NATIONAL PERSPECTIVE PLAN FOR R&D IN INDIAN POWER SECTOR

NPP MANUAL






GUIDELINES AND APPLICATION FORMAT

Coordinators:

CENTRAL ELECTRICITY AUTHORITY
SEWA BHAVAN, R K PURAM, SECTOR -1
NEW DELHI – 110 016
Website http://www.cea.nic.in

CENTRE FOR COLLABORATIVE AND ADVANCED RESEARCH
CENTRAL POWER RESEARCH INSTITUTE
BANGALORE 560 080
Website: http://www.cpri.in

Background

The Power Sector being highly technology intensive, Research and Development (R&D) plays a major role in the developmental plans, especially when Technology upgradation is considered for strengthening the power sector. The Ministry of Power constituted a Standing Committee on R&D (SCRD) to frame 15 years National Perspective Plan for R&D in Indian Power Sector. The need for formulating the guidelines for selection of research projects of National importance, successful completion and filed implementation has been expressed by SCRD in its meetings.

In order to bring in uniformity in all procedures and working methodology, the present document has been prepared. During the preparation of this document, discussions were held with CEA, Project Implementing Organizations, academicians, scientists from various departments. Based on the feedback and suggestions, the 'NPP Manual' has been prepared. The purpose of this manual is to streamline, standardize and bring in transparency in the working model of NPP projects of MoP. Research projects in the major thrust areas such as Generation, Transmission, Distribution, renewables are in progress in a collaborative mode.

Guidelines for proposals under 'Technology Development and Demonstration Programme' of DSIR, has given encouragement and motivation in preparing the 'NPP manual'. Suggestions for improvement and inclusion of other aspects and issues which will add value to this document are invited.

NATIONAL PERSPECTIVE PLAN FOR R&D IN INDIAN POWER SECTOR

- NPP Manual (GUIDELINES AND APPLICATION FORMAT)

CONTENTS

1. R & D in Power Sector
2. Standing Committee on R&D
3. National Perspective Plan for R&D
4. Objective
5. Project Proposals
6. Activities supported
7. Invitation for project proposals
8. Task Force Conveners and Executive Committee of R&D
9. Project Funding
10. Memorandum of Understanding (MoU)
11. Who can submit the Research Project Proposal
12. Submission of Project proposals
13. General Information

ANNEXURES

Annexure - 1: Research topics under thrust areas

Annexure - 2: SFC Format for preparation of Research Project Proposals under National Perspective Plan (NPP) for R&D in Indian Power Sector

Annexure - 3: General information for consideration while preparing the Project Proposal

Annexure - 4: Guidelines While Preparing the Research Project Proposal: - Explanatory Notes

Annexure - 5: Guidelines for Research Project Proposal Implementation: Section -1

Annexure - 6: Guidelines for Research Project Proposal Implementation: Section -2

Annexure - 7: Terms and Conditions stipulated by Ministry of Power, GoI.

Annexure - 8: Format for submitting the project progress report.

Annexure - 9: Procurement of equipment - 'TRUST RECEIPT'.

Annexure - 10: Certificate from the Head of the Organization / Institute submitting the Project proposal

Annexure - 11: Checklist for NPP Research Project Proposal

NATIONAL PERSPECTIVE PLAN (NPP) FOR R&D IN INDIAN POWER SECTOR

The Ministry of Power (MoP), Government of India, under its Plan Scheme 'National Perspective Plan (NPP) for R&D in Indian Power Sector' is promoting research concerning power sector issues. The research project proposals broadly cover development of New Product / Process development leading to field implementation.

1.0 R&D IN POWER SECTOR

The leading Nations, both developing and developed, have achieved improved and reliable power systems because they have established integrated, innovative and highly flexible R&D organizations that operate with a uniform set of work practices and information systems, in both public and private enterprises.

Collaborative Research in a phased manner is needed to build expertise, to find solutions for the problems existing in the system and also for problems that may arise in the future. Research is essential to bridge the gap between knowledge and technology, due to the fact that technology is changing at a faster pace.

There is requirement for strong economic, environmental and social incentives to leverage Plantcentric R&D driven re-organization of existing power units and innovative technology driven enlargement of capacity that develops all modes of production, transmission and distribution and incentive based demand side management including end use energy efficiency.

The crucial R&D needs required to bridge the technology gaps in various subsections of the power sector (Generation, Transmission & Distribution), are identified and prioritized. The R&D needs aim at either improving the design of an individual plant component and/or evolving cost efficient overall processes. R&D needs also include taking advantage of the advances in IT, electronics and communication to improve the control & instrumentation system, data acquisition system and monitoring of system performance parameters.

There is a need to form a proactive & collaborative R&D policy to develop innovative solutions to strengthen the Indian Power Sector through networking with research organizations, academic institutions and power industry.

2.0 STANDING COMMITTEE ON R & D

The Ministry of Power constituted a Standing Committee on R&D (SCRD) to frame 15 years National Perspective Plan for R&D in Indian Power Sector. The Standing Committee on R&D functions under the Chairmanship of Chairperson CEA with members drawn from leading organizations like CEA, CPRI, NTPC, NHPC, PGCIL, THDC, SJVNL, DVC, BBMB and NEEPCO. Director General CPRI is the Member Convener of this committee. The mandate of this committee is to frame a perspective R&D plan.

3.0 NATIONAL PERSPECTIVE PLAN FOR R & D

The Indian Power Sector is facing major challenges today with the introduction of reforms, and the globalization and liberalization policy of the government. Utmost importance having been given to the energy sector since the beginning and there being manifold increase in installed generation capacity and transmission networks, with increase in system size, stability and security problems have become challenging. It is of vital importance to focus our attention now on ways and means to build expertise within the country, to find solutions for the problems existing in the system and also for the problems that may arise in the future. Research in phased manner is needed to bridge the knowledge and technology gaps.

The rapid growth of the power industry in Asia Pacific region opens up opportunities for innovation and creation not only in technical aspects but also in the area of operational management. But at the same time, it brings a lot of challenges to power engineers and researchers as well as environmental issues such as bulk power transmission from remote areas, security problems for the grids with fast development etc.

R&D in ***Thermal generation*** *needs focus on improving the performance of existing thermal power plants, on solving problems related to diagnostic measures for condition monitoring of equipment and Indian coal having high ash content. New clean coal technology and environmental implications, need special attention.*

The ***Hydro power*** *base available in the country has grown commensurate with the requirements so far and has been geared to take up all types of hydro-electric power development. For obtaining high reliability operation of the forthcoming large hydro electric power projects, it is essential to keep pace with the technological development and improvements taking place in the developed countries. Also, considering the problems of silt erosion damages, which are typical for Indian conditions, corrosion etc. in the existing power stations, the required technology development in hydro power sector needs a big thrust. Specially to mitigate the problem of silt erosion in the run off river Hydro Power Station under operation, construction & Planning stage in Himalayan region, big thrust is required to find indigenous solution through continual research & development.*

***Nuclear power** plants are faced with the problems of non-availability of large size motors, bellow seal valves and advanced control and instrumentation systems for control of reactors. These areas are to be attended to in order to strengthen the research in nuclear sector.*

Hydrocarbon resource limits are bound to force the world away from fossil fuels in coming decades. In addition, the environmental and health burdens arising out of the use of hydrocarbons may force mankind towards clean energy systems. Stabilizing atmospheric carbon dioxide concentrations at safe levels will require 60 to 80% reduction in carbon emissions over the current levels. The problem in India is not just limited to hydrocarbon resources and carbon-dioxide emissions, but also in meeting increasing demand for electricity in the future. Thus, there is a need for electric power industry to look at other technologies of power generation such as solar, wind, biomass, fuel cells, geothermal, etc.

***New and Renewable Energy Sources**: Technologies related to Wind, Biomass, Solar, Geo thermal, Fuel Cells are identified under this thrust area. Research focus is on grid connectivity of large wind mills, self healing wind connected micro grids, distributed generation and large use of ethanol for energy products. Development of micro & mini grids and larger penetration of renewable energy is an important area for research.*

*The Indian Power System is growing steadily. To match with the growing demand, the **Transmission system** is also expanding with an over lay of 765 kV AC lines on existing 400 kV System, high capacity long distance HVDC system, high capacity long distance HVAC system, adoption of FACTS devices such as TCSC wherever feasible on 400 kV and 220 kV lines, etc. With the formation of regional grids and interregional ties to form ultimately the National Grid, the Power System is becoming more and more complex. Side by side with this growth, requirement of high security and reliable operation of large generating plants with EHV and UHV transmission network assumes tremendous importance for maintaining Power System Stability.*

The severe cascading blackouts that have been seen in many parts of the world highlight the vulnerability of large AC systems. A firewall preventing the spread of such disturbances can be accomplished using HVDC connections, which makes an important contribution in controlling power transmission, safeguarding stability and containing disturbances. Technologies such as FACTS and HVDC transmission have played a crucial role in alleviating transmission system constraints.

The Technical developments in communication technology and measurement synchronization for reliable voltage phasor measurements have made the design of system wide protection solution possible. The introduction of Phasor Measurement Units (PMU) has greatly improved the observability of Power System dynamics. Based on PMU's, different kinds of Wide Area Protection and emergency control and optimization systems can be designed.

Distribution *system needs careful attention in the areas such as reduction in losses, metering, distribution automation, planning, harmonic pollution, custom power devices, demand side management etc. High Voltage Distribution System is an effective method for reduction of technical losses and improved voltage profile. Encourage LT/HT ratio keeping in view techno economic considerations. Application of IT has great potential in reducing technical & commercial losses. Integrated resource planning and demand side management also needs special attention and implementation. Substantial efforts are required for capacity building, so that the present day Distribution system would be transformed into a modern day distribution system namely Smart grid. Smart grid represents a vision for a digital upgrade of Power Distribution system to both optimize current operation as well as open up new avenues for alternative energy production.*

Design and development of High Temperature Superconducting transformers, and compact transformers in distribution systems needs careful attention and applied research in this area in phased manner is proposed.

Conservation and Energy Efficiency: *Considerable amount of energy can be saved through energy efficiency and demand side management measures. Periodic energy audits have to be made for power intensive industries under the Energy Conservation Act. Emphasis on standards and labeling of appliances needs to be given priority. Thus the topics that require careful attention are: (i) Demand Side Management (ii) Standards and Labeling and (iii) Load Management. Also, an attempt to design and develop energy storage devices for applications is an emerging area in power sector.*

Energy storage technologies that have been developed or are under development for electric power applications include pumped hydropower, compressed air energy storage, batteries, super capacitors, flywheels, and superconducting magnetic energy storage. Design, Development, Testing & Evaluation of Short Term and Long Term Response of Energy Storage Devices, is important aspect.

At a discrete level, flywheel energy storage modules offer unique performance characteristics suitable for many applications. It is technically feasible to combine the best feature of high-speed flywheel energy storage with proven developments in high-power electronics.

The major thrust areas for R&D are:

Thermal Power Generation*: (i) Measures to improve plant availability, reliability, efficiency and safety (ii) Blending of Coal (iii) RLA and R&M (d) Green technology approaches such as carbon sequestration (iv) Gasification of solid and liquid fuels for power generation (v) Supercritical Boilers for Power Generation, etc.*

***Hydro Power generation**: (i) Silt erosion (ii) Measures for performance improvement (iii) Renovation and uprating and (iv) Hydro Environmental Interface.*

***Nuclear Power generation**: (i) LP Turbine blades (ii) Cooling Tower Design (iii) Large Size Motor for Primary Heat Transfer Pumps (iv) Bellow Seal Valves (v) Control and Instrumentation.*

***Environmental**: Value added products technology demonstration and production centers for fly ash utilization (Production technology, state of art plant and machinery, fly ash beneficiation schemes, quality assurance measures). Emission control technologies for NOx, SOx.; etc.*

***New and Renewable Energy Sources**: Technologies related to Wind, Biomass, Solar, Geo thermal, Fuel Cells etc.*

***Conservation and Energy Efficiency:** (i) Demand Side Management (ii) Standards and Labelling (iii) Energy Efficiency and Conservation (iv) Load Management*

***Transmission**: (i) Grid operation and control (ii) Transmission equipment (iii) FACTS (iv) Advances in HVDC transmission (v) Power System Stability and Control (vi) Wide Area Measurements and control (vii) Polymer insulators (non-ceramic/silicon rubber) (viii) GIS substations (viii) UHV AC class equipment development (ix) VSC based power transmission.*

***Distribution:** (i) Measures to reduce losses (ii) Advanced metering (iii) Distribution Automation (iv) Custom Power Devices (v) Power sector reforms (vi) Distribution System Planning tools (vii) Application of Smart Grid technology and concepts in distribution systems.*

*The list of research topics under thrust areas are given in **Annexure -1.***

4.0 OBJECTIVE

The NPP scheme has the following objectives:

- *To promote innovation by sharing the expertise and experience.*
- *To forge industry-institute cooperation*
- *To strengthen the National Innovation capability*
- *To strengthen R&D infrastructure*
- *Develop and sustain man power for R&D in power sector*

Towards achieving the above objectives, the MoP provides partial financial support to New Product / Process Development projects taken up by CPSUs, Utilities, Indian Power Industry, academia in all sectors, for research projects relevant to Power Sector.

5. 0 PROJECT PROPOSALS

These R&D projects should aim at development of a new product or a process (including development of process equipment) with practical implementation. The projects should result in significant benefits in terms of raising the technological level of the industry concerned, strengthening the network, energy and material savings/recovery and import substitution etc.

6.0 ACTIVITIES SUPPORTED

Proposals for R&D projects such as the following are considered for partial financial support:-

R&D Projects for development of a new/ improved product resulting in Prototype development and ending with demonstration in field.

The partial financial support by MoP primarily covers prototype development, cost of process equipment development, testing and evaluation of products, user trials, demonstration of technologies and process, import substitution, etc. Part of the financial support to the projects has to be from Industry's resources and beneficiary organizations.

7.0 INVITATION FOR PROJECT PROPOSALS

New technologies would need to be adopted and implemented in a proactive manner to achieve the objective of optimum utilization of the available resources. In the present scenario, there is an emerging need for R&D in different areas of power engineering. While formulating the research project proposals, it is important to critically review the growth of power sector, assess the existing R&D infrastructure in the country and identify the crucial R&D needs for power sector. While preparing the project proposals, due consideration is to be given to justify the need for research, issues, and short term, medium term & long term deliverables and the corresponding financial out lay. With this background Research project proposals are invited relevant to power sector applications.

8.0 Task force conveners and Executive committee of R&D

The project proposals can be submitted to CPRI and task force conveners of concerned thrust areas for research. The proposals thus received will be reviewed by the task force conveners and experts identified from various organizations as its members. The project proposals thus prioritized will be submitted to Executive Committee of R&D (EC R&D). The committee comprises of Member (Planning), CEA, DG, CPRI, Task force conveners and subject experts. The EC R&D will review the proposals in all aspects. EC R&D recommended projects will be submitted to SCRD.

9.0 PROJECT FUNDING

SCRD recommended and SFC approved projects for implementation shall have part funding from MoP.

10.0 MoU

On final approval of the research projects for implementation, MoU is required to be signed between CPRI on behalf of MoP and project implementing organization and project funding organization. SFC recommendations and IPR issues as applicable to MoP shall be incorporated in the MoU.

11.0 WHO CAN SUBMIT THE RESEARCH PROJECT PROPOSAL

The research project proposals can be submitted by PSUs, Utilities, and industry units either on their own or jointly with research / academic institutions. If the projects involve collaboration with/ assistance from national research / academic institutions, the proposals should highlight the scope of work and responsibilities of each organization participating in the project.

12.0 SUBMISSION OF PROJECT PROPOSALS

*The research topics under thrust areas are given at **Annexure –1**. The SFC format for preparing the project proposal is given at **Annexure -2.** Proposals (5 copies) on the above lines are invited from PSUs, Utilities, Engineering industry and academic institution having well established in-house R & D units with a good track record of R & D achievements. These proposals should be forwarded by the Chief Executive / Managing Director of the industrial units and head of research/ academic institutions and submitted to:*

Shri K.P. Singh *Chief Engineer (R&D)* *3rd Floor, North Wing* *Central Electricity Authority* *Sewa Bhavan, R.K. Puram, Sector – 1* *New Delhi 110 066* *[Ph.No.011-2610 2069 (T/F) /* *011 -2673 2221(o)*	*Dr P.V. Bala Subramanyam* *Additional Director* *Centre for Collaborative and Advanced Research* *Central Power Research Institute* *(A Government of India Society)* *P.B. No: 8066, New BEL Road,* *Bangalore 560 080. (Phone: 080 – 2360 1399)* *Fax No: 080 – 2360 7823; E-mail: peri@cpri.in;*

Project Proposals may also be submitted to the respective Task Force Member Conveners, as given below with a copy to CPRI:

Thrust Area and Task Force Convener	***Thrust Area and Task Force Convener***	***Thrust Area and Task Force Convener***
Hydro *Sh J.K. Khatri* *Chief Engineer (HE & TD),* *7th Floor; 702, North Wing, Central Electricity Authority* *R K Puram; Sector-1; Sewa Bhawan;* *New Delhi 110 066*	***Thermal:*** *Sh A.K. Gupta* *Chief Engineer (TE & TD)* *9th Floor; South Wing* *Central Electricity Authority* *R K Puram; Sector-1; Sewa Bhawan;* *New Delhi 110 066* *(Ph: 011 – 2673 2977)*	***New & Renewable Energy:*** *Additional Director* *Central Power Research Institute* *Bangalore 560 080* *(Ph: 080 – 2360 7823)*
Transmission *Sh Ravinder* *Chief Engineer (SETD)* *Room No: 335;* *3rd Floor North Wing* *Central Electricity Authority,* *R K Puram; Sector-1, Sewa Bhawan* *New Delhi 110 066* *(Ph: 011 – 2617 0541)*	***Distribution****:* *Sh Alok Gupta* *Chief Engineer (DP & D)* *6th Floor; North Wing* *Central Electricity Authority* *R K Puram; Sector-1; Sewa Bhawan;* *New Delhi 110 066* *(Ph: 011-2673 2661/ 2610 2793)*	***Sh Amarjeet Singh*** ***Secretary/Chief Engineer (Conservation & Efficiency)*** *2nd Floor* *Central Electricity Authority,* *R K Puram; Sector-1, Sewa Bhawan* *New Delhi 110 066*

13.0 GENERAL INFORMATION

The general information useful while preparing project proposal, Thrust areas of research, Format for submitting the project proposal, frequently asked questions, guidelines for project implementation, terms & conditions of ministry, format for submitting the technical & financial progress of the project, trust receipt in respect of equipment procured, certificate from the head of the organization submitting the proposal and Check list for all enclosures, is given in Annexures -3 to 11, in detail.

Annexure -1

Research topics under thrust areas

GENERATION
THERMAL GENERATION
State-of-art New Technology Demonstration Projects in Generation Sector
Advanced surface engineering technology for higher life expectancy of plant components in respect of (i) silt mitigation of hydel components and (ii) critical parts of burners, shield and liner in thermal power plants
Development of sensor systems for online fuel calorific value & un-burnt carbon in ash measurement.
Steam Generator condition assessment model through neutron activation techniques
Development of desalination technology with LP exhaust steam/ Solar heat source (10 cubic m/hr)
Advanced RLA methodologies.
ESP- Reducing emissions to 50mg/m3
Coal fired plants- life extension
Reduction of cost of generation
Energy Storage Devices: Large capacity Power Storage Technology

HYDRO GENERATION
Excavation of large size Caverns with appropriate stabilization technology
Soft rock tunneling
Application of GIS / GPS in river inflow / discharge measurements, flood forecasting, etc.
Problems due to Silting in Hydro plants-R&D for Turbine components etc.

ENVIRONMENTAL
Technology development of flue gas desulphurization system for NE high sulphur coal through electron beam (SO_2 to SO_3 conversion)
CO_2 storage in geological formations like Basalt and Sedimentary rocks
Value added products technology demonstration and production centers for fly ash utilization.
Emission control technologies for NOx, SOx
Environmental issues of transmission systems.

TRANSMISSION
Wide area measurements for grid protection & control
SCADA (Complying with IEEE 61850) & related demonstration projects
High Capacity +/-800kV UHVDC Multi terminal system for long distance power transfer and 1200kV UHV AC systems
Development of online monitoring systems for substation equipments (like transformers, breakers, CTs, etc.) to get early warning of failures
Advanced Power Electronic Technologies for Transmission (FACTS Controllers)
Power System Operator Training Simulator
Implementation aspects of High Surge Impedance Loading line.
Power System Security & Reliability
Transmission line tower design and optimization for 765kV D/C lines
Compact Towers – like pole towers, delta configuration towers and narrow based towers.

Application of new technologies – Intelligent Grid, Wide Area Monitoring, Voltage Security assessment, Dynamic Security Assessment.
Corona cage studies, Air gap insulation studies and voltage distribution studies for 1200kV Transmission system.
Development of Polymer rod 120kN and 160kN AC insulator for 400kV AC transmission lines, in heavily polluted areas.
Pollution mapping and Design of external insulation to enhance the pollution withstand capabilities of insulators in power transmission network. Pollution performance of HVDC insulators.
Polymer composite insulators – for transmission lines in polluted areas.
On-line transformer monitoring techniques for monitoring of critical parameters of power transformers.
Nano Technology Materials for Insulators & Insulating Materials
Compact Transmission line supports using FRP composites
Voltage Source Converter based DC transmission systems.

DISTRIBUTION
AC / DC Micro-grid demonstration project by deploying various distributed energy resources, energy storage systems, communication systems, AMR, VSC, DVR, STATCOM, etc. for improving reliability and power quality
Energy storage schemes for improving the reliability of sensitive loads
Development of Standards & Protocol for energy metering
Power line communication technology in Distribution
Load Research (Load modeling)

RENEWABLES
Demonstration of direct alcohol/polymer electrolyte fuel cell plant(5 kw/2kw)
Demonstration of LED lighting for rural electrification of one model village
Solar bio photovoltaic cells for generation of Hydrogen, methane using hybrid organic / inorganic system
Development of geothermal power generation technology
Distributed Generation – Major Project
Gas-cum-Solar Hybrid Project
Grid integration issues of large scale renewable power sources.

FUELS
Combustion modeling and technologies for utilizing un-burnt carbon in ash in PFB gasification
Development of multiple feed conditioning system for biomass fired boiler
Advanced circulating pressurized fluidized bed gasifier

This list is not exhaustive but only suggestive in nature. Research and Development in any new topic focusing the thrust areas relevant to Indian Power Sector also can be submitted.

Annexure -2

SFC Format for preparation of Research Project Proposals under National Perspective Plan (NPP) for R&D in Indian Power Sector

(A) Executive Summary

An Executive Summary of the Project detailing benefits, its importance and relevance to Indian Power Sector.

(B) Project proposal format

Sl.No	***Item Description***
1	*Statement of Proposal*
1.1	*Introduction*
1.2	*Description of the proposal*
1.2.1	*Estimated cost of the proposal indicating activity wise and year wise.*
1.3	*Justification of the project*
1.4	*Description of the scheme*
1.4.1	*Scheme of Implementation*
1.5	*Time Frame: Target date of completion with time schedule of activities*
2.0	*Financial implications of the proposal*
2.1	*Nature of the Scheme*
2.2	*Total outlay*
2.2.1	*Foreign Exchange Component*
2.2.1.1	*Details of Foreign Exchange component*
2.2.2	*Indian Rupee component*
2.2.2.1	*Details of Indian Rupee component*
2.3	*Facility-wise outlay with yearly phasing*
2.3.1	*Foreign Exchange Component*
2.3.2	*Indian Rupee component*
2.4	*Instruments / Equipment*
2.4.1	*Estimated cost of Instruments / Equipment*
2.5	*Details of civil works – Buildings, Foundations, any other construction works, their justification.*
2.6	*Basis for Estimate*
2.6.1	*Basis for Equipment*
2.6.2	*Basis for civil works*
2.7	*Achievement / Returns*
3.0	*Supplementary Information*
4.0	*Environmental Clearance*
	Please note that, specifications of major equipment/software and budgetary offer shall form part of research project proposal.

Annexure- 3

General information for consideration while preparing the project proposal

1. Who can submit the project proposal?

PSUs, Utilities, Engineering industry, academic institutions, etc can submit the project proposal for support under NPP scheme.

2. Is institute linkage essential?

Not essential. Industrial units can take up projects all by themselves. However, MoP encourages industries to network with research institutions, academic institutions wherever expertise, capabilities and facilities exist. If it is a joint project of industry with an institute, then the project proposal has to be signed by both the parties. If industry is seeking only limited services and consultancy from the labs/institutes, then proposal should include a letter or offer from the Director of the laboratory / institute, or his authorized signatory indicating the scope of services and related payments. Similarly if the industry is proposing to up-scale lab/bench level technology of national laboratories/research institutions, then the related agreements already entered between the industry and laboratory for development/utilization of that lab level technology will need to be enclosed in the proposal.

3. Are there any priority sectors/areas - Thrust Area of Research and relevance to power sector?

*MoP will consider projects for technology development and demonstration related to power sector. The major thrust areas are: Generation, Transmission, Distribution, New & Renewables, Power-Environment Interface and Conservation & Energy Efficiency. List of prioritized project thrust areas are given **Annexure -1**. Research projects under these areas shall be considered relevant to Power Sector application.*

4. What activities are eligible for support?

The support is towards research/design/development/engineering, software development, prototype, testing and evaluation/certification, user's trials/ field trials, patenting etc essential for R&D in New Product/ Process Development. The list of activities proposed to be taken up under the project should be brought out clearly.

5. What is the definition of 'Project'?

The projects under NPP generally cover the activities taken up after successful completion of a lab scale/bench scale work either by industry and/or by

lab/institution till completion of technology development and demonstration of the product(s) developed as commercially producible prototypes/or the process(es) at a demonstration scale before further commercialization of that technology. The project can be (a) for design and development of engineered prototypes, (b) for design, development and demonstration of process technologies etc.

6. How much support one can expect – Project funding

PSUs, Utilities, Academic institutions, and Industry are encouraged to take up projects in a collaborative mode and projects relevant to the power sector. SCRD recommends the quantum of funding to the project. Normally part funding to the extent of 50% of the total project outlay may be supported from Ministry of Power (MoP). The project implementing / executing organization shall contribute the remaining percentage of funds for the project. Project implementing / executing agency can also find a Partner to support the project financially. All the terms & conditions need to be clearly documented / drafted while submitting the project proposal.

7. Scrutiny of project proposals and Prioritizing

The project proposals shall be received by CPRI/CEA and shall be scrutinized and reviewed by Task Force members. The projects recommended and prioritized by respective task forces shall be presented to Executive Committee on R&D (EC R&D). The project investigator shall make a presentation to EC R&D. The suggestions made by E C R&D on technical and financial aspects shall be incorporated by project investigator. The projects fulfilling the requirements in all aspects shall be put up to Standing Committee on R&D (SCRD). Project investigator shall make a presentation to SCRD. Depending on the scope of project, and its relevance to power sector, SCRD shall recommend projects to Standing Finance Committee (SFC), MoP, for approval.

8. Does one get an opportunity to present his proposal?

The proposal should be self-explanatory giving all requisite details. After initial screening by the Task Force, the project proposer will be given an opportunity to present his views, when the proposal is considered by the Executive Committee on SCRD and the SCRD.

9. Is there any last date for submission of the proposal?

Project proposals can be submitted throughout the year.

10. How will the funds be released?

The funds (except for last installment) will be released in installments based on the projected requirements for the project. Towards this, the project implementing agency has to provide a six monthly schedule for funds requirement indicating their share as well as MoP share as sought. Last installment of fund will be released after project completion, after receipt of Project Completion Report, Audited Statement of Expenditure and Audited Utilization Certificate.

11. Do we have to give a bank guarantee?

MoP support is given as grants-in-aid and hence there is generally no requirement for bank guarantee/ collateral guarantee, etc.

12. Signing of MoU between project implementing organization and CPRI.

On approval of the project by the competent authority, the project implementing organization has to sign MoU with CPRI. The issues relating to Patents, Technology transfer mechanism, Financial outlay, technical scope of work, responsibilities of project implementing organizations, terms and conditions suggested by MoP etc shall be incorporated in the MoU.

After signing the MoU, the first installment of funds from MoP share will be released. Subsequent installment of funds will be released based on technical and financial progress of the project. Project Review Committee will recommend the release of funds, at all stages.

13. What is 'successful commercialization' of the project?

A project will be deemed to have been successfully commercialized on the date when the industry undertakes first commercial sale of the product from their existing plant, or a new producing plant is installed on the basis of results of the NPP project.

14. Patent and Technology Transfer Mechanism

[i] CPRI and project executing organization will jointly patent the product / Technology / process developed. The patents will be applied in the name of individuals identified by CPRI and project executing organization, and the patent rights will vest with CPRI and project executing organization.

[ii] Transfer of technology to a third party would be on mutual consent between CPRI and project executing organization. All commercial benefits such as royalty shall be

available in the ratio of funding towards the project. The technology transfer fees and Royalty shall be decided by mutual consent after achieving key mile stones.

15. Who owns the I.P.R.?

The project implementing organization, project funding organizations will own the I.P.R (as per the agreement they have) after successful discussions between the concerned persons. They will also indemnify the Government against any possible infringement of IPR.

The important issues such as: IPR, Technology transfer, royalty, etc., shall be incorporated appropriately in the MoU, with mutual consultation and discussion and considering the suggestions made by SCRD, and the SFC terms, which will be suitably incorporated in the MoU.

16. Will the firm need to sell its technology to any other party?

The project implementing agency will have the first right to utilize and commercialize the technology developed. In case the project implementing agency does not commercialize the technology in a period of 4 years after completion of the project or does not exercise its option to commercialize technology within one year of completion of the project, only in such a case the technology will need to be assigned to organizations like NRDC for third party licensing. Revenues from such licensing will be shared with the executing agency as per the actual financial contributions in the project or as specific to the concerned project. In case of technologies, which are jointly developed/scaled up based on earlier lab/bench scale work of national lab, obligation and terms & conditions of earlier agreement and MoU will be taken into account.

17. Confidentiality

All concerned in the project will ensure confidentiality as required.

18. Agreements/ Reports to be submitted

The organizations executing/implementing the research projects under NPP scheme will be required to sign MoU with CPRI on approval of the project. Then only, first installment of funds shall be released. They will also be required to submit monthly brief progress reports and audited statement of accounts. Brief progress reports and projection will need to be submitted to the Project Review Committee members 10 days before the meeting. At the end of the project a Project Completion Report will have to be submitted.

19. Is revision, pull-out possible?

There should not be any need for revision, while the project is underway. Revised proposal will be considered as a new proposal. Similarly, the project executing organization is expected to honour its commitments and complete the project as planned.

If the project implementing agency abandons the project, the MoP will take serious note of it and the project implementing agency will be required to return the money received along with simple interest at rates as applicable.

20. What additional benefits can we expect?

Custom Duty exemption is recommended for imported items coming under the project scope as per existing rules.

21. When do we shake-off hands?

Duration of the agreement is around 5 years after completion of the project to cover various commitments in the agreement such as payment of royalties, third party licensing, if any, etc.

22. Can we take financial support from any other agency/Govt. departments/bank?

Yes. All this information needs to be given in project proposal application.

23. Physical Progress Review of the Project

Project Review Committee shall review the physical progress of the project quarterly at the place of project implementing organization.

Annexure - 4

Guidelines While Preparing the Research Project Proposal: - Explanatory Notes

1. *Name and address of the organization with brief details of corporate history, R&D achievements, plans and projections for the future. Please indicate whether in-house R & D unit of the organization is recognized by DSIR.*

2. *Details of technology, historical origin, patent position, technology trends, technology forecasting, standards/specifications, knowledge gaps, critical elements of technology, enabling technologies, competitor's profile, user's profile.*

3. *Key R&D personnel and their bio-data, project champion, researchers working exclusively on this project, their past track record, recent major achievements of in-house R & D unit of the industrial firm.*

4. *Executive Summary: The executive summary is to be submitted as Annexure. The coverage must be comprehensive, as this executive summary will be circulated to experts for their comments.*

5. *Innovative content in the proposed activities, results of literature survey and patent search, prior work carried out, technological challenges and plan of action to overcome the technology barriers. Number of prototypes and reasons for selecting the number is to be given. Test protocols to be submitted. In case of process innovation, justification for the pilot plant to be given.*

6. *Market survey report, export possibilities and global competition. For process innovation, Minimum Economic Scale to be worked out.*

7. *Cost estimates to be given and this should be supported by backup offers/ estimation. Cost estimates are required to be drawn realistically and full justification is to be given.*

8. *Applicants should desist from attaching list of production and testing equipment. Only those facilities that are relevant and critical need to be highlighted. Establishment of test facilities is not normally supported; however, if the applicant desires to procure/develop specific and specialized test equipment for testing the prototype, a request for partial financial support can be made with justification.*

9. *Advance project planning techniques like Work Breakdown Structure to be used for project planning. The activities must be broken down into tasks, which can be*

monitored regularly. Against each task, resources required to complete the tasks are to be identified and submitted as an Annexure to the proposal.

10. The organization's Technical, financial and managerial strength to carry out the project may please be given in brief.

11. Deliverables-physical, commercial turnover for five years, networking with resource experts, enhancement of capabilities, additional facilities, IPR generation, market share improvement, cost reduction, reduction in energy consumption/emissions, R&D people growth, foreign exchange earnings, etc.

12. *The financial outlay of the project shall not include salaries of the project investigating team members and other permanent staff & charges for usage of the equipment/testing instruments belonging to the project investigating organization where the project is proposed to be carried out.*

Annexure- 5

Guidelines for Research Project Proposal Implementation: Section -1

1.0 Project proposal

The project proposal in SFC format is to be submitted to CPRI/CEA giving all relevant details of the project.

2.0 Collaborative Project

Generally, the projects are collaborative in nature, involving more than one organization. The responsibilities of all participating organizations should be outlined in terms of sharing of technical work, project funds and all other related matters.

- *Role and Responsibility of project implementing organization*
- *Role and Responsibilities of Participating Organizations*

3.0 Benefits

Benefits and returns from the project are to be clearly brought out in the proposal.

4.0 Project Principal Investigator

Research work required to implement the project is a team work, and active involvement of team members is required.

For smooth progress of the project, the project implementing organization will identify one officer for all correspondence and contacts, who will be designated as 'Principal Investigator'.

The Principal Investigator shall plan activities of the project for successful completion.

The Principal Investigator will be the contact person for all matters concerning to the project. All contact details must be made available to CPRI/CEA.

In the event of Principal Investigator leaving the project implementing organization on resignation, on superannuation, or on voluntary retirement or due to any other reasons, the Project Implementing Organization shall nominate, another expert in the subject as 'Principal Investigator', and intimate CPRI/CEA of such change. Within one month this process must be completed.

5.0 Scheme of implementation

The scheme of implementation of the project has to be well defined and indicated through bar chart, first and second level of steps, key mile stones with time frame and proportionate financial expenditure. The project proposal shall cover the scheme, methodology and second level of bar-chart of the project execution.

6.0 Project Review Committee (PRC)

The project shall be reviewed by Project Review Committee. While reviewing the project, the relevant issues will be discussed.

-Recommendation for time extension
-Recommendation for enhancing the financial outlay
-Recommendation for short closure of the project
-Review of project reports, completion reports and technical reports
-Release of next installment of funds

7.0 Purchase of equipment and stocking

Equipment purchased under project funds is to be properly maintained and a separate stock register has to be maintained with all proper entries. This information shall be made available to PRC members during the validity of MoU/as instructed by PRC members.

- *Standard procedures have to be followed while procuring the equipment.*
- *Procedure to utilize the equipment during and after completion of the project is to be followed as directed by PRC*
- *Sharing of revenue after completion of the project is to be done as directed by PRC*
- *Procurement of H/W and S/W items, Computer peripherals, etc., has to be very judicious.*

8.0 Recruitment of Research staff

The project implementing organization, while recruiting the temporary research staff for the project with prior recommendation and approval from PRC, has to provide the following information.

- *Stipend and terms of appointment*
- *Extension of project staff duration, if applicable*
- *adhoc appointment*
- *committee for recruitment*
- *Qualification, age and specialization, experience, etc.*

9.0 Benchmarking

10.0 Out sourcing

Part of the approved research project may be out sourced to a competent party having requisite knowledge and facilities. All terms and conditions including IPR issues have to be well defined while outsourcing and documented. Budget provision must be made for undertaking such an activity.

Prior approval of PRC is essential to out source part of the project work.

11.0 Sub-contracting

Part of the approved research project may be sub-contracted to a competent party having requisite knowledge and facilities. All terms and conditions including IPR issues while sub-contracting, have to be well documented. Budget provision must be made for undertaking such an activity.

Prior approval of PRC is essential to sub-contract part of the project work.

12.0 Consultant

Project implementing organization may consider engaging a consultant, who has requisite knowledge and experience in the subject related to the approved project. Budget provision must be made for undertaking such activity.

All terms and conditions including IPR issues, transfer of technology, etc., need to be considered, and well documented, while considering engaging a consultant.

Prior approval of PRC is essential for engaging a consultant.

13.0 Involvement of MoU institutions

CPRI has MoU with IIT-Madras, IIT-Roorkee, BHU, JU, BESU, NIT-Warangal and NIT-Surathkal.

Depending on the project and the expertise required, the project implementing organizations are encouraged to involve CPRI MoU institutions in the project. The aspects like technical scope of work and financial terms can be discussed mutually, within the scope of approved project technical scope and financial outlay.

14.0 Dissemination of knowledge

It is very important to disseminate the knowledge gained from the project. For this purpose, one day seminar/workshop has to be organized after completion of the project.

A detailed technical report is to be prepared with all information.

15.0 Release of funds

First installment of funds will be released after signing the MoU. Subsequent installments of funds will be released based on the recommendation of the PRC. PRC will recommend the release of funds on satisfactory progress of the project considering both technical and financial aspects.

16.0 Transfer of funds within the project implementing organisation

Transfer of funds within the project implementing organization is not permitted. The project implementing organization shall share the resource available such as expertise, infrastructure facilities, etc.

17.0 Project implementing venue

The venue for the project implementation shall remain unchanged as given in the proposal. However, for the convenience of the project implementing organization, if it desires to change the location for the project implementation it shall take the prior approval from the Project Review Committee, but expenditure involved due to change of place shall not be booked to project expenses. All the expenditure due to change of place shall be absorbed by Project Implementing Organization only.

18.0 Transferability of the Project

1. *The Project Implementing Organization cannot transfer the project to any other organization.*

2. *The Project Implementing Organization can involve experts, sub-contract / outsource part of the work to another agency, where requisite expertise and facilities are available; to carry out this well defined work, with prior recommendation & approval from PRC. The scope of work and payment terms proposed for outsourcing are to be clearly defined and recommended & approved by PRC members.*

3. *The place of executing the project by the Project executing organizations as defined / stated in the approved project proposal has to be adhered to. Any change in the*

place for execution of the project for the internal convenience of the executing agency is not permitted.

19.0 Reporting

4. *The Project Implementing Organization shall report the following: :*

   a) *Submit the utilization certificate in the prescribed format.*
   b) *Submit technical and financial progress every quarter, in the prescribed format.*
   c) *Submit to MoP a detailed Completion Report, in the prescribed format (in 5 copies) within 30 days of the completion of the project. This Report should be in two parts (i) Technical and (ii) Financial. The format of (i) should be finalized by the Executing Agency in consultation with PRC, while (ii) should consist of a consolidated audited statement of accounts of all funds spent by the Executing Agency, from the MoP project funds and Certificate of Utilization of all such funds, along with a certificate from the auditors of the Executing Agency.*

Submission of Progress reports

   d) *The Project Implementing Organization shall submit expenditure Statements / Utilization Certificates along with head wise expenditure details duly signed and certified by the accounts officer every quarter and a consolidated and cumulative progress annually, and on completion of the project. The formats for reporting Technical and Financial quarterly progress are given in this document.*

   e) *The Project Implementing Organization shall make arrangements for proper operation and maintenance of equipments procured under the project. The Project Implementing Organization shall acknowledge procurement of equipments under this project by a 'TRUST RECEIPT', and the format provided in this document.*

20.0 Modification of Terms & Conditions:

The terms and conditions may be modified by CPRI/CEA and the Project Implementing Organization through mutual discussions and agreement, without losing the originality and technical scope of the approved proposal, and this is to be approved by PRC.

Annexure- 6

Guidelines for Research Project Proposal Implementation
Section -2

1.0 For the purpose of this document, the term "Executing/Implementing Agency" will mean (name of the project implementing organization) having registered office at (City).

2.0 On approval of the project by the competent authority, the project executing organization is required to execute the project within the financial outlay and time frame as given in the proposal which is approved. The financial sanction is provided specific to this project and should be exclusively spent on this project within the stipulated time period. Any unspent balance out of the amount sanctioned, must be surrendered to the MoP. However, depending on the progress of the project, unspent funds may be carried forward to the next financial year for utilization for the same project but only with the specific prior approval of Project Review Committee (PRC). Any interest earned on the funds released is adjustable by MoP, against the total financial outlay of the project.

3.0 The project becomes operative with effect from the date of signing of Sanction / MoU, which ever is earlier.

4.0 The Executing Agency will keep separate audited books of account for the expenditure incurred on the project.

5.0 For permanent and semi-permanent assets, acquired wholly or partly out of the funds provided, an audited record, in the form of a register shall be maintained by the Executing Agency. The term "assets" means: (i) all immovable property; and (ii) movable property of a capital nature where the value exceeds Rs 10,000/-. The funds will not be utilized for construction of any building or permanent asset like machinery required for augmenting general production facilities. Pilot plants, test equipment, test rigs, tools and fixtures, etc. required for building prototypes and testing the same can, however, be built/ made/ acquired out of MoP funds, if so specifically identified in the approved project proposal or subsequently approved by PRC.

6.0 The assets, if any, wholly or partly acquired out of the MoP funds during the course of implementation of the project, shall not be disposed off without the specific written permission of MoP. Similarly, any prototype (s) or output emanating from the project and / or any materials including scrap, components etc, generated during the execution of the project or left over at the end of the project shall not be disposed off without the prior permission of MoP. The sale

proceeds, if any, arising out of such disposal shall be accounted for by the Project Implementing Organization to MoP, who will decide about the utilization of such sale proceeds.

7.0 After the project proposal has been approved by MoP, the Executing Agency shall not accept any new sponsor or obtain funds from agencies other than those from whom such funding was envisaged in the approved project proposal, except with the prior written permission of MoP. Similarly, the share in the project cost of any other sponsor or the share of any collaborating agency(s) will not change from that agreed upon at the time the project was sanctioned, except with the prior written permission of MoP.

8.0 Any expenditure incurred prior to the sanction of this project, shall not be admissible against the funds provided by MoP.

9.0 Any remaining unutilized amount on the completion of the project shall be refunded along with accrued interest immediately by Project Implementing Organization to MoP.

Annexure -7

Terms and Conditions stipulated by Ministry of Power, Government of India.

The Project Implementing Organization will comply with the following Terms and Conditions stipulated by MoP, Government of India. These terms and conditions will be incorporated in the MoU.

I. *The grant-in-aid is a non recurring grant and shall be spent by the Project Implementing Organization only for the purpose/object for which it is sanctioned and the expenditure should be incurred within the approved time limit of the project. Any unspent amount shall be refunded to CPRI, within three months from the date of completion of the project.*

II. *The assets acquired/ created wholly or substantially by the Project Implementing Organization out of Government grants except those declared as obsolete and unserviceable or condemned in accordance with the procedure laid down in the G.F.R. shall not be disposed off encumbered or utilized for another purpose/object, without obtaining the prior approval of PRC. In case winding up or dissolution of the organization all the assets acquired to that effect out of the grants-in-aid by CPRI should be returned forthwith.*

III. *The Utilization Certificate in respect of utilization of grants for the project/purpose/object for which it was sanctioned should be furnished by the Project Implementing Organization with an audited statement of account, for release of next installment of funds for the project, based on the recommendation and approval of PRC.*

IV. *The Utilization Certificate should also disclose whether the specified, quantified and qualitative targets that should have been reached against the amount utilized, were in fact reached, and if not the reasons thereof.*

V. *The Project Implementing Organization shall be required to maintain subsidiary accounts of grants released by CPRI and furnish to the Account Officer CPRI, a set of audited statement of accounts after utilization of the grants-in-aid or whenever called for.*

VI. *The accounts of the grants are open to check by the PRC members and shall be audited by the competent authority.*

VII. *The Project Implementing Organization shall follow and comply with the instructions issued by the Government of India from time to time regarding reservations for candidates belonging to Schedule Castes and Scheduled Tribes for recruitments. The*

Project Implementing Organization will submit to CPRI the progress made in this regard.

VIII. *The Project Implementing Organization should be required to submit performance-cum-achievement reports within a period of one month after the end of the financial year.*

IX. *No expenditure over and above the sanctioned grant shall be incurred by the Project Implementing Organization without obtaining the prior approval of PRC. Further in no case the expenditure on the project exceed the sanctioned cost of the project and monthly targets of expenditure.*

X. *The grants-in-aid should not be a source of profit. If after examination of the Audited Accounts, CPRI and PRC come to the conclusion that the grants-in-aid have been source of profit, the Project Implementing Organization shall forthwith refund the amount of grants-in-aid to CPRI.*

XI. *The Project Implementing Organization will keep all the economy instructions in view while incurring the expenditure. The Project Implementing Organization shall not incur any expenditure on those items, the purchase of which have been banned.*

XII. *In the event of the Project Implementing Organization failing to comply with the conditions or committing breach of the conditions, the Project Implementing Organization shall be jointly and severally liable to refund to the President of India the whole or a part of the grant with the interest.*

XIII. *The Project Implementing Organization will enter into a MoU with CPRI, on behalf of MoP & before receipt of the grant shall give an undertaking that it will abide by the terms and conditions of the grant.*

XIV. *Penal interest is chargeable if the Project Implementing Organization fails to furnish Progress Report/Audited statement of Accounts/Audited Utilization Certificate, etc. within the specified period after release of grants.*

Annexure -8 (a)

QUARTERLY FINANCIAL PROGRESS FOR THE PERIOD
FROM - - -TO - - -

SL.NO	***ITEM DESCRIPTION***	***DETAILS / PAGE NO***
1	*TITLE OF THE PROJECT:*	
2	*ADDRESS OF PROJECT IMPLEMENTING ORGANIZATION*	
3	*PROJECT PRINCIPAL INVESTIGATOR (PLEASE GIVE FULL ADDRESS, E-MAIL, FAX, ETC)*	
4	*PROJECT SCHEDULE* *(i) START* *(ii) CLOSE*	
5	*FINANCIAL DETAILS OF THE PROJECT* *(i) TOTAL OUTLAY:* *(ii) MoP CONTRIBUTION:* *(iii) Project Implementing Organization CONTRIBUTION:*	
6	*FUNDS RELEASED BY CPRI TILL DATE OF REPORT:*	
7	*FUNDS CONTRIBUTED BY PROJECT IMPLEMENTING ORGANIZATION TILL DATE OF REPORT:*	
8	*TOTAL EXPENDITURE TILL DATE OF REPORT (PLEASE ATTACH GIVING THE BREAKUP OF EXPENDITURE DETAILS INCLUDING PERSONNEL EMPLOYED ON THIS PROJECT WHOSE SALARIES/STIPEND/CONSULTANCY CHARGES MET FROM THIS PROJECT FUNDS):*	
9	*PHASING OF EXPENDITURE FOR REMAINING PERIOD OF PROJECT ON HALF YEARLY BASIS:*	

SIGNATURE OF PROJECT
PRINCIPAL INVESTIGATOR

DATE:
PLACE:

Annexure -8 (b)

QUARTERLY TECHNICAL PROGRESS FOR THE PERIOD
FROM - - - -TO - - - -

SL.NO	*ITEM DESCRIPTION*	*DETAILS / PAGE NO*
1	*TITLE OF THE PROJECT:*	
2	*THEME AREA OF RESEARCH:*	
3	*ADDRESS OF PROJECT IMPLEMENTING ORGANIZATION*	
4	*PROJECT PRINCIPAL INVESTIGATOR AND TEAM MEMBERS*	
5	*PERSONNEL EMPLOYED ON THIS PROJECT WHOSE SALARIES/STIPEND/CONSULTANCY CHARGES MET FROM THIS PROJECT FUNDS*	
6	*PRC MEMBERS:*	
7	*SUGGESIONS FROM PRC MEMBERS (PLEASE ENCLOSE MINUTES OF PRC MEETING)*	
8	*PROJECT SCHEDULE* *a) START* *b) CLOSE*	
9	*BRIEF BACKGROUND*	
10	*LITERATURE SURVEY INDICATING REFERENCES/BIBILIOGRAPHY*	
11	*OBJECTIVE*	
12	*WORK DONE DURING THE PERIOD (WITH ELABORATE TECHNICAL DETAILS INCLUDING EXPERIMENTAL SETUP, FIELD VISITS, ETC.)*	
13	*FURTHER WORK TO BE DONE*	
14	*HURDLES, IF ANY.*	
15	*END USER/BENEFICIARY (PLEASE INDICATE THE DETAILS OF EFFORTS MADE TO IDENTIFY THE END USER, FOR TECHNOLOGY TRANSFER, IMPLEMENTATION ETC.)*	
16	*TECHNICAL PAPERS PUBLISHED/PRESENTED (PLEASE ATTACH RE-PRINTS)*	
17	*SEMINARS/CONFERENCES CONDUCTED/PROPOSED FOR DESSIMINATION OF KNOWLEDGE*	

SIGNATURE OF PROJECT
PRINCIPAL INVESTIGATOR

DATE :
PLACE:

Annexure-9

TRUST RECEIPT

In the matter of MoU dated ……. between Central Power Research Institute (CPRI) and (Name of Project Implementing Organization), for the Project on 'Title of the Project',

1. *The Plant, Machinery and Equipment though purchased in the name of (Name of Project Implementing Organization) with the funds provided by CPRI for the subject project, will be in Trust with (Name of Project Implementing Organization) during the implementation of the project and thereafter till they are useful for the purpose stated in the above MoU.*

2. *The Plant and Machinery and Equipment will not be transferred or disposed of by us without the prior written approval of CPRI, and would remain with (Name of Project Implementing Organization).*

IN WITNESS THERE OF (Name of Project Implementing Organization) has executed these presents on …..the ……. Day of …..2010.

Signed by

Sl.No	***Name***	***Occupation & Address***	***Signature***
1			

For and on behalf of the (Name of Project Implementing Organization) in the presence of

Witnesses:

Sl.No	***Name***	***Occupation & Address***	***Signature***
1			
2			

Annexure -10

CERTIFICATE FROM THE HEAD OF THE ORGANIZATION/INSTITUTE

1. *The project proposal has the approval of the organization/institution and all existing infrastructure and facilities shall be made available for carrying out research work under National Perspective Plan (NPP) of Ministry of Power, Government of India.*

2. *The research work proposed in this project is original and does not in any way duplicate the research work already completed or being carried out in this organization/institute or elsewhere to the best of knowledge and belief.*

3. *The project is not being partly or fully financed by grant from any other organization/government/research schemes.*

4. *An MoU will be signed by the organization/institute with CPRI for executing/implementing the project, incorporating all terms and conditions and IPR issues as laid down by the competent authority.*

5. *On approval of the project by the competent authority, the project will be implemented as per the approved proposal, without modifying the financial outlay and time frame. However, project will not be withdrawn.*

Signature of the Principal Investigator

Date:

Head of the Organization

Date:

Annexure -11

CHECKLIST FOR NPP RESEARCH PROJECT PROPOSAL

Before submitting the project proposal, please ensure that the following supporting documents are attached to the research project proposal

Sl No	***Item Description***	
1	*Articles of Association*	
2	*Annual reports for the last three years*	
3	*DSIR in-house R&D recognition letter*	
4	*Statement of R&D expenditure for the past three years, if it is not specifically recorded in the annual reports.*	
5	*Board resolution/authorization committing the firm to this R&D projects (where applicable)*	
6	*Results of market survey for the proposed product.*	
7	*Results of patent search.*	
8	*Targeted specifications for the product.*	
9	*Comparison of the targeted specifications with the market leader.*	
10	*Test protocols*	
11	*Cost back up with relevant offers/estimation*	
12	*Activity-resource plan*	
13	*Source of funds for the firm (other than MoP support)*	
14	*List of existing facilities that will be utilized for this project.*	
15	*Nature and commitment of potential users to test the product and facilitate commercialization of the technology.*	
16	*MoU with experts (individuals and institutions)*	
17	*Certificate from the Head of the Organization (Format is given in Annexure -10)*	