

CENTRAL POWER RESEARCH INSTITUTE
R&D Management Division
FORMAT FOR SUBMISSION OF NPP PROPOSAL

GENERAL INSTRUCTIONS

- The proposal shall clearly and distinctly present: (i) the power-sector problem being addressed, (ii) the proposed methodology, (iii) measurable outputs and outcomes, and (iv) the pathway for scale-up, field validation, adoption, or commercialization. Each section shall be self-contained and specific; the PI should avoid merely referring to earlier sections or combining information pertaining to different sections.
- Use simple, specific and measurable statements. Support the problem with field data, utility/manufacturer inputs, standards, published evidence or preliminary results, wherever available.
- State the present Technology Readiness Level (TRL), the target TRL, the basis for the assessment and the validation required to reach the target TRL.
- Provide drawings, block diagrams, process flow, test plans, equations and references wherever these improve clarity. Avoid vague or generic descriptions.
- All costs shall be indicated in Rs lakh and upto two decimal places. The project duration is expected to be two-three years unless specifically permitted under the applicable scheme.
- Delete the guidance text in square brackets before final submission. Additional rows may be inserted where required.
- The proposal is required to be submitted with 4 hard copies and soft copy in .pdf and .docx format.

BASIC PROJECT INFORMATION

Sl. No.	Particulars	Details
1	Title of the proposal	[Enter details]
2	Thrust Area of Research (only choose from the following five areas): 1. Thermal 2. Hydro 3. Renewable Energy and Energy Storage 4. Transmission 5. Grid, Distribution and Energy Conservation	[Enter details]
3	Lead research station / institution and complete address	[Enter details]
4	Name, affiliation and contact details of Principal Investigator (PI) (mobile no. and e-mail mandatory)	[Enter details]
5	Names and affiliations of Co-PI(s) / project team members	[Enter details]
6	Collaborating Institution(s)	[Enter details]
7	End user / utility / industry / manufacturer / start-up partner	[Enter details]
8	Project duration (months)	[Enter details]
9	Total estimated cost (Rs lakh)	[Enter details]
10	Present TRL and basis/reference	[Enter details]
11	Target TRL at project completion	[Enter details]
12	Experts working in this field in India (maximum 4)	[Enter details]

A. PROBLEM DEFINITION AND NEED**A.1 Background and precise statement of the problem/challenge (maximum 1 page)**

Explain how the problem was identified, who experiences it, where it occurs and why it requires R&D. Define the system boundary and avoid describing only the broad subject area.

[Enter response here]

A.2 End-user requirement

State the specific requirement communicated or validated by the utility, manufacturer, industry, system operator or other end user. Attach a letter of support/commitment where available. If the section is not applicable write NIL.

[Enter response here]

A.3 Current technology / process / solution available

Describe the literature reviewed, present practice, technology or solution available, including typical performance, cost, reliability and deployment status. Summarize recent international and Indian work, researchers/organizations, products/technologies, patents and field deployments relevant to the proposal in the last 10 years.. Use recent references and faithfully distinguish published results from claims.

[Enter response here]

A.4 Limitations / gap in the available solutions which are identified in A.3

State the technical, economic, operational, manufacturing, regulatory or field-deployment gap that remains unresolved.

[Enter response here]

A.5 Novelty and improvement proposed over the available solution

Clearly identify what is new and how much improvement is proposed. Compare the proposal against the alternative other available technology/process/solution.

[Enter response here]

A.6 Relevance of your proposed solution for the Indian power sector

Explain why the work is important for Indian utilities, manufacturers, consumers, grid operation, safety, reliability, affordability, energy transition, indigenization or policy objectives.

[Enter response here]

B. OBJECTIVES AND SUCCESS CRITERIA

List a limited number of measurable objectives. Each objective shall have a baseline, a target and a method of verification. Avoid objectives such as "to study" unless the study leads to a defined output.

Obj. No.	Specific objective	Baseline / present value	Measurable target	Means of verification/validation
1	[Enter]	[Enter]	[Enter]	[Enter]
2	[Enter]	[Enter]	[Enter]	[Enter]
3	[Enter]	[Enter]	[Enter]	[Enter]
4	[Enter]	[Enter]	[Enter]	[Enter]
5	[Enter]	[Enter]	[Enter]	[Enter]
6	[Enter]	[Enter]	[Enter]	[Enter]

C. METHODOLOGY AND TECHNICAL WORK PLAN**C.1 Overall technical approach (maximum 5 pages)**

Explain how each objective will be achieved. Include system architecture, experimental design, modelling approach, materials/components, algorithms, datasets, sampling, test standards, instruments, analysis method and justification for the selected approach. Use diagrams and tables in addition to text.

[Insert detailed methodology, diagrams, equations and justification here]

C.2 Work packages for each institute (to be filled when more than one institute is responsible for implementation of the project)

WP / Obj.	Activities and method	Inputs / facilities / data	Responsible investigator / partner	Output / milestone	Verification / acceptance
WP-1	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]
WP-2	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]

WP / Obj.	Activities and method	Inputs / facilities / data	Responsible investigator / partner	Output / milestone	Verification / acceptance
WP-3	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]
WP-4	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]
WP-5	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]
WP-6	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]
WP-7	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]
WP-8	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]

C.3 Plan for Demonstration of the project outcome

Explain how the project outcome can be demonstrated.

[Enter response here]

D. TIME SCHEDULE AND MILESTONES

Provide a quarter-wise plan for the full project duration. Mark the period of activity and identify the measurable milestone at the end of each work package. Highlight the quarters required for that activity. Add rows and columns as per requirement.

Activity / Work Package	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Milestone/ outcome of the activity which will mark the end of the activity
WP-1 [enter the activity here]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[Enter milestone]
WP-2 [enter the activity here]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[Enter milestone]
WP-3 [enter the activity here]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[Enter milestone]
WP-4 [enter the activity here]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[X]	[Enter milestone]

E. EXPECTED OUTPUT (S), OUTCOME(S) AND TRL ADVANCEMENT

E.1 Present and target Technology Readiness Level (TRL)

Item	TRL	Evidence / basis/reference	Validation required to reach next level
Present status	[Enter]	[Enter]	[Enter]
Target at completion	[Enter]	[Enter]	[Enter]

E.2 Tangible project deliverable in terms of the product/process/system developed

List only outputs that will be handed over, demonstrated or independently verified. State specifications.

Sl. No.	Deliverable	Technical specification / target
1	Prototype(s), proof-of-concept, demonstration(s), model(s) or test setup(s)	[Enter]
2	Technology / process / product / software / test method developed	[Enter]
3	Pilot-scale demonstration / field validation / testing under real or simulated field conditions	[Enter]
4	Any other	[Enter]

E.3 Output and outcome indicators

Sl. No.	Indicator	Target
1	Research publications in reputed / peer-reviewed journals expected	[Enter]
2	Patents expected to be filed / granted	[Enter]
3	Standards, guidelines, specifications or regulatory inputs provided	[Enter]
4	Researchers, students, engineers and professionals to be engaged or trained	[Enter]
5	Other measurable output / outcome	[Enter]

E.4 Expected benefits / returns from the project

Quantify the likely benefit to the Indian power sector, utility, manufacturer, system operator, consumer or society. Examples include efficiency gain, loss reduction, reliability improvement, cost saving, safety, emissions reduction, import substitution, asset-life extension and improved system operation.

[Enter response here]

F. TRANSLATION, FIELD DEPLOYMENT AND ADOPTION IN THE POWER SECTOR**F.1 Scale up of the technology or translation plan to the Power Sector**

State how the outcome can be translated to actual use in the Power Sector. Mention few utilities, manufacturers who can be approached for translation of the outcome.

[Enter response here]

G. BUDGET AND FINANCIAL PLAN**G.1 Total estimated cost and budget justification**

[Mandatory, in case of collaborative proposals further institute wise funding to be filled. MoP contribution will be maximum of Rs 5 crore including project management expenses and institution overheads]

Budget head	Year 1	Year 2	Total (Rs lakh)	Justification linked to objective / deliverable and justification of the cost
Equipment / accessories 1. [Name] 2. [Name] 3. [Name]	[Enter]	[Enter]	[Enter]	[Enter]
Manpower / research personnel	[Enter]	[Enter]	[Enter]	[Enter]
Consumables / materials	[Enter]	[Enter]	[Enter]	[Enter]
Testing / certification / field validation	[Enter]	[Enter]	[Enter]	[Enter]
Travel / field work	[Enter]	[Enter]	[Enter]	[Enter]
Contingency	[Enter]	[Enter]	[Enter]	[Enter]
Other (specify)	[Enter]	[Enter]	[Enter]	[Enter]
Sub-Total (A)				
Institutional overheads (10% of A)	[Enter]	[Enter]	[Enter]	[Enter]
Project Management Expenses (10% of A)				
Grand Total	[Enter]	[Enter]	[Enter]	[Enter]

G.1.1 Institute-wise total estimated cost and budget justification (in case of collaborating institutes)**Institute 1**

Budget head	Year 1	Year 2	Total (Rs lakh)	Justification linked to objective / deliverable and justification of the cost
Equipment / accessories 1. [Name] 2. [Name] 3. [Name]	[Enter]	[Enter]	[Enter]	[Enter]
Manpower / research personnel	[Enter]	[Enter]	[Enter]	[Enter]
Consumables / materials	[Enter]	[Enter]	[Enter]	[Enter]
Testing / certification / field validation	[Enter]	[Enter]	[Enter]	[Enter]

Budget head	Year 1	Year 2	Total (Rs lakh)	Justification linked to objective / deliverable and justification of the cost
Travel / field work	[Enter]	[Enter]	[Enter]	[Enter]
Contingency	[Enter]	[Enter]	[Enter]	[Enter]
Other (specify)	[Enter]	[Enter]	[Enter]	[Enter]
Sub-Total (A)				
Institutional overheads (10% of A)	[Enter]	[Enter]	[Enter]	[Enter]
Project Management Expenses (10% of A)				
Grand Total	[Enter]	[Enter]	[Enter]	[Enter]

Institute 2

Budget head	Year 1	Year 2	Total (Rs lakh)	Justification linked to objective / deliverable and justification of the cost
Equipment / accessories 1. [Name] 2. [Name] 3. [Name]	[Enter]	[Enter]	[Enter]	[Enter]
Manpower / research personnel	[Enter]	[Enter]	[Enter]	[Enter]
Consumables / materials	[Enter]	[Enter]	[Enter]	[Enter]
Testing / certification / field validation	[Enter]	[Enter]	[Enter]	[Enter]
Travel / field work	[Enter]	[Enter]	[Enter]	[Enter]
Contingency	[Enter]	[Enter]	[Enter]	[Enter]
Other (specify)	[Enter]	[Enter]	[Enter]	[Enter]
Sub-Total (A)				
Institutional overheads (10% of A)	[Enter]	[Enter]	[Enter]	[Enter]
Project Management Expenses (10% of A)				
Grand Total	[Enter]	[Enter]	[Enter]	[Enter]

G.2 Expenditure plan and quarterly financial progress

Particulars	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Total
Planned expenditure (Rs lakh)	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]

Particulars	Q1	Q2	Total
Recurring Expenditure	[Enter]	[Enter]	[Enter]
Non- Recurring Expenditure	[Enter]	[Enter]	[Enter]

H. FACILITIES AND EQUIPMENT**H.1 Infrastructural facilities required for the project and extended by the project implementing institution(s) for the project:**

Sl. No.	Facility/Equipment	Need and utilization	Available at the Institute/Collaborator or to be procured	Estimated cost (in case it needs to be procured)
1				
2				
3				
4				
5				

I. PROJECT TEAM, EXPERTISE AND RESPONSIBILITIES**I.1 Expertise available with the investigators pertaining to the project (maximum 1 page)**

Highlight relevant publications, patents, preliminary results, prototypes, field experience and facilities that demonstrate the team's ability to execute each major component.

[Enter response here]

I.2 Investigator-wise roles and responsibilities

Sl. No.	Name & designation & institution	Specific scientific / technical role
1	[Enter]	[Enter]
2	[Enter]	[Enter]

I.3 Key publications / patents / relevant outputs during the last five years [mention only 10]

Sl. No.	Investigator	Publication / patent / output	Year	Relevance to proposal
1	[Enter]	[Enter]	[Enter]	[Enter]
2	[Enter]	[Enter]	[Enter]	[Enter]
3	[Enter]	[Enter]	[Enter]	[Enter]
4	[Enter]	[Enter]	[Enter]	[Enter]
5	[Enter]	[Enter]	[Enter]	[Enter]
6	[Enter]	[Enter]	[Enter]	[Enter]
7	[Enter]	[Enter]	[Enter]	[Enter]
8	[Enter]	[Enter]	[Enter]	[Enter]
9	[Enter]	[Enter]	[Enter]	[Enter]
10	[Enter]	[Enter]	[Enter]	[Enter]

I.4 Bibliography/Reference

Provide complete references cited in the proposal in IEEE format. [Max 20]

[List references here]

J. RELATED PROJECTS AND NON-DUPLICATION**J.1 Related Projects submitted/on-going to funding agencies by the Project Investigator**

Sl. No.	Title	Cost (Rs lakh)	Month / year submitted	Agency	Status
1	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]
2	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]
3	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]
4	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]
5	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]

J.2 Projects completed by the Project Investigator during the last five years

Sl. No.	Title	Cost (Rs lakh)	Duration	Role	Agency	Key output / relevance
1	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]
2	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]
3	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]
4	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]
5	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]	[Enter]

K. MANDATORY ENCLOSURES

1. Brief CV / bio-data of PI, Co-PI(s) and key project team members.
2. Detailed budget, basis of cost and quotations / budgetary offers for major equipment, testing or field activity, as applicable.
3. Letter of support / commitment from end user, utility, industry, manufacturer, start-up or field-validation partner, where applicable.
4. Institutional approval and collaboration consent, where applicable.
5. Any regulatory, statutory, ethics, safety, data-access or site permission required for the project.

L. CERTIFICATE

- A.** This proposal has the approval of the Organization and all the existing facilities shall be made available for carrying out the studies on the proposed scheme
- B.** That the research work proposed in the scheme does not in any way duplicate the research work already done or being carried out in the research station on the subject.
- C.** The research proposal is solely written by the project team and has not been generated by any LLM based GenAI applications like (ChatGPT, llama, Gemini etc.)
- D.** All the personnel including Research personnel appointed under the Project, for the full/ part duration of the Project, will be treated as temporary employees and will be governed by the administrative rules/ service conditions (for leave, TA/DA, etc.) of the implementing Organization. No permanent employees of the implementing organization shall receive their salary from the project grant.
- E.** That the project is not being partly or fully financed by grant from any other Organization / Government

Name and Signature of the Principal Investigator**Name and Signature of the Collaborator
(if applicable)**

Date: _____

Date: _____

**Signature of the HOD / Head of the Implementing
Institution / Organization (With seal)****Signature of the HOD / Head of the Collaborating
Institution / Organization (With seal)**

Date: _____

Date: _____