

NATIONAL FEDERATION OF ENGINEERS FOR ELECTRICAL SAFETY

ELECTRICAL SAFETY PROFESSIONAL CERTIFICATION SCHEME (ESPCS) CERTIFICATION PROCESS

1. INTRODUCTION

The **National Federation of Engineers for Electrical Safety (NFE)** is an organisation focused on raising awareness about the need to ensure electrical safety to eliminate hazards at electrical installations. The organisation, headquartered in Chennai, mainly comprises of electrical engineers working in the field of electrical safety and aims to improve knowledge and skills of professionals in the field by facilitating certification of personnel.

NFE works closely with electrical inspectorates of central and state governments, electrical designers, electrical safety officers, and engineers in the field of quality, safety and standards to improve electrical safety scenario and reduce the number of accidents and fatality. As part of its efforts to facilitate an accreditation system for electrical engineering professionals, NFE has proposed a certification scheme for electrical safety professionals as per International Standards of Personnel Certification, ISO/IEC 17024:2012. The scheme aims to promote safe electrical installation and practises in India. As the Scheme Owner, NFE aims to promote uniformity in the implementation of the scheme by Personnel Certification Bodies (PrCB) by developing an eco-system for certification of the Electrical Safety (ES) professionals.

The objective of this document is to define the process of certification of ES professionals under the Electrical Safety Professionals Certification Scheme (ESPCS) of the NFE.

2. SCOPE

This document explains the certification process under the **Electrical Safety Professionals Certification Scheme (ESPCS)** [hereafter referred to as the **Scheme**] and the stipulations for the certification of ES professionals.

The scheme is proposed for professionals involved in design, selection and erection, and verification of electrical systems under the following three categories (the titles of the categories are indicative):

Design and Selection: NFE Certified Electrical Consultant.

Erection: NFE Certified Electrical Installer.

Verification: NFE Certified Electrical Safety Verifier.

The certification under the proposed Scheme is to be carried out only by those PrCBs duly accredited as per ISO/IEC 17024:2012. However, until such time the market develops, NFE as Scheme Owner, may directly evaluate candidates. The individual certifications directly done by NFE shall be transferred to any of the approved PrCBs as soon as possible.

3. CERTIFICATION PROCESS

3.1 Registration of Application

NATIONAL FEDERATION OF ENGINEERS FOR ELECTRICAL SAFETY

3.1.1 The approved PrCB shall publicly display the scheme for ESPC along with the requisite format of the application with the detailed contact address/es on its website. Aspiring electrical safety professionals may apply to any of the approved PrCB in the prescribed application form.

3.1.2 The approved PrCB shall respond to all enquiries received from prospective candidates for certification with complete information regarding the certification process, appropriate to the certification Scheme (including fee structure). Enquiries may be related to list of documents containing the requirements for certification, the candidate's obligations and rights, and the duties of a certified person which includes a code of conduct. PrCBs are to respond to candidates within seven days of receipt of the query.

3.1.3 The candidate shall declare whether he/she has been a candidate for the Scheme to any other PrCB and, if yes, shall provide details of the status of application/certification, scope, and period of the certification.

3.1.4 The candidate shall declare any pending judicial proceedings concerning his/her conduct, and/or any pending proceedings by any regulatory body, concerning electrical safety related activities. Application from such a candidate shall not be entertained.

3.1.5 All applications for certification shall be reviewed for their completeness and adequacy. Deficiencies, if any, shall be informed to the candidate within seven days of receipt of the application. PrCBs are to maintain all records of the review of application.

3.1.6 All complete applications, shall be registered within seven days of receipt of application/additional information. Registrations shall be done in the order of receipt of applications, each with a unique identification number, acknowledgement, and updated records.

3.1.7 Applications of candidates found to be violating the terms and conditions of the Scheme while their application is being processed shall not be processed any further and shall be rejected after due notice of 15 days.

3.1.8 Applications of candidates whose previous certification was cancelled or rejected because of violation of terms and conditions shall not be taken up for certification within one year of cancellation of the certificate/rejection of the application.

3.1.9 All requests for certification, including applications from candidates who received certification previously, shall be processed afresh as in a new application in accordance to the procedure for grant of certification (described in 2.5).

3.1.10 The PrCB shall reject or close all applications under the following conditions:

- a. If deficiencies observed in the application are not completed within one month,
- b. If the candidate does not take the assessment within three months of registration of the application,
- c. Misuse of the scheme logo/certification mark, if any,
- d. Evidence of malpractice,
- e. Voluntary withdrawal of the application,
- f. Any other (namely, non-payment of fees among others).

3.1.11 In the event of closure/rejection of an application, the application fee submitted with the application may be refunded as per policy of PrCB.

NATIONAL FEDERATION OF ENGINEERS FOR ELECTRICAL SAFETY

3.2 Competence Assessment Process

3.2.1 The criteria for assessment shall be corresponding with the roles and responsibilities in the specific domain for which the ES professional has applied certification for, and in accordance with requirements prescribed in the document Competence Criteria for Electrical Safety Professionals.

3.2.2 NFE, as Scheme Owner, shall prepare the question bank and provide to PrCBs.

3.2.3 The assessment shall be planned and structured in a manner that ensures that the scheme requirements are objectively and systematically verified with documented evidence to confirm the competence of the candidate.

3.2.4 The PrCB shall verify and accommodate special needs, within reasonable limits while ensuring the integrity of the assessment is not violated, taking into account government and other laws and regulations.

3.3 Assessment Method

3.3.1 The assessment can be either online or face to face.

3.3.2 Examination process: The examination method shall be a combination of written examination, demonstration, and oral interview. Details of how the scores are to be assigned for the examinations are provided in this document.

The duration of the written examination shall not exceed three hours and demonstration with oral evaluation (interview) shall not exceed two hours.

3.4 Setting of Test Papers

3.4.1 Written Examination: The PrCB shall use the services of competent persons to prepare question papers for the written examination, from the question banks received from SO.

3.4.2 The PrCB shall prepare and maintain a pool of test questions and constantly keep updating the same. The PrCB shall not repeat any question, other than fundamentals, in any written examination for a period of one year.

3.4.3 To begin with the entire examination process will be in English only. (The provision of local Indian languages may be made in future subject to the expansion of the scheme). The language used for the evaluation shall be stated on the certificate issued to successful candidates.

3.4.4 Demonstration: The PrCB shall have guidelines document for the examiner(s) and a structured evaluation record for evaluation of each demonstration. There shall be a minimum of three examiners, with one of them being the lead examiner. Each examiner shall individually evaluate the candidates but provide a single final score.

3.4.5 Oral (Interview): The PrCB shall prepare questions and guidelines for the oral (Interview) and a structured evaluation record for the same

3.4.6 The PrCB shall have a written procedure for scoring of candidates including normalisation of scores.

3.4.7 The PrCB shall ensure that the questions for written and oral evaluation and the guidelines for demonstration are such that they are fair, valid, and reliable across test centres, across time zones, and across examiners.

NATIONAL FEDERATION OF ENGINEERS FOR ELECTRICAL SAFETY

3.4.8 Assessment of knowledge will be based on written test with the use of multiple-choice questions. PrCB must ensure that the question bank is deployed in rotation and multiplicity so that there is least predictability.

3.4.9 Skills will be assessed by the evaluation panel either onsite or through practical demonstration by the candidate.

Verification of skills:

1. Written examination: Answer 60 questions within a specific time (2 hours) (online – open book),
2. Interview by a committee consisting of at least 3 persons with expertise on different subjects and general aptitude.

Note: Sl. no 1 is an open book examination. The professionals can refer the IS standards (no consultation with others or answers from the internet are allowed).

This is followed by area specific evaluation:

a) Consultant:

1. Create an electrical design with specifications, showing cable routes and calculate minimum cable sizes for current carrying capacity, voltage drop and fault-current withstand conditions,
2. Verification of the facility designed by the professional as stated in the prerequisite by examiner.

b) Installer:

1. Verification of the installation, carried out by the professional as stated in the prerequisite-

c) Verifier:

1. Verification of the works carried out by the professional, based on the filled form submitted as a part of prerequisite, perform an electrical installation condition report on the same electrical installation.

3.4.10 Assessment of knowledge and skills will be followed by interview of the candidate by an interview panel, which will now assess overall competence of the candidate.

3.4.11 The minimum required percentage for passing the examination for all the three categories of professionals will be 70% with equal weightage of 50% for both knowledge and skill.

3.4.12 There will be no negative marking for the basic level assessment.

3.4.13 The overall pass percentage for the successful candidates shall be 70% for combined knowledge and skills put together.

3.5 Assessment Process

3.5.1 The assessment of the candidates shall be conducted within three months of registration of the application.

3.5.2 The PrCB shall schedule the assessments as and when the number of candidates is optimal as a minimum. The PrCB at its discretion may assess with a smaller number of candidates. The PrCB shall ensure that the certification process is completed within 15 days from the date of the actual assessment.

NATIONAL FEDERATION OF ENGINEERS FOR ELECTRICAL SAFETY

3.5.3 The PrCB shall inform all eligible candidates, including those appearing for a re-assessment, dates of the assessment and the means of assessment at least 15 days before the assessment. The PrCB shall announce the dates for the assessment and the names of the candidates through its website.

3.5.4 The names of the candidates shall be communicated at least two days in advance to the examiners and the examination centre (if any) for identification of conflict of interest, if any. Any conflict of interest identified concerning the candidates shall be eliminated, minimised, or managed by the PrCB.

3.5.5 The PrCB shall inform the Candidates the name and address of the assessment centre where the assessment is scheduled to be held. Invigilators may be non-technical and not versed with the subject so as not to influence or support any candidate during the examination process. If the candidate has any conflict of interest and voluntarily decides not to undergo the assessment, the PrCB shall provide them with the option for another assessment or reimburse the application fee.

3.5.6 The decision of the examiners shall be communicated to the candidate by the PrCB. The PrCB shall maintain an updated register of candidates and certified ES professionals with the scope and status of certification.

3.5.7 The PrCB shall ensure that the assessment and certification process is fair, valid, and reliable across assessment centres, time zones, and examiners.

3.5.8 The PrCB shall have documented procedure regarding use of suitable premises, including examination sites, equipment, and resources for carrying out their certification activities.

3.5.9 The written examination shall be conducted under the supervision of an invigilator. The

PrCB shall identify and nominate invigilators for the purpose. The invigilator shall at the end of every written examination collect all the question-and-answer sheets, seal immediately, and forward them to the PrCB's office within one working day of completion of the evaluation.

3.5.10 The demonstration and oral evaluation (interview) shall be conducted by a team (minimum of three examiners) of independent examiners and a representative of the PrCB. The names of the candidates shall be communicated in advance to the evaluation team for identification of conflict of interest, if any. Any conflicts identified with respect to the candidates shall be suitably addressed by the PrCB.

3.6 Checking of Evaluation Papers and Demonstration Report

3.6.1 The evaluation of written test answer sheets shall be carried out by competent examiner/s. The assessment of the demonstration and interview shall be by a competent three-member team, as already specified.

3.6.2 Written: The examiner shall check the written answer sheets and consolidate the results within seven days of the evaluation.

3.6.3 Oral: Each member of the team of examiners shall record his/her results for each of the questions on the structured evaluation sheet for each candidate interviewed. The individual evaluation result for each candidate shall be discussed by the team. The representative of the PrCB shall at the end of the oral evaluation (interview) collect all the evaluation results from each of the team members, collate the results, and calculate the average score for each question asked, seal and thereafter submit the same to the PrCB's office within one working day of completion of the evaluation.

3.6.4 Demonstration: The evaluation team shall evaluate the demonstration report for each of the broad headings of the Body of Knowledge within a week of the demonstration by the candidate.

NATIONAL FEDERATION OF ENGINEERS FOR ELECTRICAL SAFETY

The candidates are required to score a minimum of 70% each in the written, demonstration, and oral (interview) evaluations for qualifying as an ESCP.

3.7 Decision on Certification

3.7.1 The decision on granting certification shall be based on the information gathered during the evaluation process and shall ensure the following:

- a. The assessment result of the candidate is not below the minimum score specified,
- b. Necessary documentation is available as proof of the means used to assess the candidate,
- c. Any other requirements prescribed by the Scheme Owner.

3.7.2 The decision to grant certification shall be taken by an independent person(s) who has/have neither been involved in assessing nor training the candidate who is seeking the certification.

3.7.3 Decisions regarding granting, maintaining, recertifying, extending, reducing, suspending, and withdrawing certification shall not be outsourced.

There shall be no conditional grant of certification.

3.7.4 Candidates, who have failed to meet the acceptance criteria for assessment, may take another assessment with the same or another PrCB but would have to declare their previous performance while reapplying.

3.7.5 The Scheme Owner and PrCB shall maintain a database of certified ES professionals. If a certified ES professional relocates to a different place /state, he/she shall be required to inform the PrCB of the change in address, and the PrCB in turn shall inform the Scheme Owner of the same. The Scheme Owner and PrCB shall ensure that the database and website with information on certified ES professionals remains updated.

3.7.6 The effective date of certification shall not be prior to the date of the decision to grant the certification.

3.7.7 The validity of the ESPCS certificate shall be for five years.

3.7.8 The candidates must follow a prescribed code of conduct when certified as an ES professional.

3.7.9 If any change takes place in the standards or regulatory requirements relevant to the scheme, the Scheme Owner may modify the scheme criteria and processes as needed and shall inform all PrCBs accordingly. It may also prescribe a transition policy, and the deadline for completing the process of transition with or without additional assessment.

4. CERTIFICATE

4.1 The PrCB shall provide a certificate to all certified ES professionals. The PrCB shall maintain sole ownership of the certificates. The certificate shall be in digital format, signed or authorised by a responsible member of the PrCB. The certificate shall contain, as a minimum, the following information:

- a. The name of the certified person,
- b. A unique identification,
- c. The name of the PrCB,

NATIONAL FEDERATION OF ENGINEERS FOR ELECTRICAL SAFETY

- d. A reference to the certification scheme, standard, or any other relevant documents, including issue date, if relevant,
- e. The scope of the certification including validity conditions and limitations, if applicable,
- f. The effective date of certification and date of expiry,
- g. Other unique identification marks (namely, certification mark and accreditation symbol, among others) may be used, provided they are not misleading or ambiguous,
- h. Any other information required by the certification criteria used for certification,
- i. In the event of issuing any revised certification documents, a means to distinguish the revised documents from any prior obsolete documents.

4.2 The certificate format shall be as approved by the Scheme Owner. The certificate shall be designed to reduce the risks of counterfeiting.

4.3 The formal certification document shall be uploaded on the PrCB website from where all certified professionals can download their certificate.

5. SURVEILLANCE

5.1 For continuation of certified professional status, the PrCB shall conduct surveillance every certification cycle. One surveillance assessment shall be conducted in the third year of certification cycle (validity for five years is subject to successful surveillance within this period).

5.2.For the Surveillance assessment of certified personnel

Consultant: Review of actual design services provided by the certified professional in the last 2 years.

Installer: Review of actual installation services provided by the certified professional in the last 2 years

Safety Verifier Review of actual verification services provided by the certified professional in the last 2 years

5.3 Those who are unable to provide any or sufficient evidence of working in the field of electrical safety and wish to continue with their certified status shall have to undergo revaluation(similar to the initial certification process)

5.4 Certified professionals shall provide testimonies of continuous professional development activities of minimum 40 hours over a period of three years.

6. RECERTIFICATION (initial and surveillance methods to be similar)

6.1 Recertification will be through an assessment process similar to the initial certification as laid out in this scheme.

6.2 The PrCB shall send a renewal notice to the certified ES professional's registered email ID and/or to the registered postal address at least six months prior to the expiry of the certificate.

6.3 The certified ES professional shall apply for renewal in the prescribed format along with a fee (if any) at least four months before the expiry of certification.

NATIONAL FEDERATION OF ENGINEERS FOR ELECTRICAL SAFETY

6.4 The PrCB shall review the performance of the certified ES professional seeking recertification in accordance to procedures compliant to the certification criteria during the entire certification cycle before a decision on the renewal is taken.

6.5 The performance of the certified ES professional shall be reviewed based on the following recertification assessment factors:

- a. The surveillance assessment report(s),
- b. Corrective actions taken on any feedback given during surveillance,
- c. Any suspension of the certificate during the previous validity period,
- d. Complaints received, if any,
- e. Feedback obtained by the PrCB on the services provided by the ES professional, if available,
- f. Feedback reports obtained by the PrCB from the institution where the ES professional is employed, as applicable,
- g. Adverse information, if any,
- h. Abilities to be verified.

6.6 Certified professionals shall provide testimonies of continuous professional development activities of minimum 40 hours over a period of three years.

6.7 Recertification shall be based on the satisfactory performance of the certified ES professional during the previous certification period and satisfactory process of reassessment and shall be completed before the expiry of the certification.

6.8 The PrCB shall not recertify an ES professional conditionally based on future compliance verification. There shall be no conditional certification of the ES professional.

6.9 The PrCB shall not recertify any certified ES professional whose certification is under suspension.

6.10 When the performance of the certified ES professional is not satisfactory, the PrCB shall withhold the recertification of the ES professional, clearly stating the reasons and give time to effect corrective actions. The verification and decision on recertification shall be taken within three months of the expiry date.

6.11 The PrCB shall verify corrective actions and provide clear results.

6.12 The recertification shall be come into effect from the date of the expiry of the previous certificate and the intervening period shall be treated a period of suspension. The certified ES professional shall not claim certification during this period.

6.13 In case the certified ES professional is needed to take corrective actions on their part for the recertification to be done and he/she does not complete the steps satisfactorily within six months, a show-cause notice of 15 days shall be served with a chance to respond or a personal hearing regarding any adverse decision that may be taken. After 15 days, the certificate shall stand expired from the date of expiry of previous validity.

6.14 When a certificate is not renewed, it expires at the end of the validity period.

NATIONAL FEDERATION OF ENGINEERS FOR ELECTRICAL SAFETY

7. CHANGE OF LEVEL OF CERTIFICATION (This is for the future prospect of the Scheme, and only a proposal at this stage)

7.1 Change to a higher level of certification is possible based on an application request by an ES professional. The PrCB shall ascertain the competence required, and shall follow the defined evaluation process.

7.2 The candidate shall be issued a fresh certificate after the defined process of evaluation and certification is confirmed and approved.

8. SUSPENSION OF CERTIFICATION

8.1 The PrCB shall issue suspension of certification, with due notice of 15 days after giving the ES professional a chance to respond and additionally give a personal hearing, if desired by the professional, when:

- a. The surveillance shows unsatisfactory performance,
- b. Any serious complaint/feedback, which is found to be valid,
- c. Any administrative requirement like payment of a fee or timely provision of information,
- d. Any violation of terms and conditions of certification,
- e. Any conduct that may bring disrepute to the Scheme.

8.2 On receiving instructions for suspension of certification, the certified ES professional shall, with immediate effect, remove any reference to certification in all of his/her communication.

8.3 The certified ES professional shall be advised to identify and initiate necessary corrective actions for resolving the same.

8.4 The PrCB shall display on its website suspension of certificate in the directory of the certified professionals.

8.5 The suspension shall not exceed six months, provided it is still within the validity period of the certificate. The certified ES professional's failure to resolve issues relating to suspension within this period will result in cancellation of certification.

9. CANCELLATION OF CERTIFICATION

9.1 PrCB shall cancel the certificate when:

- a. Certified ES professional contravenes the terms and conditions of certification and violates the provisions of the certification scheme. Violation of terms include claiming or displaying the scope of certification other than that granted and any fraud that is established,
- b. The corrective actions taken do not ensure compliance, or the proposed plan for corrective actions will take a considerable time beyond three months for implementation in case of a suspended certificate,
- c. Any administrative requirement like non-payment of a fee, or not providing requested information, or any other breach of the Scheme's requirements,

NATIONAL FEDERATION OF ENGINEERS FOR ELECTRICAL SAFETY

- d. Any conduct that may bring disrepute to the Scheme,
- e. An opportunity will be given to the professional to give an explanation before such cancellation in cases which do not attract any criminal procedure.

9.2 PrCB shall cancel the certificate at the request of the certified ES professional

9.3 In the event of cancellation, the PrCB shall advise the certified ES professional to return the certificate issued by the PrCB.

9.4 Any cancellation of certification shall be made public on the websites of the Scheme Owner and PrCB.

10. FEE

10.1 An ES professional seeking certification may be charged a fee, without any discrimination.

10.2 The fee structure shall be publicly accessible and be provided on request.

10.3 The PrCB shall notify and obtain consent regarding the fee structure from the candidate before processing of application and granting of certification. As and when the fee changes, the same shall be communicated to all including the candidate and obtain his/her consent.

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