4 (f))**

Not Applicable

**Are policies and robust procedures in place to...**

a) prevent the programme registry administrators from having financial, commercial or fiduciary conflicts of interest in the governance or provision of registry services?  YES  
(Paragraph 2.4.6)

b) ensure that, where such conflicts arise, they are appropriately declared, and addressed and isolated?  YES  
(Paragraph 2.4.6)

**Summarize and provide evidence of the policies and procedures referred to in a) and b):**

The governance framework of PAT scheme is distributed amongst various Government institutions having roles and responsibilities clearly defined in the Energy Conservation Act and Energy Conservation Rules. The issuance or entitlement to purchase ESCerts is done by the Central Government upon recommendation of Bureau of Energy Efficiency.

Market Regulation for trading of ESCerts is done by Central Electricity Regulatory Commission, trading is done at trading platforms and Registration is done by Power System Operation Corporation (POSOCO).

Evidence of the policies and procedures referred above are the following web-links:

- a) Energy Conservation Rules, 2012 : <https://beeindia.gov.in/content/pat-notifications>
- b) CERC Regulations 2016: <https://registry.escerts.gov.in/>
- c) Procedure for transaction of ESCerts: <https://registry.escerts.gov.in/>

**Are provisions in place...**

- |   |       |
|---|-------|
| a) ensuring the screening of requests for registry accounts? ( <i>Paragraph 2.4.7</i> )   | ■ YES |
| b) restricting the programme registry (or registries) accounts to registered businesses and individuals? ( <i>Paragraph 2.4.7</i> ) | ■ YES |
| c) ensuring the periodic audit or evaluation of registry compliance with security provisions? ( <i>Paragraph 2.4.8</i> )            | ■ YES |

**Summarize and provide evidence of the registry security provisions referred to in a) through c):**

It may be noted that to ensure periodic evaluation of the online platforms involved in the issuance and trading of ESCerts:

- Security audits for ensuring the security provisions are carried out at specific intervals by an IT agency engaged by BEE.
- The Platform for record keeping and transaction of ESCerts is integrated with SSL certificate Class – 2 which prevents any unauthorized access.
- It has a robust system of role and field-based security with clarity of usage and responsibility.
- The portal has inherent capacity to maintain audit trail
- Further, its servers are maintained by a Government entity i.e. National Informatic Centre (NIC) adding another layer of security.

The evidence for the aforesaid questions can be seen in Annexure-3 attached herewith.

**Question 3.5 Legal nature and transfer of units**

- |   |       |
|---|-------|
| Does the programme define and ensure the underlying attributes and property aspects of a unit? ( <i>Paragraph 2.5</i> ) | ■ YES |
|---|-------|

**Summarize and provide evidence of the process by which the programme defines and ensures the underlying attributes and property aspects of a unit, including its availability to the public:**

It may be noted that procedures for issuance and trading of Energy Savings Certificates (ESCerts) have already been defined in the Energy Conservation Rules (as also mentioned in the annexure attached, point IX). The ESCerts are issued or entitled to purchase by the Central Government to each Designated Consumer upon recommendations of Bureau of Energy Efficiency. The ESCerts are issued in electronic form. Also, the Central Electricity Regulatory Commission (CERC) is the Market Regulator to promote market for development of energy saving certificates (ESCerts) including trading on power exchange(s) and discharge such other functions as may be considered necessary for the purpose. . In addition to the above, The Ministry of Power, Government of India, in the year 2016 had assigned the functions of a Registry of Energy Saving Certificates (ESCerts) trading under PAT scheme to Power System Operation Corporation (POSOCO).

Thus all the entities involved above are public and entire process of issuance or transfer of Energy Saving Certificates has been defined in the Energy Conservation Rules notified by the Central Government and also in the Procedures for transaction of ESCerts issued by CERC. Further details regarding the same can be seen

in Point IX and X of the Annexure-1.

The Energy Conservation Rules and the Procedures for transaction of ESCerts can be accessed from the following web-links respectively:

<https://beeindia.gov.in/content/pat-notifications> and <https://escerts.gov.in/PortalUser/GetImportantLinks>

### Question 3.6 Validation and verification procedures

Are standards, requirements, and procedures in place for... (*Paragraph 2.6*)

- |  |   |
|--|---|
| a) the validation of activities?             | <input checked="" type="checkbox"/> YES |
| b) the verification of emissions reductions? | <input checked="" type="checkbox"/> YES |
| c) the accreditation of validators?          | <input checked="" type="checkbox"/> YES |
| d) the accreditation of verifiers?           | <input checked="" type="checkbox"/> YES |

**Provide evidence of the standards, requirements, and procedures referred to in a) through d), including their availability to the public:**

The policy, standards, requirements and detailed procedures for validation of activities, verification of emission reduction, accreditation of validators and verifiers has been notified by the Central Government of India and is available in public domain.

**Procedure for verification of emission reduction and validation of activities:** It may be noted that the procedure for assessment of performance and Monitoring & verification has been notified in Rule 6 and 7 of the Energy Conservation Rules (Please refer to Point IV and V of the Annexure -1 attached for more detailed information).

**Accreditation of verifiers:** Also, in continuation to the above, the entire process for accreditation of validators and accreditation of verifiers has been notified in the Rule 9 of the Energy Conservation Rules. It may also be noted that the Rule 10 of the Energy Conservation Rules also known as the PAT Rules that were notified by the Central Government in the year 2012 specified the obligations of an accredited energy auditor. The procedures for Accreditation of Energy Auditors and Maintenance of their List under the Energy Conservation Act, 2001 have also been developed by Bureau of Energy Efficiency. More detailed information on accreditation of validators and verifiers can be seen in point V and VII of the Annexure-1 attached.

Evidence for accessing the above information:

1. Energy Conservation Act, 2001: <https://powermin.nic.in/sites/default/files/uploads/ecact2001.pdf>
2. Energy Conservation Rules: <http://beeindia.gov.in/content/pat-notifications>
3. Procedure for accreditation: <https://beeindia.gov.in/content/accredited-energy-auditors>

### Question 3.7 Programme governance

**Does the programme publicly disclose who is responsible for the administration of the programme? (*Paragraph 2.7*)**  YES

**Does the programme publicly disclose how decisions are made? (*Paragraph 2.7*)**  YES

**Provide evidence that this information is available to the public:**



Bureau of Energy Efficiency under the Central Government of India is responsible for administration and implementation of the PAT programme. The implementation of PAT programme is governed by the provisions of the Energy Conservation (EC) Act that was enacted by the Government of India in the year 2001.

### **BEE as Programme Administrator**

The Section 14 of the Energy Conservation Act 2001, empowers the Central Government to facilitate and enforce efficient use of energy and its conservation. The clause (l) of the Section 14 directs any designated consumer to designate or appoint energy manager in charge of the activities for efficient use of energy and its conservation and submit a report, in the form and manner as may be prescribed, on the status of energy consumption at the end of every financial year to the designated agency. The clause (n) of the Section 14 of the EC Act 2001 directs every designated consumer to comply with energy consumption norms and standards. Further details can be accessed from point I of the Annexure-1 attached herewith.

### **Energy Conservation Rules/ PAT Rules**

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 were notified by the Government of India followed by two amendments i.e. in 2016 and 2018. These Rules are also referred to as PAT Rules and the overall mechanism for operationalization of PAT programme revolves around these Rules. Further details can be accessed from point I of the Annexure-1 attached herewith.

**Evidence:** Web-links can be accessed from end of the Annexure-1 attached.

### **Can the programme demonstrate that it has... (Paragraph 2.7.2)**

- a) been continuously governed and operational for at least the last two years?  YES
- b) been continuously operational for at least the last two years?  YES
- c) a plan for the long-term administration of multi-decadal programme elements?  YES
- d) a plan for possible responses to the dissolution of the programme in its current form?  YES

The programme is envisaged to continue as the Energy Efficiency opportunities emerge in the identified sectors.

### **Provide evidence of the activities, policies, and procedures referred to in a) through d):**

The first cycle of PAT scheme was notified in the Gazette of India vide notification no. S.O. 687 (E) dated 30th March 2012. Under PAT cycle –I, 478 industrial units from 8 sectors viz. Aluminum, Cement, Chlor- Alkali, Fertilizer, Iron & Steel, Paper & Pulp, Thermal Power Plant and Textile were notified. The overall Specific Energy Consumption (SEC) reduction targets aimed to secure an energy saving of 6.686 million tonne of oil equivalent (MTOE). PAT Cycle I was completed on 31st March, 2015.

After the completion of PAT cycle –I, PAT cycle –II was notified vide S.O. 1264 (E) dated 31st March 2016 and published in the Gazette of India. Under PAT Cycle-II, SEC reduction

targets were assigned and notified to 621 DCs from 11 sectors with an overall energy consumption reduction target of 8.869 MTOE. Further to this, PAT cycle –III, IV, V and VI were notified in the year 2017, 2018, 2019 and 2020. Thus, the programme has been operational since the time of inception till date. Further details on the continuous operation of PAT scheme can be seen in point XIV of the Annexure-1 attached herewith.

**Note: Under the current application, PAT cycle –I and II are being applied for. However, for record it is informed that the Bureau of Energy Efficiency has in parallel also notified PAT cycle –III, IV, V and VI.**

**Evidence: The following web-links may be accessed:**

1. Introduction of the National Action Plan on Climate Change (NAPCC): <https://pib.gov.in/newsite/erecontent.aspx?relid=41277>.
2. Energy Conservation Act 2001: <https://powermin.nic.in/sites/default/files/uploads/ecact2001.pdf>
3. Energy Conservation Rules 2012: <https://beeindia.gov.in/content/pat-notifications>
4. Notification of PAT cycles I,II, III, IV, V and VI: <https://beeindia.gov.in/content/pat-notifications>

**Are policies and robust procedures in place to...**

a) prevent the programme staff, board members, and management from having financial, commercial or fiduciary conflicts of interest in the governance or provision of programme services? (*Paragraph 2.7.3*)  YES

b) ensure that, where such conflicts arise, they are appropriately declared, and addressed and isolated? (*Paragraph 2.7.3*)  YES

**Summarize and provide evidence of the policies and procedures referred to in a) and b):**

Governance structure for the PAT is maintained and operated by Government institutions with clearly defined roles under the PAT scheme. All these Government institutions are independent from each other and have independent staff and management. Further, any financial transactions which these institutions may enter into are defined as per the General Financial Rules of the Central Government.

In case of any conflicts, apart from the courts of Law, PAT scheme has established Appellate Tribunals at the State Government levels as well as a Tribunal at the Central Government level with the CERC.

**Evidence:**

1. Energy Conservation Act, 2001: <https://powermin.nic.in/sites/default/files/uploads/ecact2001.pdf>
2. CERC Regulations, 2016: <https://escerts.gov.in/PortalUser/ViewFile?noteId=7dbf3751-ea64-ea11-b84f-001dd8b71f95>
3. Procedures for transaction of ESCerts: <https://escerts.gov.in/PortalUser/ViewFile?noteId=a4979489-ea64-ea11-b84f-001dd8b71f95>

**If the programme is not directly and currently administered by a public agency, can the programme demonstrate up-to-date professional liability insurance policy of at least**

USD\$5M? (Paragraph 2.7.4)  YES

**Provide evidence of such coverage:**

The PAT programme is a scheme of the BEE which is a public agency. A separate professional liability insurance policy is not applicable.

**Question 3.8 Transparency and public participation provisions**

**Does the programme publicly disclose... (Paragraph 2.8)**

- a) what information is captured and made available to different stakeholders?  YES
- b) its local stakeholder consultation requirements (if applicable)?  YES
- c) its public comments provisions and requirements, and how they are considered (if applicable)?  YES

**Provide evidence of the public availability of items a) through c):**

During the course of a PAT cycle of 3 years, two key consultative processes emerge:

**1. Designated Consumer baseline and target setting / assessment:**

The PAT scheme captures information from the Designated Consumers (DCs) by means of energy audit reports on the basis of which the baseline, target and assessment of the DC compliance to PAT is assessed.

The key information (other than information having potential to affect competitiveness of the DC) is in public domain and also shared directly by the DC to Public agencies viz. SDA, BEE, POSOCO and sector specific Technical Committees.

**2. Public Comments sought during amendments/ new provisions to the PAT scheme**

**3. Additional information on the above is given in the table below:**

S. No	PAT Information	Stakeholder	Public Comments (Y/N)	Evidence
1	Procedure for Establishment of energy Consumption Norms and Standards	Technical Committees	Yes	Rule 4 of the Energy Conservation Rules
2	Check Verification of Designated Consumers	State Designated Agencies	Yes	Rule 8 of the Energy Conservation Rules
3	Establishment of new baseline for next cycle	Technical Committees	Yes	Rule 14 of the Energy Conservation Rules
4	Revision in the existing methodologies or provisions of PAT scheme	BEE	Yes	Example Energy Conservation Rules amendments made in 2016 and 2018

**Does the programme conduct public comment periods relating to... (Paragraph 2.8)**

- a) methodologies, protocols, or frameworks under development?  YES
- b) activities seeking registration or approval?  YES
- c) operational activities (e.g., ongoing stakeholder feedback)  YES
- d) additions or revisions to programme procedures or rulesets?  YES

**Summarize and provide evidence of any programme procedures referred to in a) through d):**

It may be noted that Bureau of Energy Efficiency conducts meetings with the Technical Committees of the respective sector under PAT in case of development of methodologies, protocols etc. in the sector. The section 8 of the Energy Conservation Act 2001, empowers the Bureau of Energy Efficiency to constitute Technical Committee of experts for the formulation of energy consumption standards or norms in respect of equipment or processes.

It may also be noted that Bureau of Energy Efficiency conducts capacity building workshops with an aim to disseminate procedures and other information for implementation of PAT scheme. Designated Consumers notified under the PAT scheme, Accredited Energy Auditors and other stakeholders participate in the said workshops. Bureau of Energy Efficiency also takes feedback from the stakeholders in these capacity building workshops in order to improve the operationalization of the PAT programme. Along with conducting capacity building workshops, Bureau of Energy Efficiency also conducts stakeholder meetings in order to discuss changes to be made in the methodologies, protocols, operational activities or any other revisions that are done for effective working of the PAT programme.

Evidence:

1. Energy Conservation Rules: <https://beeindia.gov.in/content/pat-notifications>
2. Workshops and stakeholder meetings: <https://beeindia.gov.in/content/pat-workshops>

**Question 3.9 Safeguards system**

**Are safeguards in place to address... (Paragraph 2.9)**

- a) environmental risks?  YES
- b) social risks?  YES

**Summarize and provide evidence of the safeguards referred to in a) and b), including their availability to the public:**

The PAT scheme seeks to enhance energy efficiency and thus GHG mitigation is inherent to the PAT outcomes. Further, the PAT Designated Consumer's attract various provisions under the Environmental Protection Act (EPA), 1986 and the Factory's Act, 1948. The PAT DC's need to comply with these to maintain the license to operate.

**Provisions of the EPA, 1986 :(<https://vikaspedia.in/energy/policy-support/environment-1/forests/general-environmental-acts>)**

The Environment (Protection) Act was enacted in 1986 with the objective of providing for the protection and improvement of the environment. It empowers the Government to establish authorities (Pollution Control Boards) charged with the mandate of preventing environmental pollution in all its forms and to tackle specific environmental problems.

## **Provisions of the Factory Act, 1948**

<https://labour.gov.in/sites/default/files/TheFactoriesAct1948.pdf>):

This umbrella act empowers Factory Inspectors to ensure Health and Safety safeguards are in place for employees and workers. Chapter III refers to Health and Chapter IV to Safety.

Further, numerous other provisions pertaining to discrimination / Child labour / fair and humane conditions of work / minimum wage / right to organize, form trade unions and enforce collective bargaining are also applicable.

### 3.10 Sustainable development criteria

**Does the programme use sustainable development criteria? (Paragraph 2.10)  YES**

**Does the programme have provisions for monitoring, reporting and verification in accordance with these criteria? (Paragraph 2.10)  YES**

#### **Summarize and provide evidence of the policies and procedures referred to above:**

India is committed to the Sustainable Development Goals (SDG) agreed at the United Nations in September 2015. In particular, the SDG 7.3 aims double the global rate of improvement in energy efficiency by 2030.

The Perform, Achieve and Trade (PAT) scheme is one of the initiatives under National Mission for Enhanced Energy Efficiency (NMEEE) which is one of the eight missions under National Action Plan on Climate Change (NAPCC). NMEEE aims to strengthen the market for energy efficiency by creating conducive regulatory and policy regimes besides fostering innovative and sustainable business models for the energy efficiency sector. The Perform Achieve and Trade Scheme (PAT), a market-based mechanism to enhance the cost effectiveness of improving energy efficiency in the energy intensive sectors through certification of energy savings which can be traded in the market.

#### **Monitoring & Verification under PAT scheme:**

Monitoring and Verification (M&V) process is one of the key features of the PAT Scheme. Bureau of Energy Efficiency empanels accredited energy auditors (AEAs) for conducting and M&V of the DCs. A brief process of the M&V phase is as follows:

- a) Engagement of Empaneled Accredited Energy Auditing (EmAEA) firms by BEE to carry out M&V of the DCs.
- b) Preparation and submission of data in relation to energy consumed and specific energy consumption per unit of production in the baseline year and in the target year in Form 1 as specified by BEE.
- c) Verification of the data submitted by the DCs in Form 1 by the EmAEAs.
- d) Filling up of Form-A (as specified by BEE) and submission of other related documents by the DCs.
- e) Submission of filled up Form-1 and Form-A to the auditing firm.
- f) The auditing firm after verification of the submitted Forms then submits a certificate of verification through Form B.
- g) Submission of Form 1, Form A, Form B and other requisite documents to the State Designated Agency (SDA) with a copy to BEE.
- h) The state designated agencies upon verification of the completeness and consistency of the submitted data, sends the data to BEE for further scrutiny.

- i) BEE then conducts scrutiny at its end and finally submits recommendations to the Central Government for issuance/entitled to purchase of Energy Saving Certificates.

It may also be noted that Bureau of Energy Efficiency has developed Monitoring & Verification Guidelines for the participating sectors under PAT scheme in an effort to facilitate the DCs to comply with notified PAT rules. The said document has also proven to be helpful to all empaneled Accredited Energy Auditors (EmAEAs) and State Designated Agencies (SDAs) in the monitoring and verification process of PAT.

Further details on Monitoring & Verification may be seen in point V of the Annexure -1.

Evidence: Web-links can be accessed at the end of Annexure -1.

### 3.11 Avoidance of double counting, issuance and claiming

Does the Programme provide information on how it addresses double counting, issuance and claiming in the context of evolving national and international regimes for carbon markets and emissions trading?

(Paragraph 2.11)  YES

**Summarize and provide evidence of the information referred to above, including its availability to the public:**

The PAT scheme generates Energy Saving Certificates (ESCerts) for trading. The ESCerts are transacted as per the defined procedure to maintain electronic trail of all transactions made.

[https://beeindia.gov.in/sites/default/files/Annexure%20I\\_Final%20Procedures\\_ESCerts%2014%20Feb%202017.pdf](https://beeindia.gov.in/sites/default/files/Annexure%20I_Final%20Procedures_ESCerts%2014%20Feb%202017.pdf)

One single Registry of Energy Saving Certificates (ESCerts) is maintained by the POWER System Operation Corporation (POSOCO) as per the regulations notified by the Central Electricity Regulatory Commission (Terms and Conditions for Dealing in Energy Savings Certificates) Regulations, May 2016 (<https://registry.escerts.gov.in/>)

Clearly defined regulations govern the functions of the Registry in the ESCerts Trading Procedure which are as follows:

- Registration of Eligible Entity
- Maintaining records of ESCerts viz. issuance and dealing etc.
- Dissemination of information in coordination with Bureau of Energy Efficiency
- Assistance in development of IT Platform for maintaining database of ESCerts
- Signing of Non -Disclosure agreement with the Administrator
- Any other function, as assigned by the Central Electricity Regulatory Commission (CERC) in consultation with the Bureau of Energy Efficiency after assessment of prevailing market conditions.

The PAT is not linked with any other national / international market regime. However, if this does take place in future, given that all data is sourced from the Registry using robust processes, double counting would not take place.

## PART 4: Carbon Offset Credit Integrity Assessment Criteria

**Note**—where “evidence” is requested throughout *Part 3* and *Part 4*, the Programme should provide web links to documentation. If that is not possible, then the programme may provide evidence of programme procedures directly in the text boxes provided (by copying/pasting the relevant provisions) and/or by attached supporting documentation, as recommended in “SECTION II: INSTRUCTIONS—*Form Completion*”.

**Note**—“*Paragraph X.X*” in this form refers to corresponding paragraph(s) in Appendix A “Supplementary Information for Assessment of Emissions Unit Programmes”.

**Note**—Where the programme has any plans to revise the programme (e.g., its policies, procedures, measures, tracking systems, governance or legal arrangements), including to enhance consistency with a given criterion or guideline, provide the following information in response to any and all relevant form question(s):

- Proposed revision(s);
- Process and proposed timeline to develop and implement the proposed revision(s);
- Process and timeline for external communication and implementation of the revision(s).

### Question 4.1 Are additional

Do the Programme’s carbon offsets... (*Paragraph 3.1*)

- a) represent greenhouse gas emissions reductions or carbon sequestration or removals that exceed any greenhouse gas reduction or removals required by law, regulation, or legally binding mandate?  YES
- b) exceed any greenhouse gas reductions or removals that would otherwise occur in a conservative, business-as-usual scenario?  YES

#### **Summarize and provide evidence of the policies and procedures referred to in a) and b), including their availability to the public:**

PAT is a regulatory instrument to reduce Specific Energy Consumption (SEC) in energy intensive industries. The target reduction for each industry is based on the prevailing levels of energy efficiency, so that energy efficient units will have low target of percentage reduction, as compared to less energy efficient units which will have higher targets. Each industry is given a mandatory target of SEC reduction with a time period of three years from the date of notification. DCs which are able to achieve SEC level that are lower than their targets can receive Energy Savings Certificates (ESCerts) for their excess savings. On the other hand, the DCs which fail to achieve the given targets either through their own actions or through purchase of ESCerts are liable to financial penalty under the Energy Conservation Act, 2001.

Thus PAT off-sets represent energy efficiency reductions beyond the mandated targets or those that could take place under a conservative business as usual scenario (viz. without mandate).

#### **Is additionality and baseline-setting... (*Paragraph 3.1*)**

- a) assessed by an accredited and independent third-party verification entity?  YES
- b) reviewed by the programme?  YES

**Summarize and provide evidence of the policies and procedures referred to in a) and b), including their availability to the public:**

It may be noted that before notification of targets to Designated Consumers, Baseline Data Collection and Verification Audit is conducted by Bureau of Energy Efficiency. The objective of conducting this verification audit is to identify Designated Consumers and establish a baseline for such identified Designated Consumers that could be notified with Specific Energy Consumption (SEC) reduction targets under PAT scheme. This verification audit for identification and setting of baseline is done by engaging accredited energy auditing firms.

Brief Qualification criteria for agencies/firms that can participate in the tendering process for performing baseline data collection and verification audit:

- a) Should be an agency / firm / company registered/ incorporated in India.
- b) Should have at least 1 Accredited Energy Auditors on its role as on the date of applying.
- c) Should have experience in carrying out similar studies and study of other scheme of
- d) Government of India.
- e) Should have experience of PAT related work.

**Review:**

Upon submission of final reports by the agencies to Bureau of Energy Efficiency, the same is scrutinized or reviewed by Bureau of Energy Efficiency and in consultation with the Technical Committees the baseline for each identified Designated Consumer is finalized.

More details can be accessed from Section II of the Annexure-1 attached herewith.

**Process Evidence for the aforesaid information can be accessed from the following web-links:**

1. Energy Conservation Rules: <https://beeindia.gov.in/content/pat-3>
2. Tendering information for engaging agencies for baseline verification audit: <https://beeindia.gov.in/>

**Identify one or more of the methods below that the programme has procedures in place to ensure, and to support activities to analyze and demonstrate, that credited mitigation is additional; which can be applied at the project- and/or programme-level: (Paragraphs 3.1, and 3.1.2 - 3.1.3)**

- Barrier analysis
- Common practice / market penetration analysis
- Investment, cost, or other financial analysis
- Performance standards / benchmarks
  
- Legal or regulatory additionality analysis (as defined in *Paragraph 3.1*)

**Summarize and provide evidence of the policies and procedures referred to in the above list, including describing any/all additionality analyses and test types that are utilized under the programme:**

In continuation to the response made to question 4.1, PAT off-sets represent energy efficiency reductions beyond the mandated energy efficiency performance targets or those that could have taken place under a conservative business as usual scenario (viz. without mandate).

For illustration purpose, the first cycle of PAT was notified vide S.O. 687 (E) dated 30th March 2012. PAT cycle –I consisted of 478 Designated Consumers from 8 energy intensive sectors namely Thermal Power Plant, Cement, Textile, Chlor-Alkali, Iron & Steel, Pulp & Paper, Fertilizer and Aluminium with an overall SEC reduction target of 6.686 Million Tonne of Oil Equivalent (MTOE). PAT cycle –I was completed in March 2015 after completing the three years implementation cycle.



Bureau of Energy Efficiency had conducted and Evaluation study on the implementation of PAT cycle –I. The outcome evaluation of PAT Cycle I was undertaken in two steps –

- Assessing the sector wise Impact through analysis of the baseline year and assessment year data.
- Assessing the overall impact - Based on the analysis and outcome of the study for each sector, the overall impact was assessed.

In continuation to the above, benchmarking analysis for specific energy consumption of each sector (as mentioned in the paragraph above) was undertaken Nationally and Internationally to highlight the potential available for energy efficiency improvements.

The Chapter 6 of outcome and evaluation of PAT cycle –I briefly describes the Sectoral data analysis and benchmarking that was carried out for all the 8 sectors of PAT cycle –I.

**Evidence of the above can be accessed from the following web-links:**

1. Energy Conservation Rules: <https://beeindia.gov.in/content/pat-3>
2. Target notification for PAT cycle –I: <https://beeindia.gov.in/content/pat-notifications>
3. Outcome and Evaluation study of PAT cycle –I: <https://beeindia.gov.in/sites/default/files/Booklet%20on%20Outcome%20and%20Evaluation%20of%20PAT%20cycle%20-I.pdf>

**If the Programme provides for the use of method(s) not listed above, describe the alternative procedures and how they ensure that activities are additional: (Paragraph 3.1)**

**If the programme designates certain activities as automatically additional (e.g., through a “positive list” of eligible project types), does the programme provide clear evidence on how the activity was determined to be additional? (Paragraph 3.1)**  YES

**Summarize and provide evidence of the policies and procedures for determining the automatic additionality of activities, including a) the criteria used to determine additionality and b) their availability to the public:**

**Explain how the procedures described under Question 4.1 provide a reasonable assurance that the mitigation would not have occurred in the absence of the offset programme: (Paragraph 3.1)**

As mentioned in the section 4.1 that PAT the first cycle of PAT was notified vide S.O. 687 (E) dated 30th March 2012. PAT cycle –I consisted of 478 Designated Consumers from 8 energy intensive sectors namely Thermal Power Plant, Cement, Textile, Chlor-Alkali, Iron & Steel, Pulp & Paper, Fertilizer and Aluminum with an overall SEC reduction target of 6.686 Million Tonne of Oil Equivalent (MTOE). PAT cycle –I was completed in March 2015 after completing the three years implementation cycle. Implementation of PAT cycle –I With the completion of the PAT Cycle – I in 2015, the reported overall achievement was 8.67 million TOE, exceeding the target for cycle -I by almost 30%. The total energy saving of 8.67 million TOE is equivalent to saving of about 20 million tonnes of coal and avoided emissions of about 31 million tonnes of CO<sub>2</sub>. In terms of monetary value, saving in energy consumption corresponds to Rs. 95,000 million.

The outcomes achieved in the implementation of PAT cycle –I were evaluated in terms of energy savings achieved and other impacts across the sectors to understand the performance better. The outcome and impact study clearly indicated that implementation of PAT cycle –I had resulted in mitigating India’s carbon emissions significantly and had contributed towards Sustainable economic development. The said report also provides comprehensive information

about various sectors including their current energy consumption, projections, climate goals, global and national benchmarking, energy saving opportunities and also success stories.

It may be noted that, the said report has been prepared based on the inputs received from industries and in consultation with associations and other major stakeholders.

Evidence: The said report can be accessed from the following web-link:

<https://beeindia.gov.in/sites/default/files/Booklet%20on%20Outcome%20and%20Evaluation%20of%20PAT%20cycle%20-I.pdf>

#### Question 4.2 Are based on a realistic and credible baseline

##### **Are procedures in place to... (Paragraph 3.2)**

a) issue emissions units against realistic, defensible, and conservative baseline estimations of emissions?  YES

b) publicly disclose baselines and underlying assumptions?  YES

##### **Summarize and provide evidence of the policies and procedures referred to in a) and b), including how “conservativeness” of baselines and underlying assumptions is defined and ensured:**

It may be noted that BEE has conducted sector specific studies to do the situational analysis which showcased that there is a wide bandwidth of Specific Energy Consumption (SEC) within an industrial sector and thereby the energy-savings potential in the sector as a whole. The wide bandwidth is reflects the differences in the energy-saving possibilities amongst plants because of their varying vintage, production capacity, raw material quality, and product-mix. Such a wide variation also makes it difficult to specify a single benchmark SEC for the sector. Older plants will find the benchmark impossibly high if it is set at the level of newer plants, newer plants will find it trivial if it is set at the level of older plants. The broad bandwidth of SEC within a sector, and the inability of all plants to achieve a sectoral benchmark SEC, suggests that SEC improvement norms had to be set for individual plants. These SEC improvement targets are based on the trend of energy consumption and energy-savings potential of the plants. In general, the higher the energy efficiency (or the lower the SEC), the lower the energy-savings potential.

Thus, under PAT no single norm/standard has been defined unless there is significant homogeneity amongst units in a sector. Therefore, the energy efficiency improvement targets fixed are “unit specific”. Each Designated Consumer is mandated to reduce its SEC by a certain value, based on its current SEC (or baseline SEC) within the sectoral bandwidth.

M&V of DCs who have been notified under PAT Scheme is a process to verify the SEC and other related parameters through verifiable means in the baseline year and in the assessment year by empaneled accredited energy auditing firms. BEE empanels the accredited energy auditors (AEAs) for conducting the M&V of the DCs.

The audit outcomes (Form 1, Form A, Form B) are verified by the state designated agencies for complete ness and consistency of the submitted data and sent to the BEE for further scrutiny. BEE then conducts scrutiny at its end and finally submits recommendations to the Central Government for issuance/entitled to purchase of Energy Saving Certificates.

**Since the baseline is established using audited and scrutinized data it is conservative.**

The baseline and the target Specific Energy Consumptions for identified sectors in a PAT cycle are notified and published in the Gazette of India by the Central Government of India upon recommendations by Bureau of Energy Efficiency. The notifications that have been published in the Gazette of India indicating the baseline SEC and target SEC of Designated Consumers. The same can be accessed from the following web-link: <https://beeindia.gov.in/content/pat-notifications>.

**Are procedures in place to ensure that *methods of developing baselines, including modelling, benchmarking or the use of historical data, use assumptions, methodologies, and values do not over-estimate mitigation from an activity?* (Paragraph 3.2.2) ■ YES**

**Summarize and provide evidence of the policies and procedures referred to above:**

Baseline is established using third party verified data of the PAT designated consumers. This data is in turn reviewed by a Technical Committee especially constituted for this purpose.

Details maybe referred here through the Energy Conservation Rules, 2012: <https://beeindia.gov.in/content/pat-notifications>

**Are procedures in place for activities to respond, as appropriate, to changing baseline conditions that were not expected at the time of registration?** (Paragraph 3.2.3) ■ YES

**Summarize and provide evidence of the policies and procedures referred to above:**

The Energy Conservation Rules also known as the PAT Rules clearly indicate that any designated consumer should not get any unfair or undue gain due to deficiencies or inconsistencies or errors or misrepresentation in the data reported by them as a part of compliance under the PAT scheme.

As mentioned in the sections above, the section 8 of the Energy Conservation Act 2001, empowers the Bureau of Energy Efficiency to constitute Technical Committees of experts for the formulation of energy consumption standards or norms in respect of equipment or processes. The functions of the Technical committee have been notified in the Energy Conservation Rules 2012 also known as the PAT Rules.

Thus, in case of any such condition wherein changing baseline conditions of a Designated Consumer, the Technical Committee constituted by Bureau of Energy Efficiency for sectors under PAT scheme is consulted in order to address such issues. If the Technical Committee and Bureau of Energy Efficiency finds the claim of changing baseline conditions appropriate, only then further action of changing baselines is undertaken and notified in the Gazette of India.

**Evidence:**

1. Energy Conservation Rules: <https://beeindia.gov.in/content/pat-notifications>.
2. Energy Conservation Rules, 2012: <https://beeindia.gov.in/content/pat-notifications>

Question 4.3 Are quantified, monitored, reported, and verified

**Are procedures in place to ensure that...**

- a) emissions units are based on accurate measurements and valid quantification methods/protocols? (Paragraph 3.3)  YES
- b) validation occurs prior to or in tandem with verification? (Paragraph 3.3.2)  YES
- c) the results of validation and verification are made publicly available? (Paragraph 3.3.2)  YES
- d) monitoring, measuring, and reporting of both activities and the resulting mitigation is conducted at *specified intervals* throughout the duration of the crediting period? (Paragraph 3.3)  YES
- e) mitigation is measured and verified by an accredited and independent third-party verification entity? (Paragraph 3.3)  YES
- f) *ex-post* verification of mitigation is required in advance of issuance of emissions units? (Paragraph 3.3)  YES

**Summarize and provide evidence of the policies and procedures referred to in a) through f):"**

Please refer to Section IV, V and VI of the Annexure -1 enclosed herewith.

**Are provisions in place... (Paragraph 3.3.3)**

- a) to manage and/or prevent conflicts of interest between accredited third-party(ies) performing the validation and/or verification procedures, and the programme and the activities it supports?  YES
- b) requiring accredited third-party(ies) to disclose whether they or any of their family members are dealing in, promoting, or otherwise have a fiduciary relationship with anyone promoting or dealing in, the offset credits being evaluated?  YES
- c) to address and isolate such conflicts, should they arise?  YES

**Summarize and provide evidence of the policies and procedures referred to in a) through c):**

The Accredited Energy Auditor are empaneled and identified via a robust system under the Energy Conservation Act which defines various aspects such as -- the qualifications, criteria and conditions subject to which a person may be accredited as an energy auditor and the procedure for accreditation.

Further, the Audited outcomes are reviewed at various steps viz at the State level and the final scrutiny by the BEE.

Designated Consumers can also raise concerns which may be closed post a Check verification. Evidence: Rule 6, 7, 8 and 9 of the Energy Conservation Rules: [https://beenet.gov.in/GuideLine/PAT\\_Rules\\_English.pdf](https://beenet.gov.in/GuideLine/PAT_Rules_English.pdf)

**Are procedures in place requiring that... (Paragraph 3.3.4)**

a) the renewal of any activity at the end of its crediting period includes a reevaluation of its baselines, and procedures and assumptions for quantifying, monitoring, and verifying mitigation, including the baseline scenario?  YES

b) the same procedures apply to activities that wish to undergo verification but have not done so within the programme's allowable number of years between verification events?  YES

**Summarize and provide evidence of the policies and procedures referred to in a) and b), including identifying the allowable number of years between verification events:**

**The Rule 14 of the Energy Conservation Rules specify the procedures for Establishment of new baseline for next cycle of PAT.**

It clearly states that, 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.

**Evidence:**

Energy Conservation Rules:

[https://beenet.gov.in/\(S\(mx1x0z0gxkpkfad31omtowxh\)\)/GuideLine/PAT\\_Rules\\_English.pdf](https://beenet.gov.in/(S(mx1x0z0gxkpkfad31omtowxh))/GuideLine/PAT_Rules_English.pdf)

Also, the same procedure would apply since the verification time window and the M&V protocol is common to all DC's. Further, the verification is by the auditor who audits the facility and performance document trail.

**Are procedures in place to transparently identify units that are issued *ex-ante* and thus ineligible for use in the CORSIA? (Paragraph 3.3.5)**

**Provide evidence of the policies and procedures referred to above:**

Not applicable

**Question 4.4 Have a clear and transparent chain of custody**

*SECTION III, Part 3.4—Identification and tracking* includes questions related to this criterion.

It may be noted that to ensure periodic evaluation of the online platforms involved in the issuance and trading of ESCerts:

- Security audits for ensuring the security provisions are carried out at specific intervals by an IT agency engaged by BEE.
- The Platform for record keeping and transection of ESCerts is integrated with SSL certificate Class – 2 which prevents any authorized access.
- It has a robust system of role and field based security with clarity of usage and responsibility.
- The portal has inherent capacity to maintain audit trail
- Further, its servers are maintained by a Government entity i.e. National Informatic Centre (NIC) adding another layer of security.

#### Question 4.5 Represent permanent emissions reductions

**List all emissions sectors (if possible, activity types) supported by the Programme that present a potential risk of reversal of emissions reductions, avoidance, or carbon sequestration:**

There is no risk of reversal of the energy savings achieved as represented by the issued ESCert. This is because, the ESCert is issued on the completion of a PAT cycle using audited data viz. issued ex-Post based on actual energy savings made.

Further, in the subsequent PAT cycle, the baseline is revised to be equivalent to the DC's Assessment year Energy performance. This implies that any ESCerts issued in the subsequent cycle are based on fresh measures undertaken and not dependent on the previous cycle's efforts.

Thus, there is no risk of reversal.

**What is the minimum scale of reversal for which the Programme provisions or measures require a response? (Quantify if possible)**

**For sectors/activity types identified in the first question in this section, are procedures and measures in place to require and support these activities to...**

- a) undertake a risk assessment that accounts for, *inter alia*, any potential causes, relative scale, and relative likelihood of reversals? (Paragraph 3.5.2)  YES
- b) monitor identified risks of reversals? (Paragraph 3.5.3)  YES
- c) mitigate identified risks of reversals? (Paragraph 3.5.3)  YES
- d) ensure full compensation for material reversals of mitigation issued as emissions units and used toward offsetting obligations under the CORSIA? (Paragraph 3.5.4)  YES

**Summarize and provide evidence of the policies and procedures referred to in a) through d):**

**Are provisions in place that... (Paragraph 3.5.5)**

- a) confer liability on the activity proponent to monitor, mitigate, and respond to reversals in a manner mandated in the programme procedures?  YES
- b) require activity proponents, upon being made aware of a material reversal event, to notify the programme within a specified number of days?  YES
- c) confer responsibility to the programme to, upon such notification, ensure and confirm that such reversals are fully compensated in a manner mandated in the programme procedures?  YES

**Summarize and provide evidence of the policies and procedures referred to in a) through c), including indicating the number of days within which activity proponents must notify the programme of a material reversal event:**

**Does the programme have the capability to ensure that any emissions units which compensate for the material reversal of mitigation issued as emissions units and used toward offsetting obligations under the CORSIA are fully eligible for use under the CORSIA? (Paragraph 3.5.6)  YES**

**Summarize and provide evidence of the policies and procedures referred to above:**

Would the programme be willing and able, upon request, to demonstrate that its permanence provisions can fully compensate for the reversal of mitigation issued as emissions units and used under the CORSIA? (Paragraph 3.5.7)  YES

**Question 4.6 Assess and mitigate against potential increase in emissions elsewhere**

**List all emissions sectors (if possible, activity types) supported by the programme that present a potential risk of material emissions leakage:  YES**

**Are measures in place to assess and mitigate incidences of material leakage of emissions that may result from the implementation of an offset project or programme? (Paragraph 3.6)  YES**

**Summarize and provide evidence of the policies and procedures referred to above:**

The activity types undertaken by the Designated Consumers fall under various measures for example:

<b>Retrofits</b>	<b>Process Optimization</b>	<b>Process Upgradation</b>
Lighting, Motors, Compressors, VFD, Star labelled equipment, etc.	Re-design, Controls, Weight reduction, arresting leaks (steam, water, air), Right sizing, Drying, reduction in stages, etc.	Proprietary process technology, Enforced preventive maintenance; Clubbing of unit operations, etc.

Leakage would take place if the equipment replaced in the baseline would find its way to a similar use in some other industry. This is inconceivable as the older equipment would:

- a) Have wear and tear from use as well as de-commissioning
- b) May have proprietary norms making it impossible to sell
- c) Be custom built for the process application, with negligible use outside the plant boundaries
- d) Technological obsolescence and commoditization make the price of similar new equipment more economically attractive.

**Are provisions in place requiring activities that pose a risk of leakage when implemented at the project-level to be implemented at a national level, or on an interim basis on a subnational level, in order to mitigate the risk of leakage? (Paragraph 3.6.2)  YES –**

**Summarize and provide evidence of the policies and procedures referred to above:**

Not Applicable

**Are procedures in place requiring and supporting activities to monitor identified leakage? (Paragraph 3.6.3)  YES Not Applicable**

**Summarize and provide evidence of the policies and procedures referred to above:**

Not Applicable

**Are procedures in place requiring activities to deduct from their accounting emissions from any identified leakage that reduces the mitigation benefits of the activities? (Paragraph 3.6.4)  YES**

**Summarize and provide evidence of the policies and procedures referred to above:**

Not Applicable

**Question 4.7 Are only counted once towards a mitigation obligation**

**Does the Programme have measures in place for the following:**

- a) to ensure the transparent transfer of units between registries; and that only one unit is issued for one tonne of mitigation (*Paragraphs 3.7.1 and 3.7.5*)  YES
- b) to ensure that one unit is issued or transferred to, or owned or cancelled by, only one entity at any given time? (*Paragraphs 3.7.2 and 3.7.6*)  YES
- c) to discourage and prohibit the double-selling of units, which occurs when one or more entities sell the same unit more than once? (*Paragraph 3.7.7*)  YES
- d) to require and demonstrate that host countries of emissions reduction activities agree to account for any offset units issued as a result of those activities such that double claiming does not occur between the airline and the host country of the emissions reduction activity? (*Paragraph 3.7.3*)  YES

**Summarize and provide evidence of the policies and procedures referred to in a) through d):**

Under the PAT scheme the tradable unit is energy (measured in TOE) which lends itself to conversion into Carbon. Necessary provisions to enable this conversion have been proposed and are under consideration with the Central Govt. On approval these would be adopted.

One ESCert represents one tonne of oil equivalent of energy saving achieved. To enable PAT scheme fungibility, proposals are under consideration towards prescribe the value of 1 ESCert in tons of CO<sub>2</sub> equivalent, by the Central Government for the amendment of the Energy Conservation Act.

The ESCert's once issued are maintained via an electronic registry and thus complete traceability of the ESCert is possible at all stages- from issuance till extinguishment.

An ESCert can be sold only once and then extinguished to meet compliance. Hence double selling is not possible under the scheme.

**There is only one registry and hence double claiming is not possible. Further the Focal point on Climate matters in India is the Ministry of Environment, Forests and Climate Change (MoEFCC). Host country attestations would be provided by the MoEFCC. As and when the PAT scheme participates under CORSIA, the desired agreement in-between the two schemes can be formalized.**

**Evidence:** Annexure -2 (Business Confidential – Not to be shared beyond the TAB)

**Does the Programme have procedures in place for the following: (*Paragraph 3.7.8*)**



a) to obtain, or require activity proponents to obtain and provide to the programme, written attestation from the host country's national focal point or focal point's designee?  YES

b) for the attestation(s) to specify, and describe any steps taken, to prevent mitigation associated with units used by operators under CORSIA from also being claimed toward a host country's national mitigation target(s) / pledge(s)?  YES

c) for Host country attestations to be obtained and made publicly available prior to the use of units from the host country in the CORSIA?  YES

**Summarize and provide evidence of the policies and procedures referred to in a) through**

Refer to the response given for the question 4.7.

Evidence: Annexure -2

**Does the Programme have procedures in place requiring... (Paragraph 3.7.9)**

a) that activities take approach(es) described in (any or all of) these sub-paragraphs to prevent double-claiming?

Emissions units are created where mitigation is not also counted toward national target(s) pledge(s) / mitigation contributions / mitigation commitments. (Paragraph 3.7.9.1)

Mitigation from emissions units used by operators under the CORSIA is appropriately accounted for by the host country when claiming achievement of its target(s) / pledges(s) / mitigation contributions / mitigation commitments, in line with the relevant and applicable international provisions. (Paragraph 3.7.9.2)

Programme procedures provide for the use of method(s) to avoid double-claiming which are not listed above (Paragraph 3.7.9.3)

b) that Host Country attestations confirm the use of approach(es) referred to in the list above?

**Summarize and provide evidence of the policies and procedures referred to in a) and b):**

**Evidence:** Annexure - 2

**Does the Programme... (Paragraph 3.7.10)**

a) make publicly available any national government decisions related to accounting for units used in ICAO, including the contents of host country attestations described in paragraph 3.7.8?  YES

b) update information pertaining to host country attestation as often as necessary to avoid double-claiming.  YES

**Summarize and provide evidence of the policies and procedures referred to in a) and b):**

**Evidence:** Annexure -2

Does the Programme have procedures in place to compare countries' accounting for emissions units in national emissions reports against the volumes of eligible units issued by the programme and used under the CORSIA which the host country's national reporting focal point or designee otherwise attested to its intention to not double-claim? (Paragraph 3.7.11)  YES

**Summarize and provide evidence of the policies and procedures referred to above:**

Ministry of Environment, Forest and Climate Change (MoEFCC) reviews all the missions under the NAPCC periodically.

**Evidence:** Annexure -2

Does the Programme have procedures in place for the programme, or proponents of the activities it supports, to compensate for, replace, or otherwise reconcile double-claimed mitigation associated with units used under the CORSIA which the host country's national accounting focal point or designee otherwise attested to its intention to not double-claim? (*Paragraph 3.7.13*)  YES

Summarize and provide evidence of the policies and procedures referred to above

Would the Programme be willing and able, upon request, to report to ICAO's relevant bodies, as requested, performance information related to, *inter alia*, any material instances of and programme responses to country-level double-claiming; the nature of, and any changes to, the number, scale, and/or scope of host country attestations; any relevant changes to related programme measures? (*Paragraph 3.7.12*)  YES

#### Question 4.8 Do no net harm

Are procedures in place to ensure that offset projects do not violate local, state/provincial, national or international regulations or obligations?  YES

Summarize and provide evidence of the policies and procedures referred to above:

Describe, and provide evidence that demonstrates, how the programme complies with social and environmental safeguards: (*Paragraph 3.8*)

Describe, and provide evidence of the programme's public disclosure of, the institutions, processes, and procedures that are used to implement, monitor, and enforce safeguards to identify, assess and manage environmental and social risks: (*Paragraph 3.8*)

**Please refer to response given under Question 3.9**

## **PART 5: Programme comments**

Are there any additional comments the programme wishes to make to support the information provided in this form?

No comments

**SECTION IV: SIGNATURE**

*I certify* that I am the administrator or authorized representative (“Programme Representative”) of the emissions unit programme (“Programme”) represented in a) this form, b) evidence accompanying this form, and c) any subsequent oral and/or written correspondence (a-c: “Programme Submission”) between the Programme and ICAO; and that I am duly authorized to represent the Programme in all matters related to ICAO’s analysis of this application form; and that ICAO will be promptly informed of any changes to the contact person(s) or contact information listed in this form.

*As the Programme Representative, I certify* that all information in this form is true, accurate, and complete to the best of my knowledge.

*As the Programme Representative, I acknowledge* that:

the Programme’s participation in the assessment does not guarantee, equate to, or prejudice future decisions by Council regarding CORSIA-eligible emissions units; and

the ICAO is not responsible for and shall not be liable for any losses, damages, liabilities, or expenses that the Programme may incur arising from or associated with its voluntary participation in the assessment; and

as a condition of participating in the assessment, the Programme will not at any point publicly disseminate, communicate, or otherwise disclose the nature, content, or status of communications between the Programme and ICAO, and of the assessment process generally, unless the Programme has received prior notice from the ICAO Secretariat that such information has been and/or can be publicly disclosed.

*Signed:*

Mr. Abhay Bakre

13<sup>th</sup> May 2020

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Full name of Programme Representative (*Print*)

Date signed (*Print*)

---

Programme Representative (*Signature*)

(This signature page may be printed, signed, scanned and submitted as a separate file attachment)



ICAO

## **Programme Application Form, Appendix B**

### **Programme Assessment Scope**

CONTENTS: With this document, programmes may define which of their activities they are submitting for assessment by the TAB. The two sheets are described below:

- Sheet A) Activities the programme describes in this form, which will be assessed by ICAO's T.
- Sheet B) List of all methodologies / protocols that support activities described under Sheet A

AB

**SHEET A: DESCRIBED ACTIVITIES** (Here, list activities supported by the programme that are described in this form for further assessment)

Sector	Supported activity type(s)	Implementation level(s)	Geography(ies)
Thermal Power Plant	Energy Efficiency	At full implementation stage	India
Cement			
Iron & Steel			
Fertilizer			
Chlor- Alkali			
Textile			
Aluminium			
Railways			
Refineries			
DISCOMs			
Pulp & Paper			

**SHEET B: METHODOLOGIES / PROTOCOLS LIST** (Here, list all methodologies / protocols that support activities described in Sheet A)

Methodology name	Unique Methodology / Protocol Identifier	Applicable methodology version(s)	Date of entry into force of most recent version	Prior versions of the methodology that are credited by the Programme (if applicable)	Greenhouse / other gases addressed in methodology	Web link to methodology
Facilitate and Enforce Efficient use of energy and its conservation	Chapter V, Section 14 of the Energy Conservation Act 2001	NA	1st October 2001	NA	Tonnes of CO2 (proposed)	<a href="https://powermin.nic.in/sites/default/files/uploads/ecact2001.pdf">https://powermin.nic.in/sites/default/files/uploads/ecact2001.pdf</a>
Establishment of Energy Consumption Norms and Standards	Rule 3 of the Energy Conservation Rules	NA	30th March 2012 1st Amendmenet: 31st March 2016 2nd Amendment: 26th April 2018	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Procedure for establishment of energy consumption norms and standards.- (Detailed information in the Schedule)	Rule 4 of the Energy Conservation Rules	NA	31st March 2012 1st Amendmenet: 31st March 2016 2nd Amendment: 26th April 2018	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Form, manner and time for preparation of scheme for implementation of efficient use of energy and its conservation.	Rule 5 of the Energy Conservation Rules	NA	32nd March 2012 1st Amendmenet: 31st March 2016 2nd Amendment: 26th April 2018	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Assessment of performance	Rule 6 of the Energy Conservation Rules	NA	33rd March 2012 1st Amendmenet: 31st March 2016 2nd Amendment: 26th April 2018	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Procedure for monitoring and verification (Detailed information in the Schedule)	Rule 7 of the Energy Conservation Rules	NA	34th March 2012 1st Amendmenet: 31st March 2016 2nd Amendment: 26th April 2018	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Check-verification	Rule 8 of the Energy Conservation Rules	NA	35th March 2012 1st Amendmenet: 31st March 2016 2nd Amendment: 26th April 2018	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Procedure regarding compliance with energy consumption norms and standards and issue of energy savings certificate.	Rule 9 of the Energy Conservation Rules	NA	36th March 2012 1st Amendmenet: 31st March 2016 2nd Amendment: 26th April 2018	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Obligations of accredited energy auditor	Rule 10 of the Energy Conservation Rules	NA	37th March 2012 1st Amendmenet: 31st March 2016 2nd Amendment: 26th April 2018	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Recommendation for issue of energy savings certificates.	Rule 11 of the Energy Conservation Rules	NA	38th March 2012 1st Amendmenet: 31st March 2016 2nd Amendment: 26th April 2018	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Procedure for issue of energy savings certificate	Rule 12 of the Energy Conservation Rules	NA	39th March 2012 1st Amendmenet: 31st March 2016 2nd Amendment: 26th April 2018	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Compliance of energy consumption norms and standards.	Rule 13 of the Energy Conservation Rules	NA	40th March 2012 1st Amendmenet: 31st March 2016 2nd Amendment: 26th April 2018	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Establishment of new baseline for next cycle.	Rule 14 of the Energy Conservation Rules	NA	41st March 2012 1st Amendmenet: 31st March 2016 2nd Amendment: 26th April 2018	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Obligations of the designated consumers	Rule 15 of the Energy Conservation Rules	NA	42nd March 2012 1st Amendmenet: 31st March 2016 2nd Amendment: 26th April 2018	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Specification of value of energy	Rule 16 of the Energy Conservation Rules	NA	43rd March 2012 1st Amendmenet: 31st March 2016 2nd Amendment: 26th April 2018	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Minimum annual energy consumption to become a Designated Consumer	Clause (e) and (f) of the Energy Conservation Act 2001	NA	12th March 2007	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Notification of Form 1	Clause (i) of sub-section (2) of Section 56 of the Energy Conservation Act 2001	NA	2nd March 2007	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Bureau of Energy Efficiency (the manner and Intervals of Time for Conduct of Energy Audit) Regulations, 2009	Clause (g) of sub-section (2) of Section 58, read with clause (q) of sub-section (2) of Section 13 of the Energy Conservation Act 2001	NA	22nd December 2009	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Bureau of Energy Efficiency (Manner and Intervals of Time for Conduct of Energy Audit) Regulations, 2010	Clause (g) of sub-section (2) of Section 58, read with clause (q) of sub-section (2) of Section 13 of the Energy Conservation Act 2001	NA	28th April 2010	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Energy Conservation (Form, Manner and Time for furnishing information with regard to Energy Consumed and Action Taken on Recommendations of Accredited Energy Auditor) Rules, 2008	Clause (h) of sub-section (2) of Section 56 read with clause (k) of section 14 of the Energy Conservation, 2001.	NA	26th June 2008	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Monitoring and Verification Guidelines	Rule 7 of the Energy Conservation Rules	NA	01 November 2019	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Bureau of Energy Efficiency (Qualifications for Accredited Energy Auditors and Maintenance of their List) Regulations, 2010	Clauses (n), (o), and (p) of sub-section (2) of Section 13, clauses (d), (e) and (f) of sub-section 2 of Section 58 and Section 8 of the Energy Conservation Act	NA	31st March 2010	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Central Electricity Regulatory Commission (Terms and Conditions for Dealing in Energy Savings Certificates) Regulations were notified in May 2016	Rule 13 of the Energy Conservation Rules	NA	27th May 2016	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>
Procedures for transaction of Energy Saving Certificates (ES Certs)	Clause 7(a) of CERC Regulations 2016	NA	14th February 2017	NA	Tonnes of CO2 (proposed)	<a href="https://beeindia.gov.in/content/pat-notifications">https://beeindia.gov.in/content/pat-notifications</a>





## **Annexure -1**

### **Perform Achieve and Trade (PAT) Scheme**

*The Perform, Achieve and Trade (PAT) scheme imposes mandatory energy efficiency performance targets on industry and other establishments of energy intensive sectors governed by the Central Government in India to enhance energy efficiency across the sectors.*

*The excess energy saved beyond the target is quantified in tonnes of oil equivalent (TOE) and issued as energy savings certificates (ESCCerts equivalent to 1 TOE) which could be traded among the Designated Consumers (DCs) included under the PAT scheme. The scheme is in operation since the year 2012 spearheaded by the Bureau of Energy Efficiency (BEE), under the Ministry of Power, Government of India, The following brief describes the key features of the scheme.*

#### **I. Objective of the scheme:**

Towards enhancing energy efficiency in energy intensive sectors to reduce carbon emissions and to combat against the threats of climate change, PAT scheme has been formulated as a regulatory program to reduce the Specific Energy Consumption (SEC) in industries and other establishments of energy intensive sectors, through a market based mechanism to enhance the cost effectiveness through certification of excess energy saving which can be traded.

PAT scheme is one of the four initiatives under the National Mission for Enhanced Energy Efficiency (NMEEE) that began its implementation since 2012. The Mission is one of the eight missions under the National Action Plan on Climate Change (NAPCC) of the Government of India with a view to address climate change and enhance the ecological sustainability of India's development path.

*The implementation of the PAT scheme lies with the Bureau of Energy Efficiency (BEE) ([www.beeindia.gov.in](http://www.beeindia.gov.in)) under the Central Government.*

#### **Statues and policies:**

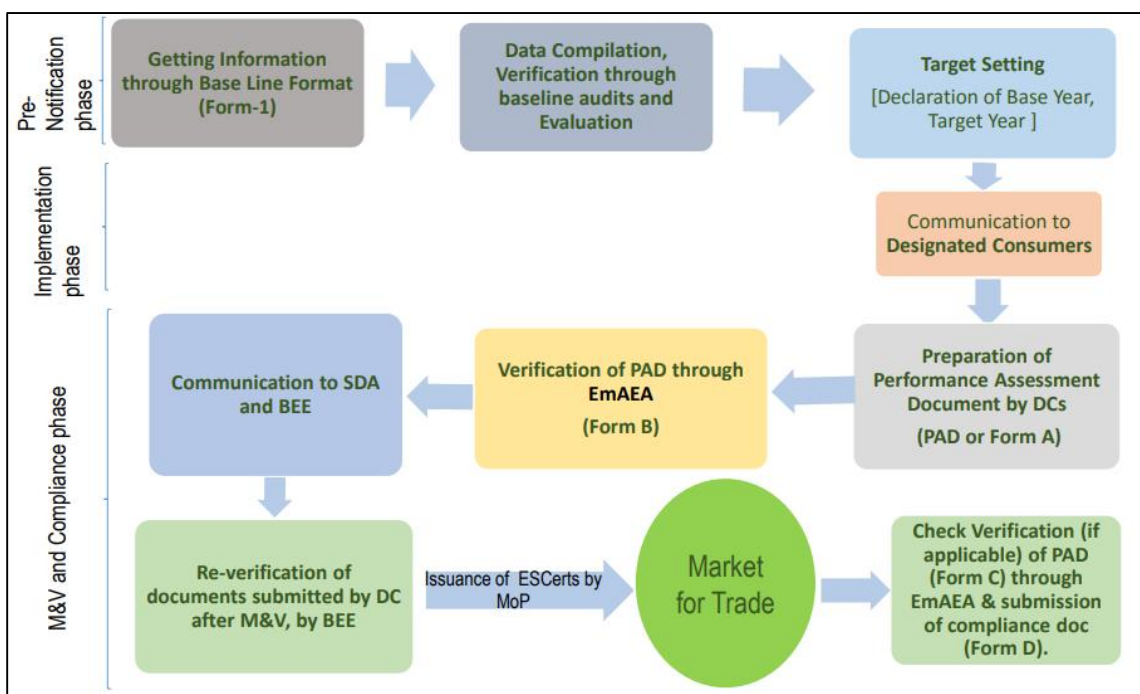
The Energy Conservation Act<sup>1</sup> that was enacted by Government of India in the year 2001, empowers the Central Government to enforce efficient use of energy and its conservation and also the established the Bureau of Energy Efficiency (BEE) under the Ministry of Power.

Deriving powers from the Energy Conservation Act 2001, the Central Government of India in consultation with Bureau of Energy Efficiency had notified 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**<sup>2</sup> vide Gazette notification number G.S.R. 269 (E) dated 30<sup>th</sup> March 2012. The aforesaid Rules were notified for the purpose of effective implementation of the PAT scheme.

Thus the PAT programmes existing methodologies and protocols have been notified in the Gazette of India and is available for public domain. The Energy Conservation Rules, 2012 have also been updated from time to time. These Rules were amended in the year 2016 and 2018 vide gazette notifications and are also available in the public domain.

The Energy Conservation Act provides regulatory mandate for standards & labelling of equipment and appliances; energy conservation building codes for commercial buildings; and energy consumption norms for energy intensive industries. In addition, the Act enjoins the Central Government and the BEE to take steps to facilitate and promote energy efficiency in all sectors of the economy. It also directs State Governments to designate agencies for the implementation of the Act and promotion of energy efficiency in the given State.

**PAT Process** Figure 1: Process flow of PAT Scheme and ESCert Trading



The processes under PAT involves various activities broadly classified phased as pre-notification, implementation and monitoring and verification and compliance phase. The first phase involves activities related to scoping of potential sectors and then to identify individual units under those sectors, baseline establishment, target assessment and notification of targets. In the second phase, upon the notification, the Designated Consumers implement measures to meet their targets during the specified period. In the third phase, activities include verification of the performance and compliance thereafter. A schematic in this regards is presented below.

## II. Establishment of energy consumption and norms and standards – Programme protocols and development process:

### a) Policy/Rule for establishment of energy consumption norms and standards:

The Rule 3 of the Energy Conservation Rules provides that the Central Government shall establish energy consumption norms and standards in consultation with Bureau of Energy Efficiency for Designated Consumers (DCs) as notified in clause (g) of Section 14 of the Energy Conservation Act, 2001.

**b) Scope and Criteria for participation in the PAT scheme:**

The Perform, Achieve and Trade (PAT) scheme involves participation from energy intensive industries from across the country.

It covers about 50% of the total industrial energy consumption and includes sectors such as Thermal Power Plant, cement, Iron & Steel, Textile, Fertilizer, Railways, Refineries etc. The PAT scheme is aimed at enhancing energy efficiency in energy intensive industries. The list of Energy Intensive Industries and other establishments specified as Designated Consumers is notified in the “Schedule” of the Energy Conservation Act 2001. The Central Government in consultation with the Bureau of Energy Efficiency had notified the **Minimum annual energy consumption**<sup>3</sup> (in tonne of oil equivalent) to become a Designated Consumer the sectors namely Thermal Power Plants, Fertilizer, Cement, Pulp and Paper, Textiles, Chlor-Alkali, Iron & Steel and Aluminum in March, 2007. Subsequently, minimum annual energy consumption<sup>4</sup> (in tonne of oil equivalent) was defined for three new sectors namely Railways, Refineries and DISCOMs in 2015.

**THE PAT BASELINE**

**c) Procedure for establishment of baseline:**

Bureau of Energy Efficiency had conducted sector specific studies to do the situational analysis. The studies showed that there is a wide bandwidth of Specific Energy Consumption (SEC) within an industrial sector that indicated large energy-savings potential in the sector. The wide bandwidth is also a reflection of the differences in the energy-saving possibilities amongst plants because of their varying vintage, production capacity, raw material quality, and product-mix. Such a wide variation also makes it difficult to specify a single benchmark SEC for the sector as a whole.

Older plants will find the benchmark impossibly high if it is set at the level of newer plants, newer plants will find it trivial if it is set at the level of older plants. The broad bandwidth of SEC within a sector, and the inability of all plants to achieve a sectoral benchmark SEC, suggests that SEC improvement norms had to be set for individual plants. These SEC improvement targets are based on the trend of energy consumption and energy-savings potential of the plants.

In general, the higher the energy efficiency (or the lower the SEC), the lower the energy-savings potential. Thus, it is not feasible to define a single norm/standard unless there is significant homogeneity amongst units in a sector.

Therefore under PAT scheme, the energy efficiency improvement targets fixed are “**unit specific**”. Each Designated Consumer (DC) is mandated to reduce its SEC by a certain value, based on its current SEC (or baseline SEC) within the sectoral bandwidth. A pictorial representation is provided in Figure 2.

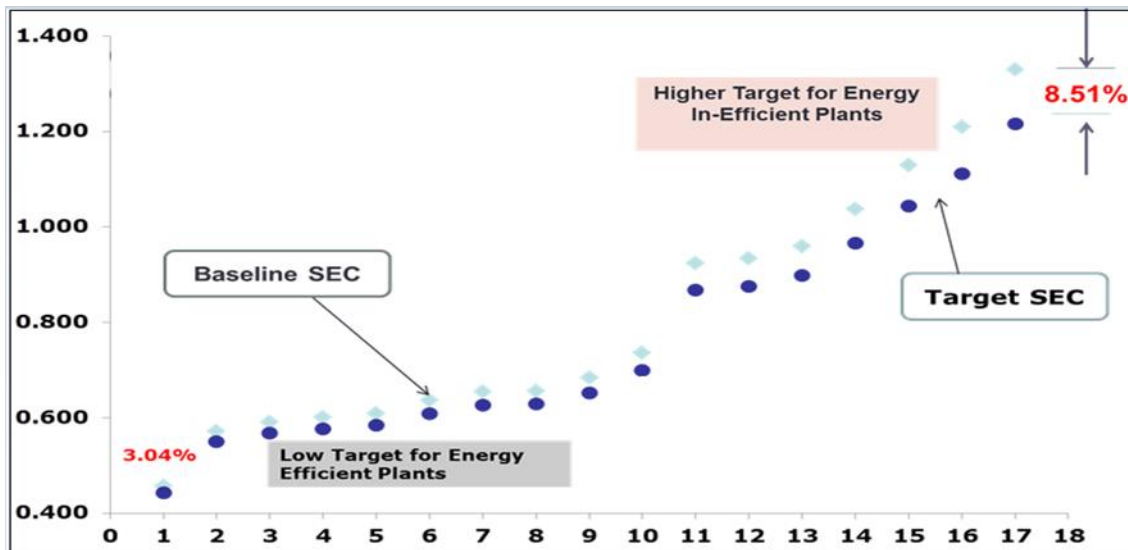


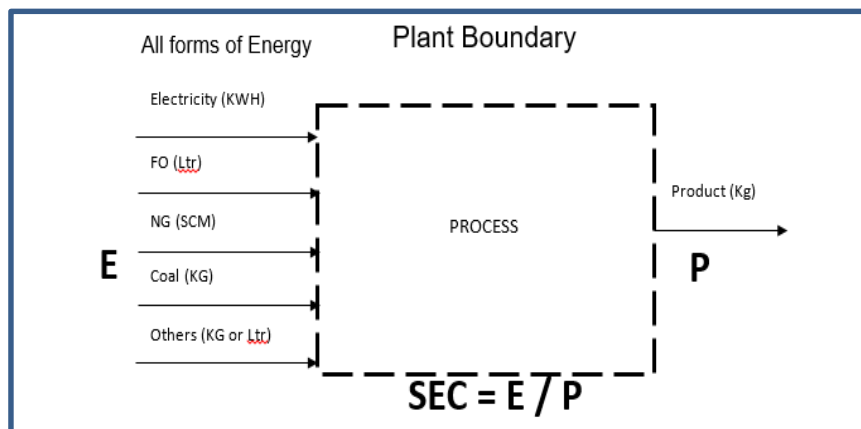
Figure 2. Energy Saving Target linked with the unit’s baseline effective SEC

d) Establishment of baseline:

The sub-rule (2) of the Rule 3 of the Energy Conservation Rules<sup>2</sup> provides that the energy consumption norms and standards shall be specific for every designated consumer. It may be noted that before notification of targets to Designated Consumers, Baseline Data Collection and Verification Audit is conducted by Bureau of Energy Efficiency. The objective of conducting this verification audit is to identify Designated Consumers and establish a baseline for such identified Designated Consumers that could be notified with Specific Energy Consumption (SEC) reduction targets under PAT scheme. This verification audit for identification and setting of baseline is done by energy auditing firms identified via an open tendering process.

PAT is a mechanism designed to achieve the emissions reduction in energy intensive industries and revolves around the concept of reduction in Specific Energy Consumption (SEC). It refers to the calculation of SEC in the baseline year and projected SEC 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 a particular cycle. SEC is calculated on a Gate-to-Gate concept which is pictorially shown below in Figure 3. The SEC of an industry on Gate-to-Gate concept is calculated with the following formula:

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



**Figure 3: Gate-to-Gate Concept applied to assess SEC**

**e) Role of Stakeholders:**

**Technical Committees:**

The Section 8 of the Energy Conservation Act 2001<sup>1</sup>, empowers Bureau of Energy Efficiency to constitute Technical Committee of experts for the formulation of energy consumption standards or norms in respect of equipment or processes. The functions of the Technical Committee in establishment of energy consumption norms and standards is defines in Rule 4 of the Energy Conservation Rules<sup>2</sup> which includes calculation of Specific Energy Consumption in the baseline year and projected SEC in the target year, Preparation of report containing designated consumer-specific basis of methodology in consultation with the designated consumers and submit the same to Bureau of Energy Efficiency etc. Such technical Committees are represented by all key stakeholders such as the line Ministries, industry associations, research bodies and academia and other domain experts.

**State Designated Agencies:**

The Section 15 of the Energy Conservation Act 2001<sup>1</sup>, empowers the State Governments of India to designate in consultation with Bureau of Energy Efficiency, any agency as designated agency to coordinate, regulate and enforce the provisions of the Energy Conservation Act within the state. Thus the state designated agencies play a vital role during establishment of energy consumption norms and standards.

**f) Notification of targets:**

As mentioned in the point above, upon receiving report prepared by the Technical Committee, the same is scrutinized and finalized by Bureau of Energy Efficiency containing its recommendation regarding the energy consumption norms and standards for each designated consumers' plant. Further, as per the sub-rule (5) of Rule 4 of the Energy Conservation Rules<sup>2</sup>, Bureau of Energy Efficiency shall submit the said report to the Central Government.

Thus, as per sub-rule (6) of the Rule 4 of the Energy Conservation Rules<sup>2</sup> that has been derived from the clause (g) of section 14 of the Energy Conservation Act, 2001<sup>1</sup>, the Central Government on recommendations of Bureau of Energy Efficiency shall **establish and specify the energy consumption norms and standards for every designated**

**consumers'** through public notification. It also gives direction to all designated consumers for compliance with the energy consumption norms and standards under clause (n) of section 14 of the Energy Conservation Act, 2001<sup>1</sup> and inform Bureau of Energy Efficiency and all the State designated agencies.

It may be noted as indicated in the Baseline Section above, that the target reduction for each Designated Consumer (DC) is based on the prevailing levels of energy efficiency, so that energy efficient units will have low target of percentage reduction, as compared to less energy efficient units which will have higher targets.

Each DC is given a mandatory target of SEC reduction with a time period of three years from the date of notification by the Central Government. DCs which are able to achieve SEC level that are lower than their targets can receive Energy Savings Certificates (ESCerts) for their excess savings. On the other hand, the DCs which fail to achieve the given targets either through their own actions or through purchase of ESCerts are liable to financial penalty under the Energy Conservation Act, 2001<sup>1</sup>.

### **III. Implementation of the PAT scheme by notified Designated Consumers:**

The Rule 5 of the Energy Conservation Rules<sup>2</sup> (PAT Rules) specifies the “**Form, manner and time for preparation of scheme for implementation of efficient use of energy and its conservation**”. It provides that every designated consumer that has been notified under the PAT scheme in a given cycle shall, within three months of the issue of notification shall submit a scheme to State designated agency with a copy to Bureau of Energy Efficiency. The scheme shall include the following:

- Action plan containing inter-alia, a brief description of identified energy saving measures to comply energy consumption norms and standards by the target year;
- The estimated cost of each identified energy saving measures;
- Implementation plan to achieve energy consumption norms and standards through implementation of energy saving measures or through purchase of energy savings certificates.

### **IV. Assessment of performance:**

#### **a. Role of Designated Consumers**

- i. The Rule 6 of the Energy Conservation Rule 2012, provides that Every designated consumer, within four months of the conclusion of the target year from the baseline year shall submit to the State designated agency, with a copy to Bureau of Energy Efficiency, 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' along with verification report given by the accredited energy auditor and accompanied by the following documents, namely:
  - copy of unique number of registration given to the designated consumer;
  - proof of timely submission of reports in Form 1 Rules 2007<sup>5</sup> for three previous three years;
  - proof of timely submission of reports in Form 1, Form 2 and Form 3 under Rules 2008<sup>6</sup> along with copies thereof including the reports for the target year;
  - details of energy savings measures implemented for compliance with the energy consumption norms and standards in Form 2 and Form 3 of Rules 2008<sup>6</sup>, 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;

- 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;
  - 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.
- ii. The designated consumer, within four 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.

#### **b. Role of Accredited Energy Auditors:**

The Section 2 of the Energy Conservation Act<sup>1</sup> defines the Accredited Energy Auditor and also empowers to specify by regulations, the qualifications, criteria and conditions subject to which a person may be accredited as an energy auditor and the procedure for accreditation. (More details in the sections below)

**Under the Section 14 of Energy Conservation Act, the designated consumers are required to conduct energy audit by an accredited energy auditor.**

Also, in continuation to the above, Bureau of Energy Efficiency draws powers from the Energy Conservation Act 2001<sup>1</sup> to develop list of accredited energy auditors, define qualification of accredited energy auditors, specify the manner and the intervals of time for conducting audit by an accredited energy auditor etc.

#### **V. Procedure for Monitoring & Verification (M&V):**

- a) The Rule 7 of the Energy Conservation Rules<sup>2</sup> defines the procedure for Monitoring & Verification. 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<sup>7</sup> and the Guidelines issued by the Bureau from time to time for compliance with the energy consumption norms and standard.
- b) Monitoring and Verification (M&V) process is one of the key features of the PAT Scheme. M&V of DCs who have been notified under PAT Scheme is a process to verify the SEC and other related parameters through verifiable means in the baseline year and in the assessment year by empaneled accredited energy auditing firms. BEE empanels accredited



energy auditors (AEAs) for conducting and M&V of the DCs. A brief process of the M&V phase is as follows:

- Engagement of Empaneled Accredited Energy Auditing (EmAEA) firms by BEE to carry out M&V of the DCs.
  - Preparation and submission of data in relation to energy consumed and specific energy consumption per unit of production in the baseline year and in the target year in Form 1 as specified by BEE.
  - Verification of the data submitted by the DCs in Form 1 by the EmAEAs.
  - Filling up of Form-A (as specified by BEE) and submission of other related documents by the DCs.
  - Submission of filled up Form-1 and Form-A to the auditing firm.
  - The auditing firm after verification of the submitted Forms then submits a certificate of verification through Form B.
  - Submission of Form 1, Form A, Form B and other requisite documents to the State Designated Agency (SDA) with a copy to BEE.
  - The state designated agencies upon verification of the completeness and consistency of the submitted data, sends the data to BEE for further scrutiny.
  - BEE then conducts scrutiny at its end and finally submits recommendations to the Central Government for issuance/entitled to purchase of Energy Saving Certificates.
- c) It may also be noted that Bureau of Energy Efficiency has developed Monitoring & Verification Guidelines<sup>8</sup> for the participating sectors under PAT scheme in an effort to facilitate the DCs to comply with notified PAT rules. The said document has also proven to be helpful to all empaneled Accredited Energy Auditors (EmAEAs) and State Designated Agencies (SDAs) in the monitoring and verification process of PAT.

**d) Role of Accredited Energy Auditors:**

The Designated Consumer for the purpose of Monitoring & Verification shall engage an Accredited Auditing Firm from the list of firms as specified by Bureau of Energy Efficiency (as also mentioned above). The Designated Consumer shall also make the following arrangement for the purpose of Monitoring & Verification:

- preparation and maintenance of quarterly data reports by the designated consumers
- preparation and maintenance of yearly data reports by the designated consumers
- 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.

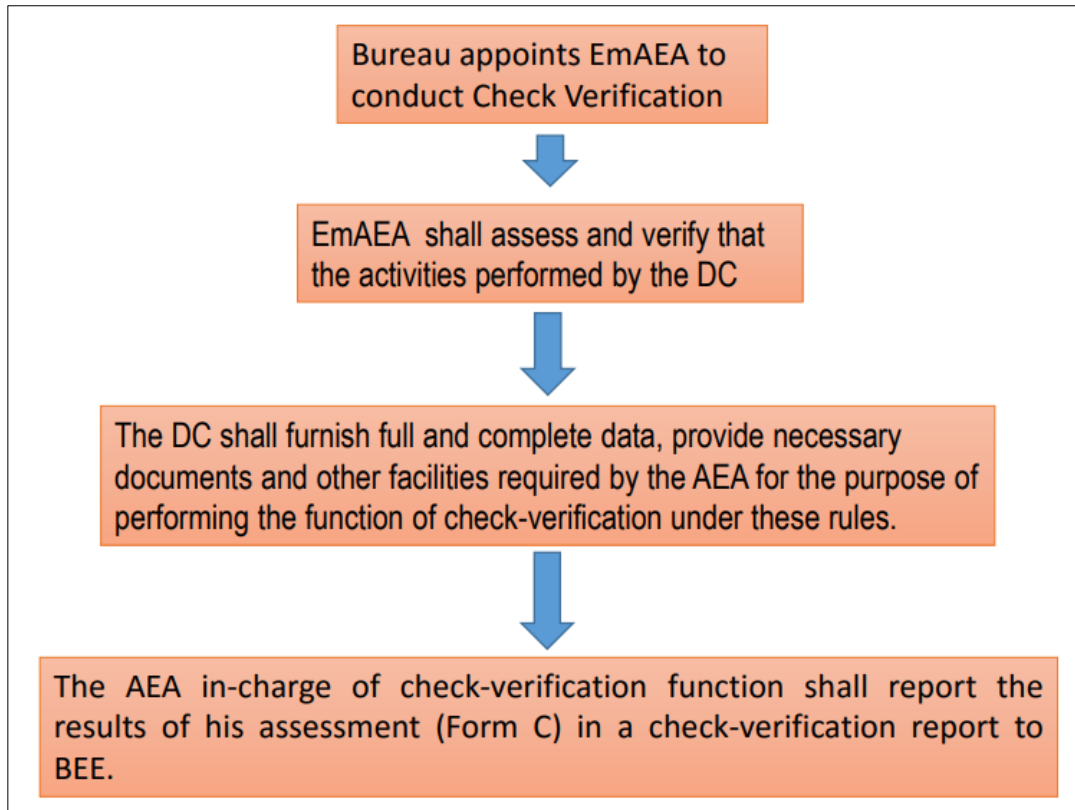
All the activities undertaken by the designated consumers under for implementation of the PAT scheme shall be scrutinized by the accredited energy auditor for the purpose of preparation of verification report and the designated consumer shall furnish the full and complete data, provide necessary documents and other facilities required by the accredited energy auditor for the purpose of performing the function of verification.

**VI. Check –Verification:**

As per the Rule 8 of the Energy Conservation Rules<sup>2</sup>, Bureau of Energy Efficiency 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

shall initiate action for review of compliance report. The process flow of check-verification is as follows:

Figure 4: Check verification via Accredited Energy Auditor



## VII. Accredited Verifiers and Validators:

The entire process for validation of activities, verification of emission reduction, accreditation of validators and accreditation of verifiers has been notified in the Energy Conservation Rules<sup>2</sup>. As per Rule 9 of the Energy Conservation Rules<sup>2</sup>,

- a) 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:
  - 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<sup>10</sup>;
  - has at least three certified energy auditors certified by the Bureau;
    - has at least one sector expert with experience of more than ten years in the said sector applied for, if Accredited Energy Auditor has the required experience in a specific sector, the same shall be treated as sector specific experience;”
    - The Empanelment of the AEA firm shall be sector specific based on the experience of sector experts engaged by the firm.”

- 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;
  - 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 organization, a net worth of ten lakhs rupees.
- b) 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.
  - c) The applications shall be accompanied by a certificate of registration or incorporation as the case may be.
  - d) The applications so received shall be scrutinized and a panel of eligible applicants shall be prepared which shall be displayed on the web site of the Bureau of Energy Efficiency.
  - e) 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.
  - f) A unique identification number shall be issued to the accredited energy auditors

It also be noted that the **Rule 10 of the Energy Conservation Rules<sup>2</sup> also known as the PAT Rules** specifies the “**obligations of an accredited energy auditor**”.

### **Energy Savings Certificate**

#### **VIII. Issuance of Energy Saving Certificates or Credit Issuance:**

- a) Bureau of Energy Efficiency on satisfying itself about the correctness of verification report, and check-verification report, wherever sought by it, send its recommendations to the Central Government, based on the claim raised by the designated consumer within two months from the last date of submission of Form 'A' by the concerned state designated agency, for issue or to purchase of energy savings certificates under section 14A of the Energy Conservation Act, 2001<sup>1</sup> and the recommendation shall specify.-
  - the exact number of energy savings certificates for issue or to purchase to the designated consumer and the entitlement for such energy savings certificates.
  - the identity of the concerned designated consumers;
  - 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.
- b) The designated consumer may seek issue of energy saving certificates based on performance achieved during the 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 recommendations to the Central Government, based on the claim made by the designated consumer in Form 'A' for issue of energy saving certificates under section 14A of the Energy Conservation Act<sup>1</sup>.

#### **IX. Procedure for issuance of Energy Saving Certificates or Credit Issuance:**

- a) As per the Rule 12 of the Energy Conservation Rules<sup>2</sup>, the Central Government, on the receipt of recommendation from Bureau of Energy Efficiency, shall on satisfying itself in this regard, **issue or entitled to purchase energy savings certificates of required value** to the concerned designated consumer within forty-

five days from the date of receipt of such recommendation from Bureau of Energy Efficiency.

- b) The energy savings certificate shall be issued in electronic form.
- c) The value of one energy savings certificate shall be equal to one metric tonne of oil equivalent of energy consumed and shall be rounded off to nearest whole number as per IS 2: 1960.
- d) The designated consumer who has been issued energy savings certificates may sell them through the power exchange.
- e) The designated consumer who has been issued energy savings certificates during the current cycle may use them for the purpose of banking and the energy savings certificates issued shall remain valid till the completion of the compliance period of their next cycle.
- f) The designated consumers may use the banked energy saving certificates, if any, referred above for the purpose of compliance of the next cycle or may sell them to any other designated consumer for the compliance within the validity period.
- g) The designated consumer,-
  - whose specific energy consumption is more than the prescribed norm and standards shall be eligible to purchase the energy saving certificates to ensure compliance with the prescribed norms and standard specified under clause (g) and clause (p) of the section 14 of the Energy Conservation Act 2001<sup>1</sup>;
  - who have achieved the energy consumption norms and standards but has not been issued energy saving certificates shall also be eligible to purchase energy saving certificates during the trading sessions for meeting their compliance of next compliance cycle.”
- h) 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.
- i) The Central Electricity Regulatory Commission shall function as the Market Regulator to promote market for development of energy saving certificates (ESCerts) including trading on power exchange(s) and discharge such other functions as may be considered necessary for the purpose.

#### **X. Identification and Tracking – Role of Registry:**

- a) The Ministry of Power, Government of India, in the year 2016 had assigned the functions of a Registry of Energy Saving Certificates (ESCerts) trading under PAT scheme to Power System Operation Corporation (POSOCO). In continuation to the above, the Central Electricity Regulatory Commission (Terms and Conditions for Dealing in Energy Savings Certificates) Regulations were notified in May 2016<sup>11</sup>. These Regulations defined the functions of the Registry in the ESCerts Trading Procedure which are as follows:
  - Registration of Eligible Entity
  - Maintaining records of ESCerts viz. issuance and dealing etc.
  - Dissemination of information in coordination with Bureau of Energy Efficiency
  - Assistance in development of IT Platform for maintaining database of ESCerts
  - Signing of Non -Disclosure agreement with the Administrator

- Any other function, as assigned by the Central Electricity Regulatory Commission (CERC) in consultation with the Bureau of Energy Efficiency after assessment of prevailing market conditions.
- b) Subsequent to the above, in the year 2017, procedures for transaction of Energy Saving Certificates (ESCerts) <sup>12</sup> were approved by the Central Electricity Regulatory Authority (CERC). The detailed procedures for the transaction of ESCerts (as mentioned above) consist of the following:
- Registration of a Designated Consumer (DC) with Registry as Eligible Entity,
  - Interface Activities between Power Exchanges and Registry, Administrator and Registry and Registry and Designated Consumer and
  - Dealing of Energy Saving Certificates, Transfer and other residual matters.
- c) **Security Audit:** It may be noted that to ensure periodic evaluation of the online platforms involved in the issuance and trading of ESCerts:
- Security audits for ensuring the security provisions are carried out at specific intervals by an IT agency engaged by BEE.
  - The Platform for record keeping and transection of ESCerts is integrated with SSL certificate Class – 2 which prevents any authorized access.
  - It has a robust system of role and field-based security with clarity of usage and responsibility.
  - The portal has inherent capacity to maintain audit trail
  - Further, its servers are maintained by a Government entity i.e. National Informatic Centre (NIC) adding another layer of security.
- d) It may be noted that the event of default / non-compliance and consequences thereof are clearly specified in the said procedures.

## **XI. Compliance of Energy Consumption norms and standards:**

- a) As per the Rule 13 of the Energy Conservation Rules<sup>2</sup>, 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' eight months from the last date of submission of Form "A"
- by implementation of energy conservation and energy efficiency improvement measures or;
  - where the measures implemented 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.
- b) The designated consumer may use balanced energy saving certificates after the compliance, if any, for the purpose of banking and such banked energy saving certificates may be used for the compliance of the next cycle.

## **XII. 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-'A' and Form

'B' shall be the baseline for establishment of new plant specific energy consumption norms and standards for designated consumers for the next cycle.

### **XIII. Trading of Energy Saving Certificates (ESCCerts):**

For the trading of ESCerts, Central Electricity Regulatory Commission (CERC) is the Market Regulator and Bureau of Energy Efficiency is the Administrator. POSOCO (Power System Operation Corporation limited) has been appointed as Registry<sup>13</sup> for making DCs as eligible entities for trading of ESCerts and book-keeping of ESCerts. There are two Power Exchanges<sup>14</sup> i.e. IEX and PXIL where trading of ESCerts shall take place. CERC has approved the Procedure for Transaction of Energy Savings Certificates (ESCCerts)<sup>12</sup>. Trading is to take place every Tuesday as per the Regulations.

### **XIV. PAT Cycles (Indicates continuous operation of the scheme)**

NMEEE was approved by the cabinet along with necessary funding in the year 2010. Subsequent to the approval of the NMEEE document, the Energy Conservation Rules, also known as the PAT Rules were notified in the year 2012 followed by the Notification of the first cycle of PAT vide notification no. S.O. 687 (E) dated 30th March 2012<sup>15</sup>. Under PAT cycle –I, 478 industrial units from 8 sectors viz. Aluminum, Cement, Chlor- Alkali, Fertilizer, Iron & Steel, Paper & Pulp, Thermal Power Plant and Textile were notified. The overall Specific Energy Consumption (SEC) reduction targets aimed to secure an energy saving of 6.686 million tonne of oil equivalent (MTOE). PAT Cycle I was completed on 31st March, 2015.

The outcomes achieved in the implementation of PAT cycle –I<sup>16</sup> were evaluated in terms of energy savings achieved and other impacts across the sectors to understand the performance better. The outcome and impact study clearly indicated that implementation of PAT cycle –I had resulted in mitigating India's carbon emissions significantly and had contributed towards sustainable economic development. The said report also provides comprehensive information about various sectors including their current energy consumption, projections, greenhouse gas emissions, global and national benchmarking, energy saving opportunities and also success stories

After the completion of PAT cycle –I, PAT cycle –II was notified vide S.O. 1264 (E) dated 31st March 2016<sup>17</sup> and published in the Gazette of India. Under PAT Cycle-II, SEC reduction targets were assigned and notified to 621 DCs from 11 sectors with an overall energy consumption reduction target of 8.869 MTOE. Subsequent to the start of PAT Cycle II, inclusion of new designated consumers from already identified sectors and new sectors began on rolling basis thereby a new PAT cycle was every year. Therefore, PAT cycle – III, IV, V and VI were notified in the year 2017, 2018, 2019 and 2020 respectively. Thus, the programme has been operational since the time of inception till date and is envisaged to continue as the energy efficiency opportunities remains at all levels of efficiency though the quantum may be different.

## Web-links in Public domain

1. **Energy Conservation Act, 2001:**  
<https://powermin.nic.in/sites/default/files/uploads/ecact2001.pdf>

### Baseline

2. **Energy Conservation Rules, 2012 :**  
<https://beeindia.gov.in/content/pat-notifications>
3. **Amendment to Energy Conservation Rules, 2012**
  - a. **in 2016**  
<https://beeindia.gov.in/sites/default/files/PAT%20Rules%20Amendment%2C%202016.pdf>
  - b. **in 2018**  
[https://beeindia.gov.in/sites/default/files/PAT%20Rules%20amendment%2C%202018\\_0.pdf](https://beeindia.gov.in/sites/default/files/PAT%20Rules%20amendment%2C%202018_0.pdf)
4. **Notification for Minimum annual energy consumption to become a Designated Consumer, 2007:**  
<https://beeindia.gov.in/content/pat-notifications>
5. **Minimum annual energy consumption for three new sectors namely Railways, Refineries and DISCOMs, 2015:**  
<https://beeindia.gov.in/content/pat-notifications>

**Energy Audit (Form 1), Recommendations on Measures (Form 2) and Action Taken (Form 3)**

6. **Notification of Form 1, 2007:**  
<https://beeindia.gov.in/content/pat-notifications>
7. **Notification of Form 2 and 3, 2008:**  
<https://beeindia.gov.in/content/pat-notifications>

### Monitoring & Verification

8. **Bureau of Energy Efficiency (Manner and Intervals of Time for Conduct of Energy Audit) Regulations, 2010**  
<https://beeindia.gov.in/content/pat-notifications>
9. **Monitoring and Verification Guidelines:**  
<https://beeindia.gov.in/content/pat-downloads>
10. **Bureau of Energy Efficiency (Qualifications for Accredited Energy Auditors and Maintenance of their List) Regulations, 2010;**  
<https://beeindia.gov.in/content/pat-notifications>

### ESCert Issuance, Registry

11. **Central Electricity Regulatory Commission (Terms and Conditions for Dealing in Energy Savings Certificates) Regulations were notified in May 2016**  
<https://escerts.gov.in/PortalUser/GetImportantLinks>
12. **Procedures for transaction of Energy Saving Certificates (ESCs)**  
<https://escerts.gov.in/PortalUser/GetImportantLinks>

**13. Online Registry under PAT scheme:** <https://registry.escerts.gov.in/>

**14. ESCerts trading at Power Exchange:**

<https://www.ixindia.com/products.aspx?id=v1VO3VPqpMA%3d&mid=Gy9kTd80D98%3d>

### **Target Notification**

**15. Target Notification for PAT cycle –I:**

<https://beeindia.gov.in/content/pat-notifications>

**16. Outcome achieved in the implementation of PAT cycle –I:**

<https://beeindia.gov.in/sites/default/files/Booklet%20on%20Outcome%20and%20Evaluation%20of%20PAT%20cycle%20-I.pdf>

**17. Target Notification for PAT cycle –I:**

<https://beeindia.gov.in/content/pat-notifications>



## Annexure 3

# BEE PATNET and Dynamics 365 CRM– Security



**BUREAU OF ENERGY EFFICIENCY**  
*Government of India, Ministry of Power*

# 1. PATNET Security Features

The **PATNET** is a portal, developed using the Model-View-Controller (MVC) technology by Microsoft. The **Model-View-Controller (MVC)** framework is an architectural pattern that separates an application into three main logical components Model, View, and Controller, hence the abbreviation MVC. Each architecture component is built to handle specific development aspect of an application. MVC separates the business logic and presentation layer from each other. Besides these framework features below security features and best web practices have been followed to strengthen the web portal – BEE PATNet.

1. One Time Password (OTP)
2. Password Encryption
3. Captcha
4. Force Resetting of password in 3 months
5. Open Web Application Security Project (OWASP) standard

Also, below best practices and standards have been adhered to while developing the portal – BEE PATNet to avoid the most common Application Security Vulnerabilities:

1. **Prevention of SQL Injection:** Injection occurs when user-supplied data is sent to an interpreter as part of a command or query. A proper care and checks have been carried out to prevent injection – particularly SQL Injection that are common in web application.
2. **Intact authentication:** Account credentials and session tokens are properly protected so attackers can not compromise passwords, keys or authentication tokens to assume other users' identities.
3. **Data Encryption:** Cryptographic functions are properly used to protect data and credentials. This way all sensitive data is encrypted/ hashed with a strong encryption/ hashing algorithm. Implemented Salted Hashing (SHA256) for login page and Old password pages and basic hashing for Change Password and Registration Page.
4. **XML External Entities (XXE):** Properly configured XML processors are used within XML files. This is used to prevent external entities to disclose internal files using the file URI handler, internal file shares, internal port scanning, remote code execution, and denial of service attacks.
5. **Secure Access Control:** A strict access control mechanism is in place where only authorised users can access the PATNet platform. This mechanism is supported by implementing a One Time Password (OTP) based authentication whenever the user receives OTP message (SMS) on the registered mobile number.
6. **Cross Site Scripting (XSS):** XSS has been implemented whereby user supplied data is first validated and encoded before submission from a web browser. This prevents execution of scripts in a browser, hijacking of browser using malware etc.
7. **Logging and monitoring:** An effective logging mechanism is implemented whereby every activity is logged for future research. This logging helps to identify and resolve the issues accordingly.

## 2. BEE DCRM Security Features

Dynamics 365 is a product line of enterprise resource planning and customer relationship management applications announced by Microsoft

Dynamics 365 for Customer Engagement provides a security model that protects data integrity and privacy, and supports efficient data access and collaboration. The goals of the model are as follows:

- Provide users with the access only to the appropriate levels of information that is required to do their jobs.
- Categorize users by role and restrict access based on those roles.
- Support data sharing so that users and teams can be granted access to records that they do not own for a specified collaborative effort.
- Prevent a user's access to records the user does not own or share.

**Role-based security** in Dynamics 365 Customer Engagement (on-premises) focuses on grouping a set of privileges together that describe the responsibilities (or tasks that can be performed) for a user. Dynamics 365 Customer Engagement (on-premises) includes a set of predefined security roles. Each aggregates a set of user rights to make user security management easier. Also, each application deployment can define its own roles to meet the needs of different users.

Role-based security is aligned with the structure of the business. Users are assigned to security roles based on their responsibilities in the organization and their participation in business processes, and access is granted to these security roles rather than to individual users. Furthermore, the administrator grants access based on the duties the users perform in their roles, not to the program elements used by the users to fulfill their roles.

**Record-based security** in Dynamics 365 Customer Engagement (on-premises) focuses on access rights to specific records.

**Field-level security** in Dynamics 365 Customer Engagement (on-premises) restricts access to specific high business impact fields in an entity only to specified users or teams.

Combine role-based security, record-level security, and field-level security to define the overall security rights that users have within custom Dynamics 365 Customer Engagement (on-premises).

**Active Directory Authentication:** Windows Active Directory (AD) authentication protocols authenticate users, computers, and services in AD, and enable authorized users and services to access resources securely is among the oldest authentication protocols used by Microsoft.

However, its hashes were relatively easy to crack. By capturing hashes and cracking them to obtain account logon credentials, attackers could easily authenticate to other systems on the network. NTLM, which succeeded LM, is an encrypted challenge/response based authentication protocol used for network logons by client devices, yet it's still easy to crack. NTLMv2 was a significant improvement compared to NTLM in terms of both authentication and session security mechanisms. It enhanced the security of NTLM by adding the ability for a server to authenticate to a client. Kerberos authentication is a vast improvement over the previous technologies. Kerberos provides identity authentication by exchanging messages between the client, authentication server, and application server. Compared to NTLMv2, Kerberos' use of strong cryptography and third-party ticket authorization makes it much more difficult for cybercriminals to infiltrate the network, providing an additional layer of security.