

Ref No.: SECI/PS/R&D/12092022

**Call for R&D proposals for Setting up of Pilot Energy Storage Systems and
other RE projects/products**

1. About SECI:

SECI, under the Ministry of New and Renewable Energy (MNRE) was established in the year 2011 with the mission to build a 'Green India' through harnessing abundant solar radiation and wind resource, thereby achieving energy security for the country. SECI is the implementing agency for various schemes for the development of solar, wind and hybrid power. As of April 2022, SECI has successfully awarded over 54 GW of renewable capacity across the country, has been awarded to various developers through competitive bidding process. Out of this, more than 14 GW of capacity has been commissioned and balance capacities are under various stages of implementation. SECI, having technical expertise, is also providing Project Management Consultancy (PMC) services to various government and non-government organizations for setting up of Solar and Wind Power Projects. In addition to these, SECI has operational CAPEX projects of 21 MW capacity under its ownership and the company is looking to expand its portfolio in renewable energy. Also, SECI has been developing Solar-coupled BESS projects, including the 1.95 MW Solar PV Power Project with 2.15 MWh BESS in Lakshadweep, 50 MW Solar PV Power Project with 50 MWh BESS in Phyang, Leh, and 100 MW Solar PV Power Project with 100 MWh BESS in Rajnandgaon, Chhattisgarh. SECI has come out with a 500 MW/1000 MWh Battery Energy Storage System (ESS-I) tender in India under Tariff-Based Global Competitive Bidding.

2. Background:

India is home to one of the world's most ambitious renewable energy programs, banking on a target of 175 GW of installed renewable energy capacity by 2022. Also, the Prime Minister has pledged to increase the country's renewable energy capacity to constitute 450 GW of the country's installed capacity by 2030.

Renewable generation is inherently infirm and non-dispatchable due to its intermittency and its seasonal and diurnal variation. Solar Power generation is possible only during sunshine hours

with peak generation around noon and the generation is higher during the months of March to June. Wind power peaks in the evening hours, and is generally higher during the monsoon. This places a considerable risk on the security and stability of the grid, since with higher renewable penetration the probability of voltage and frequency swings in the network will increase.

This challenge may be met by supplementing the renewable power sources with suitable Energy Storage Systems (ESSs), which can store power during peak generation hours and dispatch the energy during the later hours of the day. In this regard, Electrochemical Battery Energy Storage Systems have proven to be invaluable assets in recent years, as can be seen from the proliferation of multiple BESS projects across the country. However, other options in the Energy Storage need to be explored so that their capabilities are assessed for indigenous technology development.

SECI has been facilitating number of RE projects across the country as intermediary procurers and SECI has right receive generation information from all the projects. SECI would like to establish real-time data analysis of the data from all the projects under operation under SECI. The data analysis include generation reports on plants performances, geographical merits, real-time display of cumulative generation from the plants etc. This will enable SECI/GoI to plan for the future innovations in development of RE projects.

SECI is also looking for support innovations in roof top projects/products and any new RE technologies.

3. Objective of Call:

SECI intends to invite proposals from the prospective applicants involved in the field of Research and Development (R&D) of Energy Storage System technologies to set up novel ESS projects in order to supplement generation from different Renewable sources like Wind, Solar & Hybrid (Wind & Solar). SECI is also looking for innovations in Do It Yourself (DIY) roof top products with storage and any new RE generation technologies. The ultimate objective of this endeavor is to encourage indigenous innovations in the Energy Storage R&D space, roof top solar, data analytics along with any new RE concepts and to facilitate development and commissioning of prototypes of novel technologies, so as to lay the groundwork for future Large-scale implementation of these technologies. The **General Terms & Conditions of the Grant for Projects in R&D Mode** under this call for proposal are provided as **Appendix I**.

4. Scope of Works

Prospective applicants may submit proposals to set up in the areas mentioned above. The project capacities shall be up to 500 kWh of Energy storage capacity along with suitable Solar Power generation system. The project scope of work shall include design, engineering, installation, commissioning and testing of the project till the inter connection point at 11/33 kV substation. The Project shall be set up at site identified by SECI and connectivity shall be the responsibility of SECI. The project proposal shall include the tentative Project layout and Single Line Diagrams for Connectivity to the grid.

The innovative DIY roof top products developed under this proposal shall be deployed either at SECI establishments or at any site chosen by SECI. The main emphasis will be on the DIY roof top projects with Battery Energy Storage.

The scope of data analytics projects includes data acquisition, analysis of existing/ real-time data from various projects of SECI/ other project developers and data presentation.

Any new RE technologies can be developed and demonstrated at Investigators laboratory.

5. Prospective Applicants:

The following entities are eligible for submitting their proposals as Interested Entities:

- i. R&D or Academic Institutions including Engineering Colleges (both Public and Private, duly accredited by Government Bodies)
- ii. Public/Private Industries
- iii. Societies registered under the Societies Registration Act 1860
- iv. Trusts registered under the Indian Trusts Act 1882
- v. NGOs
- vi. Startups duly recognized by Department of Promotion and Internal Trade (DPIIT)
- vii. Organizations engaged in Research and Development for promotion of new and renewable energy

Interested entities may also include collaborations with other institutes/entities, in which case the scope of activities must be clearly elucidated in the proposal.

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6. Thrust Areas

Proposals are invited for demonstration of scalability of the following technologies:

- a) Gravity-based / Mechanical Energy Storage Systems
- b) Green Hydrogen based Energy Storage Systems
- c) Any other non-electrochemical ESS technology that is in line with the spirit of this call may be proposed for consideration by SECI.
- d) DIY roof top solar systems with or without storage
- e) Data analytics of RE projects
- f) Any new RE technologies development and demonstration.

7. Projects duration.

The projects execution period shall be 1-2 years from the Date of Sanction of the Project. Any extension will be decided based on the Project Monitoring Committee recommendations.

8. Project Proposal Formulation Guidelines

The proposal shall be submitted in the form given in Appendix II and its annexures, and should necessarily include, but should not be limited to, the following information:

- i. Objectives of the project
- ii. Technology focus of the Proposal
- iii. Details of Implementing Entity/Entities
- iv. Company Profile/Project In-charge Profile
- v. Status of Work done in India and Other Countries
- vi. Project Particulars
- vii. Research and Implementation Methodology
- viii. Implementation Milestones
- ix. Key Performance Indicators and acceptance Criteria
- x. List of Deliverables
- xi. Total Cost Estimate, with detailed breakup among various components with justification

9. Project Proposal Evaluation

SECI shall screen the proposals with respect to the interests of the organization through an Inter-disciplinary Screening Committee. The criteria on which selection will be based on will be (i) Relevance and Quality of the Proposal; (ii) Clarity and Quantifiability of Project Objectives and Deliverables (ii) Technical Feasibility at the end of development (iii) Technology Readiness Level of the Proposed Project (iv) Justification of Project Cost.

10. Funding

SECI shall support the funding of the project up to 100% of the project cost, within the financial outlay submitted in the proposal. The project's costs will include project manpower, equipment, instrumentation, fabrication and installation, travel, contingencies etc. The justification of the budget of the project shall be clearly appended with the project proposal. Any institutional overheads will not be paid. Any contingency/consumables amount shall be based on the recommendations of the PMC, to be provided taking into account the extent of fieldwork and manpower involved.

Sanction and release of funds to the selected applicant shall be on a milestone basis:

- i. Post-Submission of Design: 10%
- ii. Supply of Equipment: 65 %
- iii. Installation, Commissioning and Testing: 25%

At each milestone, funds may be disbursed after not less than 90% of the previous disbursement has been utilized. The disbursement shall be made against detailed agreement with the Implementing Entity. This agreement shall define various quality and performance parameters, which the Implementing Entity shall be bound to meet. Financial support under this program shall be released as per the standard financial norms and upon submitting the required documentation as per GFR-2017. Additionally, SECI shall have indemnity in any cases of infringement, lawsuits, patent issues etc. That may arise after disbursement of funds.

10. Implementation

The successful applicant shall be Implementing Entity of the project. The Implementing Entity shall constitute a team of researchers/engineers for implementation of the project and designate

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a project lead as the Principal Investigator/ Project Manager (PI). The PI shall be the coordinating person of the Team and shall conduct all correspondence with SECI.

During the course of Implementation, the Implementing Entity will undertake the following:

- i. Preparation of detailed project reports
- ii. Preparation of detailed design and engineering drawings for execution
- iii. Timely submission of Project Progress Reports during various stages of execution
- iv. Installation and associated site work, Commissioning, and Testing of the Plant

11. Monitoring and Evaluation:

SECI will be the Monitoring Entity for the projects. A Project Monitoring Committee (PMC) will be constituted, comprising of subject matter experts from the industry and/or academia and representative(s) from SECI. The committee will be responsible for proper monitoring of the research and development work, and validating the milestones claimed by the Implementing Entity.

12. Project Completion Process:

The Implementing Entity shall endeavor to complete the project within the prescribed timelines while undergoing rigorous monitoring and feedback.

- (i) Extension of the duration without increase in the outlay can be granted with approval of the Project Monitoring Committee.
- (ii) Extension of the duration with additional financial assistance will be considered considering recommendation of the PMC and approval of Managing Director. In both cases, approval will be granted subject to valid justification of the same.
- (iii) On completion of the projects, the project shall be presented before the PMC and completed reports shall be submitted for review and approval of the PMC and competent authority.
- (iv) After completion, all project assets shall be transferred to SECI. Training shall be given to SECI personnel for the O&M of the project. Also, the Implementing Entity shall undertake to provide support SECI during the O&M of the project for 2 years after commissioning.

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13. Submission of Proposals

- Interested Applicants are required to submit the response with the complete information in all respects as per the requirements in Annexure II of this document. The furnished information shall be supported with relevant documents if any.
- Prospective parties may submit their proposals duly signed by the authorized signatory along with relevant details as sought in the data sheets latest by 18.11.2022 till 17:30 hrs. in a sealed cover super-scribing “**Call for Proposals for Setting up of Pilot Energy Storage System projects in R&D Model and other RE projects/products**” to

Dr Y.B.K Reddy
Additional General Manager (Power Systems)
Solar Energy Corporation of India Limited,
Plate B, 6th Floor, Office Block 2
NBCC Building, East Kidwai Nagar,
New Delhi-110023

For any clarification, you are requested to contact 011-24666 218 or

Email to ybkreddy@seci.co.in

The date of any discussion meeting after receipt of proposals, will be informed to the respondents by e-mail / through SECI website.

Disclaimer:

Prospective respondent (Applicants) to this Call for proposals acknowledges and agrees that:

- Solar Energy Corporation of India Limited (SECI) has issued this Call for Proposals with the best intentions to support innovative projects. This call does not guarantee conversion of this call into any definitive contractual agreements.

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- It is also agreed that SECI in its sole discretion, may reject any and all proposals made by respondent(s), may change the conditions relating to this Call or cancel this Call at any time without assigning any reason.
- Prospective respondent(s) acknowledge and agree that response to the Call is purely voluntary action on their part and for any expenditure on this account shall be borne by the respondent(s).
- SECI will have no obligation or liability to the respondent(s) in the event of cancellation of Call.
- Neither SECI nor their employees or officers make any representation or warranty, express or implied, or accept any responsibility or liability, whatsoever, in respect of any statements or omissions herein, or the accuracy, completeness or reliability of information, and shall incur no liability under any Law, Statute, Rules or Regulations as to the accuracy, reliability or completeness of this proposal.
- The Applicant, shall defend, indemnify and hold harmless SECI, its directors, officers and employees against any liability, loss, damage, cost and expense suffered as a result of any claim, demand, action or suit made or raised against the Applicant by any third party in any action, suit or proceedings on a claim based upon an allegation that the product/project infringes any right of any third party. The Applicant shall further indemnify SECI for any judgments, settlements, reasonable costs and reasonable Counsel's fee resulting from such a claim.

Note: Applicants are requested to keep themselves updated with the website www.seci.co.in on regular basis for any addition / deletion / modification / clarification or notification in respect of this, at any stage. No separate notification will be issued in any other media.

APPENDIX - I

**GENERAL TERMS & CONDITIONS OF THE GRANT FOR SETTING UP OF PILOT
PROJECTS IN R&D MODE**

1. Approval of the R&D/ technology development project and the grant being released is for the Specific Project sanctioned and should be exclusively spent on the project within the approved time duration. The Implementing Entity is not permitted to seek or utilize funds from any other organization (government, semi-government, autonomous and private bodies) for this research project. Any unspent balance out of the amount sanctioned must be surrendered to the Solar Energy Corporation of India (SECI) through an ECS/ crossed Demand Draft Drawn in favour of SECI payable at New Delhi.
2. Full infrastructure facilities by way of accommodation, water, electricity, communication etc. for smooth implementation of the project shall be borne by the Implementing Entity.
3. For permanent, semi-permanent assets acquired solely or mainly out of the project grants, an audited record in the form of a register. The term “Assets” include (a) the immovable property acquired out of the grant; and (b) movable property of capital nature where the value exceeds Rs.50,000/-. The Implementing Entity is required to send to the SECI a list of assets acquired from the grant.
4. Assets acquired in the project shall be property of SECI. The assets should not be disposed off or encumbered or utilized for purpose other than those for which the grant had been sanctioned without the prior permission of SECI.
5. On conclusion/ termination of a project SECI will be free to sell or otherwise dispose off its share of the assets, which are the Property of the necessary facilities for arranging the sale of these assets. SECI has the discretion to gift its share of assets to the Implementing Entity or transfer them to any other organization if it is considered appropriate.

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6. The Project Proposal shall be submitted by a Principal Investigator/Project Manager (PI) who shall serve as the Point of Contact for the implementation of the proposed Project. The PI will furnish progress Report of the work carried out under the project on six monthly basis in the months of April and October during the Project Implementation period.
7. Officer(s) of SECI AND SECI Designated Scientist/ Specialist/ Expert panel/ Committee may visit the organization periodically to review the progress of the work being carried out and to suggest suitable measures to ensure realization of the objectives of the Project. During implementation of the Project, the Implementing Entity will provide facilities to such visitors in the form of accommodation, site visits, etc.
8. On completion of the project, a final consolidated 'Project Completion Report' on the work done on the project will be prepared after incorporating suggestions, if any, from the reviewers of the project and submitted to the SECI in physical as well as electronic forms.
9. The 'Project Completion Report' must include all relevant technical details/specifications, working drawings for designing of the system/equipment. And an inventory of materials required, etc
10. At the time of seeking further installment of grant and closure/termination of the project. The Implementing Entity/PI has to furnish the following documents;
 - a. Utilization Certificate (U.C) For SECI Grant and 'Statement of Expenditure' (S.O.E.) for the total expenditure for the previous financial year (in original or copy if sent earlier)
 - b. Latest authenticated Statement of Expenditure' including Committee Expenditure, for the expenditure on the project including cost shared by any other organization since 1st April of that financial year till the previous month; and
 - c. Technical Progress report, if not sent earlier.

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11. SECI, at its discretion, shall have the right of access to the books and accounts of the Implementing Entity maintained in respect of the grant received from SECI.
12. The Implementing Entity will maintain a separate saving account for the project in a Bank. If it is found expedient to keep a part or whole of the grant in a bank account earning interest, the interest thus earned should be reported to the SECI and should be reflected in the 'Statement of Expenditure'. The interest thus earned will be refunded to SECI at the end of financial year.
13. The Implementing Entity will neither entrust the implementation of the work for which the grant is sanctioned to another institution nor will it divert the grant receipts to other institute as assistance. In case the Implementing Entity is not in a position to the implement or complete the project, it should, forthwith, refund to SECI the entire grant or the balance received by it at the earliest.
14. All the personnel including research personal appointed under the project, for the Full/ part duration of the project, are to be treated as project personnel on contract to the organization and will be governed by the Administrative rules/services conditions (For leave, TA/DA etc.) of the implementing Institute. They are not to be treated as employees of the government of India any circumstance and the SECI will have no liability, whatsoever, for the project personnel after completion of the project duration.
- 16 SECI reserves the right to terminate the project at any stage if it is convinced that the grant has not been properly utilized or sufficient progress has not been reported under the project or sufficient efforts have not been devoted.
- 17 The Project becomes operative with immediate effect or within a maximum of one month from the date on which the ECS/ Draft/ Cheque is received by the implementing Institution or date of issue of Notice to Proceed by SECI, whichever comes later.

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- 18 If the PI to whom a grant for a project has been sanctioned wishes to leave the Implementing Entity where the project is sanctioned, the Implementing Entity/ PI will inform the same to SECI and in consultation with SECI, evolve steps to ensure successful completion of the project before relieving the PI or appoint another PI.
- 19 If the results of research are to be legally protected under IPR, the results should not be published without action being taken to secure legal protection for the research results.
- 20 Investigator(s) wishing to publish technical/ scientific papers based on the research work done under the project should acknowledge the assistance received from SECI, indicating the Project Sanction No. etc. under which grant has been given to the Implementing Entity. The PI will submit a copy of the paper in both printed and electronic forms to SECI as soon as it is published.
- 21 If the result is in the form of a survey report/ product performance evaluation or other such activities which have commercial implications, the Implementing Entity will not publish the results without specific written approval of SECI.
- 22 The Implementing Entity and/or PI should provide a copy of the 'Full Text Document' of the Patent within one month of its publication, if any.
- 23 The Implementing Entity(s)/ Inventor(s) are required to seek protection of Intellectual Property Right for the results/ output of the sanctioned R&D projects and shall share royalty/ proceeds of sale of IPR in accordance with the guidelines given below:
 - i. SECI shall have a royalty-free license/ marching right for the use of the Intellectual Property for its purposes and SECI reserves the right to require the Implementing Entity to license others and that anyone exclusively licensed to market the innovation in India, must manufacture the product in India.
 - ii. In case SECI files patents (when Implementing Entity is unable to file a patent) any earnings accruing from transfer and commercialization shall be shared equally by SECI

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- with the Implementing Entity and the generator of the Intellectual Property. However, wherever the expected earnings are above Rs.10 lakh, the proportion of sharing can be 40% for the Implementing Entity, 40% for SECI and 20% to the generator of Intellectual Property.
- iii. The Implementing Entity(s) is permitted to retain the benefits arising out of the IPR. In case of Implementing Entity comprising of more than one entities, IPR generated through joint research can be owned jointly by them as may be mutually agreed to by them through a written agreement.
 - iv. The Implementing Entity may transfer the technology to another industry for commercialization, on terms and conditions as may be mutually agreed upon, on non-exclusive basis under intimation to SECI. Any earnings accruing from such a transfer and commercialization shall be shared between the institution and the industry as may be mutually agreed to. The details of the agreement, amounts-received, annual sales turnover of the product shall be intimated periodically to SECI.
 - v. Other terms and conditions regarding IPR issues shall be in accordance with the guidelines contained in the DST circular issued with the concurrence of Ministry of Finance, Department of Expenditure vide their O.M.No.33(5)PF-1199, dated 22nd February, 2000 or subsequent circulars which may be issued by DST/MOF on the subject.
- 24 The Applicant submitting a proposal in response to this Call for Proposal, shall defend, indemnify and hold harmless SECI, its directors, officers and employees against any liability, loss, damage, cost and expense suffered as a result of any claim, demand, action or suit made or raised against the Applicant by any third party in any action, suit or proceedings on a claim based upon an allegation that the product/project infringes any right of any third party. The Applicant shall further indemnify SECI for any judgments, settlements, reasonable costs and reasonable Counsel's fee resulting from such a claim. The Applicant shall submit a declaration to this effect along with the Proposal.
- 25 In case of any dispute the decision of Managing Director, SECI shall be final.

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ANNEXURE II

**FORM FOR SUBMISSION OF PROPOSAL FOR SETTING UP OF PILOT PROJECTS IN
R&D MODE**

Sl.No.	Item	Details
1.	Project Title:	
2.	Technology Focus (Select One)	<ul style="list-style-type: none"> ➤ Gravity-based Energy Storage Systems ➤ Mechanical Energy Storage Systems ➤ Green Hydrogen Energy Storage Systems ➤ DIY roof top solar systems with or without storage ➤ Data Analytics ➤ Any new RE technologies development and demonstration.
3.	Objectives	
4.	Summary Please provide Brief Technology Details as addendum to this Annexure	
5.	Total Project Cost (from Annexure A to Appendix II)	
6.	Duration	
7.	Details of Implementing Entity (Name, Address, Telephone, Email Address)	
8.	Brief Profile of Implementing Entity	
9.	Category of the Implementing Entity	(A) Autonomous Bodies (B) Non-Governmental Organization (C) Co-operative Societies and Co-operative Institutions (D) Others (Please define)
10.	Contact Person (Name, Designation, Institution, Address, Telephone, email address)	

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11.	Status of Work being done in India and Other countries by various Research Organisations and Industries(To be properly referenced with citations in peer reviewed scientific Journals wherever possible):	
12.	Project Particulars (Solar PV Component MWp/MW, BESS MW/MWh etc.)	
13.	Details of Research and Implementation Methodology	Detailed methodology including schematics, diagrams, all relevant technical details etc. to be provided as Annexure to this Proforma.
14.	Work Modules to achieve the specific objectives along with monitorable milestones	
15.	Key Performance Indicators and Acceptance Criteria	
16.	Project Deliverables (products/process/papers/IPR, if any)	
17.	Project Cost breakup	To be attached as Annexure to this Proforma (Annexure A to Appendix II)
18.	Potential Users and suggested Plan of action for utilization of expected Project Output with proper analysis for scalability and bankability	
19.	Other information	<p>The following information is to be provided as per Annexure II:</p> <p>Details of other R&D projects implemented by the Implementing Entity, their cost, status (completed/ under implementation) and sponsors.</p> <p>A Declaration of indemnification as per APPENDIX – I: GENERAL TERMS & CONDITIONS OF THE GRANT For Setting Up of Pilot Projects In R&D Mode</p>

ANNEXURE A to APPENDIX II
DETAILED COST BREAK-UP OF PROJECT

a) Cost of Equipment:

Sl. No.	Name of the Equipment along with make & model	Imported/ Indigenous	Estimated Costs (in Foreign Currency also for imported equipment)*	Justification
1.				
2.				
3.				
	Total			

*Including transport, insurance and installation charges.

b) Cost of Manpower

Sl. No.	Manpower (Job Description)	Qualification	Estimated Costs/ Remuneration	Justification
1.				
2.				
3.				
	Total			

c) Cost of Consumables:

Sl. No.	Item	Quantity & Cost	Amount (Rs.)		
			First year	Second year	Total
1.					
2.					
3.					
	Total:				

d) Travel Cost:

Sl. No.	Travel (Domestic/ International)	Justification	Amount (Rs.)		
			First year	Second year	Total
1.					
2.					
3.					
	Total:				

ANNEXURE B to APPENDIX II

**Certificate from the Principal Investigator and Implementing Entity (On
the letter head of the Organization)**

Project Title:

1. I am submitting the above titled project proposal to SECI for financial support.
2. I/ We agree to abide by the terms and conditions of the SECI research grant.
3. I/ We have not submitted the project proposal elsewhere for financial support.
4. I/ we will not proceed on long term/ study leave/ deputation during the period of project implementation, without prior permission from SECI
5. I have enclosed the following documents/ materials:
 - i) Hard Copies of the Proposal (02 copies)
 - ii) Electronic copy / CD (01 copy)
 - iii) Name and address of up to five experts/institution interested in the subject/ output of the project.

Date:

Place: Name and signature of Principal Investigator

**Endorsement by the Head of the
Implementing Entity/Organization**

Certified that Project Proposal entitled “ ----- ” is prepared by Dr/Shri ----- and has not been submitted to any other institution for funding. The Organization will provide necessary regular staff and infrastructure facilities for the project work and such facilities have not been requested in the proposal. The Organization will ensure compliance of the terms and conditions of the financial grant by SECI and other conditions of the project.

Place & Date

**Name, Signature and Seal
Head of the Grantee Organization/Implementing Entity**