



Department of Science & Technology (TPEM)
Technology Development & Transfer (TDT) Division

Project Proposal under
DHI-TPEM Technology Platform for Electric Mobility
(TPEM)

Project Title:	
Category	
Research Area	
Principal Investigator	
Lead Institution	
Date of Submission	

Call for Proposals (Brief)

The Detailed Call for Proposals is available on TPEM website: www.dst.gov.in

You may also write to us for a copy at sajid@nic.in

The Technology Platform for Electric Mobility (TPEM) is a joint initiative of the Department of Heavy Industry (DHI) and the Department of Science & Technology (TPEM) to support R & D Consortia Projects involving multiple companies and academic institutions. The Consortia projects will be eligible for grant-in-aid funding upto 60% and the rest will be contributed by industry partners in terms of resources, manpower, equipment and facilities.

The project proposals are invited in the following areas.

TPEM Program 1. Lithium Battery

- Project 1.1. Two Wheeler Traction Battery [48/ 72V, max-2.5 kwh],
- Project 1.2. Three Wheeler Traction Battery [48/ 72V, max-6 kwh],
- Project 1.3. Four Wheeler Traction Battery [72V, max-16/24 kwh],
- Project 1.4. Bus Traction Battery [750 V, max-250 kwh] for 18.5 tonne, 12 meter bus.

TPEM Program 2. Charging Infrastructure

- Project 2.1. AC Chargers with Net Metering facility
- Project 2.2. Technology Pilot for DC Charging technologies for low voltage vehicles (2W, 3W & small cars)
- Project 2.3. Technology pilots for EV Bus Charging at Bus Depots for Urban Transit Fleets
- Project 2.4. Technology pilot for communication channel & protocol between the vehicles, charging stations and control station.

TPEM Program 3. Driving Cycle & Traffic Pattern

- Project 3.1. Segmented studies on the Urban Driving Cycle & Traffic Pattern for different categories of vehicles using telematics equipment and traffic surveys, for 1 year, covering winter, summer & monsoon.

TPEM Program 4. Motors & Drives

- Project 4.1. Electric Two Wheeler (e-2W) Reference Vehicle
- Project 4.2. Electric Three wheeler (e-3W) Reference Vehicle

TPEM Program 5. Lightweighting of xEVs

- Project 5.1. Lightweight solutions for optimally designed xEV, encompassing vehicle body structure, chassis and sub-systems, that will meet customer requirements and regulations.

Contents

Section-1.Overview of the Project.....	4
1.1.Project Title:.....	4
1.2.Lead Investigators	4
1.3.Details of Collaborating Institutes and Industry.....	4
1.4.Please give names of 5-6 Area Experts.....	5
Section-2.Forwarding Letters.....	6
2.1.Undertaking from Principal Investigator	6
2.2.Endorsement from Head of Organisation	7
2.3.Undertaking from collaborating Industries/ Agencies	8
Section-3.Relevance of Proposed Project	9
3.1.Current Status of the technology.....	9
3.2.Significance of the project	9
Section-4.Project Work Summary.....	10
4.1.Detailed Objectives.....	10
4.2.Technical Details	10
Section-5.Detailed Work Plan	11
List of Work-Packages.....	11
5.1.Work package-1 (WP-1).....	11
5.2.Work package-2 (WP-2).....	12
5.3.Work package-3 (WP-3).....	13
5.4.Work package-4 (WP-4).....	14
Section-6.Budget Summary (in ₹ lakhs)	15
Section-7.Itemised Budget.....	17
7.1.Manpower.....	17
7.2.Consumables.....	17
7.3.Contingencies.....	18
7.4.Other Costs (Outsourcing/ Fabrication/ Testing/ Patenting).....	18
7.5.Domestic Travel – from – TPEM Grant (in ₹ lakhs)	19
7.6.Equipment proposed to be procured.....	19
7.7.List of equipment available with participating agencies, relevant to the project.....	19
Section-8.Annexure: Justification for Itemized Budget.....	20
8.1.Consumables.....	20
8.2.Contingency & Travel	20
8.3.Other Costs	20
8.4.Permanent Equipment.....	20
Section-9.Biodata of Investigators	21
9.1.Principal Investigator (1):.....	21
9.2.Investigator (2):.....	21
9.3.Investigator (3):.....	22
9.4.Investigator (4):.....	22

Section-1. Overview of the Project

1.1. Project Title:

1.2. Lead Investigators

1.2.1. Principal Investigator (PI)

Name	
Designation	
Agency & address	
Telephones (Mobile; Landline)	
E-mail	
Date of birth	

1.2.2. Co-Principal Investigator (Co-PI)

Name	
Designation	
Agency & address	
Telephones (Mobile; Landline)	
E-mail	
Date of birth	

1.3. Details of Collaborating Institutes and Industry

1.3.1. Partner-1

Name	
Designation	
Agency & address	

Telephones (Mobile; Landline)	
E-mail	
Date of birth	

1.3.2. Partner-2

Name	
Designation	
Agency & address	
Telephones (Mobile; Landline)	
E-mail	
Date of birth	

1.4. Please give names of 5-6 Area Experts

(Please give complete postal address, telephone numbers and e-mail addresses)

1.4.1.

1.4.2.

1.4.3.

1.4.4.

1.4.5.

1.4.6.

Section-2. Forwarding Letters

2.1. Undertaking from Principal Investigator

1. I have enclosed a print-copy and a soft-copy (PDF) of the Project Proposal titled: _____, complete in all respect, along with (a) Endorsement from the Head of the Organisation (on letter head), and (b) Undertakings from the Collaborating Industries/Agencies
2. I have not submitted this Project Proposal titled : _____ or similar work, elsewhere for financial support.
3. I shall ensure that if an equipment is available for use in my Organization, it will not be proposed to be purchased under the Project.

Name & Designation:	Date:
Signature:	Place:
Stamp/ Seal:	

2.2. Endorsement from Head of Organisation

1. Name of Agency: _____
2. I, on behalf of the organization, welcome the participation of Dr/Mr/Ms _____ as the Principal Investigator (PI) and Dr/Mr/Ms _____ as the Co-PI for the Project Proposal titled: _____.
3. In the unforeseen and legitimate event of discontinuation by the PI, the Co-PI will assume full responsibility for completion of the Project. Information to this effect, endorsed by me, will be promptly sent to TPEM
4. The equipment and facilities (including administrative) available with the institute and those being procured under the project will be made available to the Investigator(s) throughout the duration of the Project.
5. I will ensure that the financial and purchase procedures in the project will be as per the prevailing norms, and that the Organisation shall provide timely the Statement of Expenditure and the Utilization Certificate of the Funds under the Grant as required by TPEM in the prescribed format.

Name & Designation:	Date:
Signature:	Place:
Stamp/ Seal:	

2.3. Undertaking from collaborating Industries/ Agencies

1. Name of Agency: _____
2. I have gone through the Project Proposal entitled _____ submitted by Dr./Mr./Ms. _____ of _____ (Name of the Organization) for TPEM funding and I hereby affirm that my Organization/ Company is committed to participate in the Project to the full extent as indicated in the Project Proposal including the technical and financial commitments described in the project proposal.

Name & Designation:	Date:
Signature:	Place:
Stamp/ Seal:	

2.4 Conflict of Interest

DEPARTMENT OF SCIENCE AND TECHNOLOGY

POLICY ON CONFLICT OF INTEREST

FOR REVIEWER & COMMITTEE MEMBER or APPLICANT or DST OFFICER ASSOCIATED/ DEALING WITH THE SCHEME/ PROGRAM OF DST

Issues of Conflicts of Interest and ethics in scientific research and research management have assumed greater prominence, given the larger share of Government funding in the country's R & D scenario. The following policy pertaining to general aspects of Conflicts of Interest and code of ethics, are objective measures that is intended to protect the integrity of the decision making processes and minimize biasness. The policy aims to sustain transparency, increase accountability in funding mechanisms and provide assurance to the general public that processes followed in award of grants are fair and non-discriminatory. The Policy aims to avoid all forms of bias by following a system that is fair, transparent and free from all influence/ unprejudiced dealings, prior to, during and subsequent to the currency of the programme to be entered into with a view to enable public to abstain from bribing or any corrupt practice in order to secure the award by providing assurance to them that their competitors will also refrain from bribing and other corrupt practice and the decision makers will commit to prevent corruption, in any form, by their officials by following transparent procedures. This will also ensure a global acceptance of the decision making process adopted by DST.

Definition of Conflict of Interest:

Conflict of Interest means "any interest which could significantly prejudice an individual's objectivity in the decision making process, thereby creating an unfair competitive advantage for the individual or to the organization which he/she represents". The Conflict of Interest also encompasses situations where an individual, in contravention to the accepted norms and ethics, could exploit his/her obligatory duties for personal benefits.

1. Coverage of the Policy:

- a) The provisions of the policy shall be followed by persons applying for and receiving funding from DST, Reviewers of the proposal and Members of Expert Committees and Programme Advisory Committees. The provisions of the policy will also be applicable on all individuals including Officers of DST connected directly or indirectly or through intermediaries and Committees involved in evaluation of proposals and subsequent decision making process.
- b) This policy aims to minimize aspects that may constitute actual Conflict of Interests, apparent Conflict of Interests and potential Conflict of Interests in the funding mechanisms that are presently being operated by DST. The policy also aims to cover, although not limited to, Conflict of interests that are Financial (gains from the outcomes of the proposal or award), Personal (association of relative / Family members) and Institutional (Colleagues, Collaborators, Employer, persons associated in a professional career of an individual such as Ph.D. supervisor etc.)

2. Specifications as to what constitutes Conflict of Interest.

Any of the following specifications (non-exhaustive list) imply Conflict of Interest if,

- (i) Due to any reason by which the Reviewer/Committee Member cannot deliver fair and objective assessment of the proposal.
- (ii) The applicant is a directly relative# or family member (including but not limited to spouse, child, sibling, parent) or personal friend of the individual involved in the decision making process or alternatively, if any relative of an Officer directly involved in any decision making process / has influenced interest/ stake in the applicant's form etc..
- (iii) The applicant for the grant/award is an employee or employer of an individual involved in the process as a Reviewer or Committee Member; or if the applicant to the grant/award has had an employer-employee relationship in the past three years with that individual.
- (iv) The applicant to the grant/award belongs to the same Department as that of the Reviewer/Committee Member.

- (v) The Reviewer/Committee Member is a Head of an Organization from where the applicant is employed.
- (vi) The Reviewer /Committee Member is or was, associated in the professional career of the applicant (such as Ph.D. supervisor, Mentor, present Collaborator etc.)
- (vii) The Reviewer/Committee Member is involved in the preparation of the research proposal submitted by the applicant.
- (viii) The applicant has joint research publications with the Reviewer/Committee Member in the last three years.
- (ix) The applicant/Reviewer/Committee Member, in contravention to the accepted norms and ethics followed in scientific research has a direct/indirect financial interest in the outcomes of the proposal.
- (x) The Reviewer/Committee Member stands to gain personally should the submitted proposal be accepted or rejected.

The Term "Relative" for this purpose would be referred in section 6 of Companies Act , 1956.

3. **Regulation:**

The DST shall strive to avoid conflict of interest in its funding mechanisms to the maximum extent possible. Self-regulatory mode is however recommended for stake holders involved in scientific research and research management, on issues pertaining to Conflict of Interest and scientific ethics. Any disclosure pertaining to the same must be made voluntarily by the applicant/Reviewer/Committee Member.

4. **Confidentiality:**

The Reviewers and the Members of the Committee shall safeguard the confidentiality of all discussions and decisions taken during the process and shall refrain from discussing the same with any applicant or a third party, unless the Committee recommends otherwise and records for doing so.

5. **Code of Conduct**

5.1 To be followed by Reviewers/Committee Members:

- (a) All reviewers shall submit a conflict of interest statement, declaring the presence or absence of any form of conflict of interest.
- (b) The reviewers shall refrain from evaluating the proposals if the conflict of interest is established or if it is apparent.
- (c) All discussions and decisions pertaining to conflict of interest shall be recorded in the minutes of the meeting.
- (d) The Chairman of the Committee shall decide on all aspects pertaining to conflict of interests.
- (e) The Chairman of the Committee shall request that all members disclose if they have any conflict of interest in the items of the agenda scheduled for discussion.
- (f) The Committee Members shall refrain from participating in the decision making process and leave the room with respect to the specific item where the conflict of interest is established or is apparent.
- (g) If the Chairman himself/herself has conflict of interest, the Committee may choose a Chairman from among the remaining members, and the decision shall be made in consultation with Member Secretary of the Committee.
- (h) It is expected that a Committee member including the Chair-person will not seek funding from a Committee in which he/she is a member. If any member applies for grant, such proposals will be evaluated separately outside the Committee in which he/she is a member.

5.2 To be followed by the Applicant to the Grant/Award:

- (a) The applicant must refrain from suggesting referees with potential Conflict of Interest that may arise due to the factors mentioned in the specifications described above in Point No. 2.
- (b) The applicant may mention the names of individuals to whom the submitted proposal should not be sent for refereeing, clearly indicating the reasons for the same.

5.3 To be followed by the Officers dealing with Programs in DST:

While it is mandatory for the program officers to maintain confidentiality as detailed in point no. 6 above, they should declare, in advance, if they are dealing with grant applications of a relative or family member (including but not limited to spouse, child, sibling, parent) or thesis/ post-doctoral mentor or stands to benefit financially if the applicant proposal is funded. In such cases, DST will allot the grant applications to the other program officer.

6. Sanction for violation

3.1 For a) Reviewers / Committee Members and b) Applicant

Any breach of the code of conduct will invite action as decided by the Committee.

3.2 For Officers dealing with Program in DST

Any breach of the code of conduct will invite action under present provision of CCS (conduct Rules), 1964.

7. Final Appellate authority:

Secretary, DST shall be the appellate authority in issues pertaining to conflict of interest and issues concerning the decision making process. The decision of Secretary, DST in these issues shall be final and binding.

8. Declaration

I have read the above “Policy on Conflict of Interest” of the DST applicable to the Reviewer/ Committee Member/ Applicant/ DST Scheme or Program Officer # and agree to abide by provisions thereof.

I hereby declare that I have no conflict of interest of any form pertaining to the proposed grant *
I hereby declare that I have conflict of interest of any form pertaining to the proposed grant *

* & # (Tick whichever is applicable)

Name of the Reviewer/ Committee Member or Applicant or DST Officer

(Strike out whichever is not applicable)

(Signature with date)

Section-3. Relevance of Proposed Project

3.1. Current Status of the technology

3.1.1. Internationally

3.1.2. Indian scenario and technological gap

3.1.3. Development status at the participating agencies

3.2. Significance of the project

3.2.1. Major applications of the proposed technology

3.2.2. Target Beneficiaries & Expected Impact

3.2.3. What further works will required after the project, for commercial exploitation of technology?

Section-4. Project Work Summary

4.1. Detailed Objectives

4.1.1. Specific Objectives

4.1.2. Scientific Basis and Methodology

4.2. Technical Details

4.2.1. Targeted level of development under the project

(Describe the Prototypes/ Process Demonstration; preferably with reference to Technology Readiness Levels)

4.2.2. Proposed target specifications & performance standards

4.2.3. Innovative Elements/Components of the Project

Section-5. Detailed Work Plan

List of Work-Packages

No	Title of Work-Package	Lead Investigating Agency
1		
2		
3		
4		

5.1. Work package-1 (WP-1)

5.1.1. Goals in WP-1

Title of WP-1					
Objective					
Deliverable					
Duration		Start Date		End Date:	

5.1.2. Major Tasks in WP-1

1	
2	
3	
4	

5.1.3. Agencies & their roles in WP-1

ID	Agency	Role
A		
B		

C		
D		

5.2. Work package-2 (WP-2)

5.2.1. Goals in WP-2

Title of WP-2					
Objective					
Deliverable					
Duration		Start Date		End Date:	

5.2.2. Major Tasks in WP-2

1	
2	
3	
4	

5.2.3. Agencies & their roles in WP-2

ID	Agency	Role
A		
B		
C		
D		

5.3. Work package-3 (WP-3)

5.3.1. Goals in WP-3

Title of WP-3					
Objective					
Deliverable					
Duration		Start Date		End Date:	

5.3.2. Major Tasks in WP-3

1	
2	
3	
4	

5.3.3. Agencies & their roles in WP-3

ID	Agency	Role
A		
B		
C		
D		

5.4. Work package-4 (WP-4)

5.4.1. Goals in WP-4

Title of WP-4					
Objective					
Deliverable					
Duration		Start Date		End Date:	

5.4.2. Major Tasks in WP-4

1	
2	
3	
4	

5.4.3. Agencies & their roles in WP-4

ID	Agency	Role
A		
B		
C		
D		

Section-6. Budget Summary (in □ lakhs)

	Item	1 st Year		2 nd Year		3 rd Year		Total	
		TPEM	Partners	TPEM	Partners	TPEM	Partners	TPEM	Partners
1.	Manpower								
2.	Consumables								
3.	Contingency								
4.	Other Costs*								
5.	Travel								
6.	Permanent Equipment								
7.	Overhead Charges								
	Total								

(*Outsourced work, Fabrication & Testing)

Total Project Budget = ₹ lakhs,
 Request for TPEM Grant= ₹ lakhs,
 Partners Contributions= ₹ lakhs,

Research Manpower to be engaged in the project:

JRF (₹ 25,000 +HRA)	SRF (₹ 28,000 +HRA)	RA-I (₹ 36,000 +HRA)	RA-II (₹ 38,000 +HRA)	RA-III (₹ 40,000 +HRA)

Norms for Manpower & Overheads, from TPEM Grants

Manpower @ Research Institutes

Nomenclature & Emoluments	Qualification
Junior Research Fellow (₹25,000/- + HRA)	Post Graduate Degree in Basic Science with NET qualification or Graduate Degree in Professional course with NET qualification or Post Graduate Degree in Professional Course
Senior Research Fellow (₹28,000/- + HRA)	Qualification prescribed for JRF with two years of research experience
Research Associate-I (₹36,000/- + HRA)	Ph.D/ MD/ MS/ MDS or equivalent degree or having 3 years of research, teaching and design and development experience after MVSc/ M.Pharm/ ME/ M.Tech with at least one research paper in Science Citation Indexed (SCI) journal. The Research Associate Scale may be decided by the institute/ organization based on the experience of the candidate.
Research Associate-II (₹38,000/- + HRA)	
Research Associate-III (₹40,000/- + HRA)	

Overheads @ Research Institutes

Overhead amount is towards meeting the cost of academic expenses including infrastructural facilities at the host institutes, and is permissible as given below: :

- a) For projects costing upto ₹1 crore, 10% of the total cost for educational institutions and NGOs and 8% for laboratories and institutions under Central Government Departments/Agencies;
- b) For projects costing more than ₹1 crore and upto ₹5 crore, overheads of ₹15 lakh or 10% of total cost whichever is less;
- c) For projects costing more than ₹5 crore and upto ₹20 crore, ₹20 lakh will be provided as overheads; and
- d) For projects costing more than ₹20 crore, the quantum will be decided on a case to case basis.

Section-7. Itemised Budget

7.1. Manpower

7.1.1. Budget for Salaries - TPEM Grant

Designation	Qualification	Salary per month	Number of Persons	Amount (in ₹ lakhs)	Role Description
				₹ lakhs	

7.1.2. Budget for Salaries - Partner Contribution

Designation	Qualification	Salary per month	Number of Persons	Amount (in ₹ lakhs)	Justification
				₹ lakhs	

7.2. Consumables

Please provide the quantified list of consumables along with cost estimates/quotations in the Annexure
(Item, Quantity & Unit cost)

7.2.1. Budget for Consumable Materials - TPEM Grant(in ₹ lakhs)

1st Year	2nd Year	3rd Year	Total
₹	₹	₹	₹
₹	₹	₹	₹
₹	₹	₹	₹

7.2.2. Budget for Consumable Materials (Partners Contribution) (in ₹ lakhs)

1st Year	2nd Year	3rd Year	Total
₹	₹	₹	₹
₹	₹	₹	₹
₹	₹	₹	₹

7.3. Contingencies

Please provide the basis of cost estimates in the Annexure.

7.3.1. Budget for Contingencies- TPPEM Grant (in □ lakhs)

1st Year	2nd Year	3rd Year	Total
₹	₹	₹	₹
₹	₹	₹	₹
₹	₹	₹	₹

7.3.2. Budget for Contingencies (Partners Contribution) (in □ lakhs)

1st Year	2nd Year	3rd Year	Total
₹	₹	₹	₹
₹	₹	₹	₹
₹	₹	₹	₹

7.4. Other Costs (Outsourcing/ Fabrication/ Testing/ Patenting)

Please provide the basis of cost estimates/quotations in the Annexure.

7.4.1. Budget for Other Costs-TPPEM Grant (in □ lakhs)

Item	1st Year	2nd Year	3rd Year	Total
Outsourcing	₹	₹	₹	₹
Fabrication	₹	₹	₹	₹
Testing	₹	₹	₹	₹
Others	₹	₹	₹	₹

7.4.2. Budget for Other costs- Partners Contribution (in □ lakhs)

Item	1st Year	2nd Year	3rd Year	Total
Outsourcing	₹	₹	₹	₹
Fabrication	₹	₹	₹	₹
Testing	₹	₹	₹	₹
Others	₹	₹	₹	₹

7.5. Domestic Travel – from – TPEM Grant (in □ lakhs)

Please provide the basis of cost estimates in the Annexure. (journeys, purpose)

1st Year	2nd Year	3rd Year	Total
₹	₹	₹	₹
₹	₹	₹	₹
₹	₹	₹	₹

7.6. Equipment proposed to be procured

Please provide justification in Annexure on the use of equipment in project. Provide supporting Quotation

7.6.1. Budget for Permanent Equipment – TPEM Grant

Description of Equipment	Foreign/ Indigenous	Unit Landed Cost (CIF, Custom Duty etc.)	Number of Items	Total(in ₹ lakhs)
		₹		₹
		₹		₹
		₹		₹

7.6.2. Budget for Permanent Equipment - Partner Contribution

Description of Equipment	Foreign/ Indigenous	Unit Landed Cost (CIF, Custom Duty etc.)	Number of Items	Total(in ₹ lakhs)
		₹		₹
		₹		₹
		₹		₹

7.7. List of equipment available with participating agencies, relevant to the project

Description of Equipment	Foreign/ Indigenous	Agency where it is located

Section-8. Annexure: Justification for Itemized Budget

Please provide justification against each sub-heading below, along with supporting Quotation.

8.1. Consumables

8.2. Contingency & Travel

8.3. Other Costs

8.4. Permanent Equipment

Section-9. Biodata of Investigators

9.1. Principal Investigator (1):

9.1.1. Name, Designation, Agency:

9.1.2. Gender & Date of Birth:

9.1.3. Qualifications:

9.1.4. Employment Experience (Last 10 years):

9.1.5. Publications (Last 5 years):

9.1.6. Patents:

9.1.7. Research Thesis Guided:

9.2. Investigator (2):

9.2.1. Name, Designation, Agency:

9.2.2. Gender & Date of Birth:

9.2.3. Qualifications:

9.2.4. Employment Experience (Last 10 years):

9.2.5. Publications (Last 5 years):

9.2.6. Patents:

9.2.7. Research Thesis Guided:

9.3. Investigator (3):

9.3.1. Name, Designation, Agency:

9.3.2. Gender & Date of Birth:

9.3.3. Qualifications:

9.3.4. Employment Experience (Last 10 years):

9.3.5. Publications (Last 5 years):

9.3.6. Patents:

9.3.7. Research Thesis Guided:

9.4. Investigator (4):

9.4.1. Name, Designation, Agency:

9.4.2. Gender & Date of Birth:

9.4.3. Qualifications:

9.4.4. Employment Experience (Last 10 years):

9.4.5. Publications (Last 5 years):

9.4.6. Patents:

9.4.7. Research Thesis Guided: