



**MADHYA PRADESH POWER MANAGEMENT COMPANY LIMITED**  
CIN: U40109MP2006SGC018637  
(A GOVT. OF M.P. UNDERTAKING)  
Regd. Office: Shakti Bhawan, Rampur, Jabalpur, Madhya Pradesh, INDIA-482008  
Tel.: 0761-2702404 Website: [www.mppmcl.com](http://www.mppmcl.com), email: [rajeev.keskar@mppmcl.com](mailto:rajeev.keskar@mppmcl.com)

NIT No. CGM/RO/T-15/2019/.....

Date : 03.06.2019

**Notice for Expression of interest for “Demonstration and selection of technology for Providing Energy Storage Services of up to 500 MW and Setting up Energy Storage Manufacturing Facility in Madhya Pradesh ”**

MPPMCL intends to execute Energy Storage Projects in Madhya Pradesh to make optimum use of Energy resources in MP. For this purpose, “Expression of Interest” are invited from the interested parties.

Chief General Manager (RO), M.P. Power Management Col. Limited, Bhopal on behalf of Managing Director, MPPMCL hereby invites interested Service Providers/RE Generators/ Manufacturing firms/Utilities etc who has experience in the filed of Energy Storage anywhere in India or abroad..

Please visit the Home Page of MPPMCL website <https://www.mppmcl.com> (Opportunities > business) for detail EoI and notices.

1. Proposal will be received on email id [energystorage@mppmcl.com](mailto:energystorage@mppmcl.com). Interested Agencies can also submit hardcopy of their responses at below address:  
**CHIEF GENERAL MANAGER ( REGIONAL OFFICE)**  
E-4, Prakash Parisar, Arera Colony,  
Near Bhojpur Club Bhopal-462016  
Tel.: 0755-2423044
2. Information regarding last date of submission queries & EoI proposal and other key dates will be updated on MPPMCL website. Participants are requested to visit website of MPPMCL on regular basis.
3. The E.O.I. should include relevant information as per details available on the above website.
4. The Chief General Manager (RO), MPPMCL, Bhopal reserves the right to accept or reject any or all offers.

  
Chief General Manager (RO)  
MPPMCL, Bhopal

// SAVE ELECTRICITY //



Expression of Interest for:  
Demonstration and selection of technology for  
Providing Energy Storage Services of up to 500 MW  
and  
Setting up Energy Storage Manufacturing Facility  
in Madhya Pradesh



Issued by:  
**MADHYA PRADESH POWER MANAGEMENT COMPANY LIMITED**  
CIN: U40109MP2006SGC018637  
(A GOVT. OF M.P. UNDERTAKING)  
Regd. Office: Shakti Bhawan, Rampur, Jabalpur, Madhya Pradesh, INDIA-482008  
Tel.: 0761-2702404 Website: [www.mppmcl.com](http://www.mppmcl.com), email: [md@mppmcl.com](mailto:md@mppmcl.com)

3<sup>rd</sup> June'2019

---

## Table of Contents

<b>Background .....</b>	<b>2</b>
<b>Introduction.....</b>	<b>2</b>
About Madhya Pradesh Power Sector.....	2
Renewable Energy Portfolio of Madhya Pradesh .....	3
<b>Need for Energy Storage .....</b>	<b>4</b>
Key areas identified for Energy storage.....	5
<b>Objective of this EoI.....</b>	<b>5</b>
<b>Scope of Work .....</b>	<b>5</b>
<b>Eligibility Criteria.....</b>	<b>6</b>
<b>Instruction for submission of EoI proposal.....</b>	<b>6</b>
<b>Evaluation and Shortlisting of agencies for presentation /discussion.....</b>	<b>8</b>
<b>Disclaimer.....</b>	<b>8</b>
<b>Timelines .....</b>	<b>8</b>
<b>Way forward.....</b>	<b>9</b>

---

## Background

Madhya Pradesh is one of the States in India who are providing 24x7 Power supply to Domestic consumers. Distribution Companies in Madhya Pradesh serve 11.5 Million domestic consumers, out of which 2.7 Million consumers have been recently added under Saubhagya Yojna. Going forward, Government of Madhya Pradesh is focused to maintain quality, reliability and security of the electricity grid to provide reliable supply to consumers and need Ancillary services to support the same. Ancillary services provide resources and tools to system operator to maintain grid frequency, network voltages and other grid parameters within specified limits. For example, ancillary service can help maintain load-generation balance (in turn, grid frequency) in case of sudden failure of generating unit or transmission element, uncertainties/errors in load forecasts and variable renewable energy forecasts, sudden disturbances in the power system, etc. Further, increasing penetration of variable RE sources (mainly, solar and wind) in the country necessitates maintaining of adequate active power reserves (primary, secondary, tertiary, etc.) and reactive power reserves. Ancillary services can also be used for relieving network congestion, restoring grid from blackout, etc.

Grid-scale energy storage is expected to play a dominant and pivotal role in providing ancillary services, balancing real-time demand and supply, integrating renewable energies and improving stability of the electricity grids. Energy storage could be in the form of chemical batteries, pumped storage hydro, compressed air energy storage, flywheels and other forms of energy storage. Chemical batteries (lithium-ion, advanced lead acid, sodium sulphur, flow batteries) are fast becoming popular and offers host of benefits compared to other forms of energy storages - higher efficiencies, flexibility in sizing and modular, availability of wide range of discharge times, shorter gestation period, no restriction in location, no natural resources required for operation, less space requirement and less maintenance cost

Madhya Pradesh Power Management Company on behalf of Government of Madhya Pradesh is inviting Global Manufacturer & Service Providers to set up Energy Storage facility/Services in the State of Madhya Pradesh.

## Introduction

Madhya Pradesh is one of the largest State in India and situate in the center of the Country, with the population of 82.3 Million. At present MP State has approximate 15 Million Electricity Consumer.

Government of Madhya Pradesh is concerned with power policy framework and administrative control, safeguarding consumers' interest, promotion of conventional & renewable energy sources and efficient power system in the state.

Government of Madhya Pradesh is committed to making Madhya Pradesh self-reliant in the field of power to create a platform for multi-faceted growth. To develop a financially viable and competitive power sector that ensures quality power for all at the affordable price.

### About Madhya Pradesh Power Sector

M.P. Power Management Company Limited, Jabalpur (hereafter referred as "MPPMCL" or "Company" or "Procurer") is a Company incorporated under the provisions of the Companies Act, 1956 and is a Government of Madhya Pradesh Undertaking. The MPPMCL is a holding Company of all three Power Distribution Companies in MP.

- Madhya Pradesh Purva Kshetra Vidyut Vitran Company Limited (MPPoVVCL), Jabalpur;
- Madhya Pradesh Madhya Kshetra Vidyut Vitran Company Limited (MPMKVVCL), Bhopal;
- Madhya Pradesh Pashim Kshetra Vidyut Vitran Company Limited (MPPaVVCL), Indore;

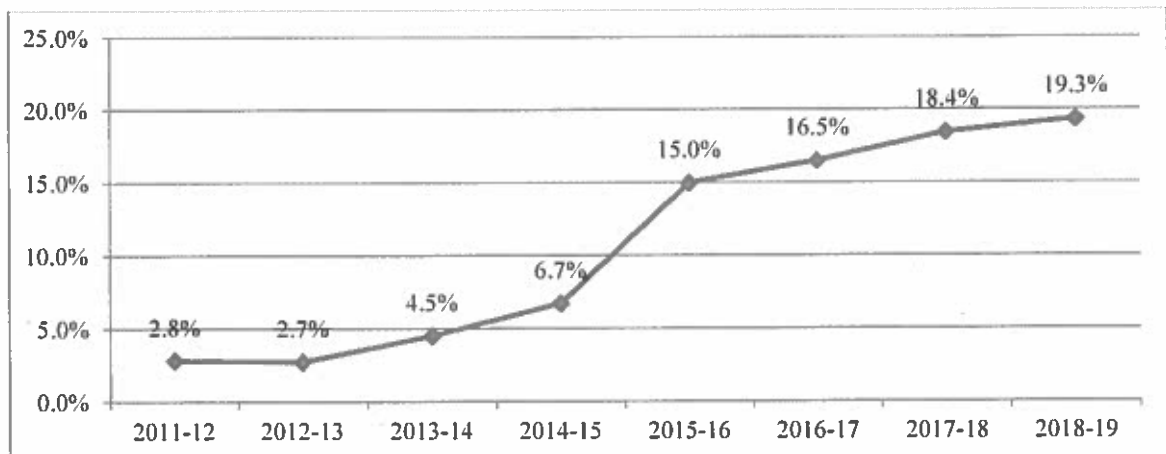
All three Distribution Companies are distribution Licensees and are engaged in the functions of distribution and retail supply of electricity in the State of Madhya Pradesh.

#### Renewable Energy Portfolio of Madhya Pradesh

India is one of the countries with the largest production of energy from renewable sources. Renewable energy (excluding large hydro) accounted for 22% of the total installed power capacity as of 31<sup>st</sup> January 2019. The government target of installing 20 GW of solar power by 2022 was achieved four years ahead of schedule in January 2018. India has now set a new target of achieving 175 GW of renewable energy capacity by the year 2022.

**Madhya Pradesh, in its endeavor to contribute to achievement of national renewable targets, has shown continuous growth in terms of renewable capacity addition. Out of the total installed capacity of 19,796 MW as on 31 Jan 2019, 3,827 MW (19.3%) came from renewable sources.**

Contribution of renewable energy in total installed capacity of Madhya Pradesh



It may be seen that the renewable power share in the State has increased from mere 2.8% in 2011-12 to 19.3% in 2018-19.

While it is imperative to make more use of renewable energy resources, such as solar and wind, to reduce our reliance on non-renewable fossil fuels such as oil and gas, like any other technologies, renewable also has some challenges:

- Variable outputs
- Unpredictability
- Difficulties with scheduling

It is to be noted that the electricity grid is a complex system in which power supply and demand must be equal at any given moment. Constant adjustments to the supply are thus needed for predictable changes in demand.

---

Energy storage plays an important role in this balancing act and helps to create a more flexible and reliable grid system.

For example, when there is more supply than demand, such as during the hours when low-cost power plants continue to operate, the excess electricity generation can be used to power storage devices. When demand is greater than supply, storage facilities can discharge their stored energy to the grid.

Presently, existing renewable technologies have “must run” status and thus cannot be backed down when there is more supply than demand. Utilities thus have to back down other low cost generating units while they continue to bear the burden of fixed cost. On the other hand when the demand is more, utilities have no other option than to ramp up high cost generation or procure power through open access since renewable generation is purely dependent on forces of nature and thus beyond the control of utilities. Because existing renewable energy technologies – such as wind and solar – have variable outputs, storage technologies have great potential for smoothing out the electricity supply from these sources and ensuring that the supply of generation matches the demand. It is apt to say that energy storage can thus give it characteristics of firm power.

Pump storage hydro power projects have been used for decades as a form of storage that absorbs excess capacity from the grid and returns capacity to the grid later when it is needed. As more storage technology options emerge and India transitions to a cleaner energy economy, energy storage is poised to play an even greater role.

## **Need for Energy Storage**

Energy storage is a crucial tool for enabling the not only effective integration of renewable energy but also load shifting which can enable peak shaving and load management. The technology continues to prove its value to grid operators around the world. Energy storage technologies provide several benefits such as ‘time shift’, ‘grid stabilization’, ‘peak shaving of demand’, ‘improved generation efficiency’ and ‘improved transmission capacity utilization’, etc. Given the value addition and the benefits that efficient energy storage technologies offer, and the expected drop in prices in the near future, energy storage has the potential to become highly attractive for both grid-connected and off-grid renewable energy applications.

There is a need to introduce new technologies to demonstrate and validate better local application and performance. At the same time, there is also a need to develop business models and structures for these solutions, where the application(s) already exist. Therefore, new energy storage technologies need to be evaluated, and business models need to be developed and tested to ramp up addition of renewable energy in India.

## Key areas identified for Energy storage



Energy storage can act as a capacity in the entire energy value chain (generation, transmission, distribution and loads). The greater use of storage can also help the transition from centralized generation to distributed generation with added benefits of improving energy access and availability, security, quality and efficiency.

## Objective of this EoI

The objective of this EoI is to invite Global players in the field of Energy Storage service/manufacturing, to **demonstrate their technology** and share their experience in the field of Energy Storage in India and abroad. Based on the technology demonstration, experience sharing & stakeholder discussion, the Management will finalize the mode/model/technology for implementation of Energy Storage (Services & manufacturing) in Madhya Pradesh.

One of the key objective of this EoI is also to develop Madhya Pradesh as a hub of **Manufacturing facilities** of storage solutions. This EoI gives an opportunity to all the global leading Manufacturers & Services provider of Energy Storage solutions to interact with key decision makers of Government of Madhya Pradesh and present their requirement for developing these in the state of Madhya Pradesh.

## Scope of Work

- Development of up to 500 MW Energy Storage Solution to supply Energy to MP Power Management Company.
- The storage plant shall be of up to 500 MW capacity. The storage plant shall have at least 8 hours of discharge per day. In addition, the storage plant shall be able to discharge continuously for 3 hours.
- The participants can propose any storage technology based on their experience. However, preference would be given to those technologies and vendors, which have a demonstrable track record, and are expected to experience significant cost-performance improvements with scale.
- Participants can propose for deployment of micro-grid projects with batteries for grid stabilization and feed the grid surplus power during night during peak load instead of procuring expensive power during peak load.



- Participants can propose the Energy Management Solutions for integration of battery operated facility with grid.
- Participants can propose Forecasting solutions to improve the command and control of energy assets.
- MPPMCL would like to test batteries with different technologies, participant to propose their battery technologies to conduct a POC.
- Key requirements for setting up of Manufacturing Facilities for Energy Storage with in State of Madhya Pradesh.

## Eligibility Criteria

- Agencies with prior experience in field of Energy Storage in India/Abroad are eligible to participate in this EoI, However following can participate in this EoI:
  - Manufacturer of Storage Equipment's;
  - Energy Storage Service Provider;
  - Technology solution provider;
  - Renewable Energy Generators;
  - Utilities/PSUs with experience in Energy Storage etc.
- The Agency shall use a proven technology demonstrated successfully anywhere in the world.
- Agencies can also participate in this EoI as a single entity or in the form of joint venture;

## Instruction for submission of EoI proposal

- The agency must submit their queries (if any) and EoI proposal through E-mail to mail ID [energystorage@mppmcl.com](mailto:energystorage@mppmcl.com) ,as per the timelines given in below section.

### ***Submission of queries by participants:***

The participants may submit their queries (if any) related to this EoI through Email on or before last date as mentioned in timelines below. MPPMCL will respond to selected/all queries through e-mail.

---

***Submission of proposal by participants:***

- The agency will submit following information with EoI Proposal;
  - Information about agency;
  - Agency's experience on similar type of assignments;
  - About the product/ Solution offered by agency;
  - Advantages and disadvantages of different storage solutions;
  - Experience sharing from different countries/utilities on Energy Storage Solution;
  - Suggestion from agencies for successful implementation of manufacturing and energy storage services in MP.
  - Proposal/Presentation shall also cover following characteristics of Storage solution to be demonstrated by the participants :
    - Maximum Response Time from Cold Start:
    - Ability to operate and in grid forming and grid following modes
    - Maximum Ramp-up Response time in operating conditions:
    - Maximum Ramp-down Response time in operating conditions, etc
  - Requirements for setting up manufacturing capacity, location of manufacturing plants, technology used, etc
- **Agencies can also submit hardcopy of their responses at below address:**

CHIEF GENERAL MANAGER (REGIONAL OFFICE)

E-4, Prakash Parisar, Arera Colony,

Near Bhojpur Club Bhopal-462016

Tel.: 0755-2423044

## Evaluation and Shortlisting of agencies for presentation /discussion

MPPMCL will shortlist the agencies based on the proposal submitted. The Shortlisted agencies will be invited by MPPMCL for presentations/discussion and demonstration of their technology & capabilities. For shortlisting, the preference will be given to the agencies have relevant experience.

- **The Technical Qualification would be a qualitative evaluation of the following dimensions:**
  - Uniqueness, innovation, scalability, demonstrability, impact of Application and Business Model;
  - Qualification and Track Record of the Agency;
  - Experience and Track record of the proposed technology/Solution;
  - Quality of the overall proposal and methodology;
- **Shortlisted agencies will be intimated and invited for presentation and discussion.**

### Disclaimer

Issues of this document do not in any way commit or otherwise oblige MPPMCL to proceed with all or any part of a tender process. This call for discussion/presentation is not the subject of any process contract or any contractual obligations between MPPMCL and the participants. Further, MPPMCL may, at its absolute discretion either modify or abandon any part or whole of the document and / or process, without giving prior notice to any or all the participants. MPPMCL is not liable for any costs or compensation towards submission of proposal and attending discussion session, participants have to submit their responses to this request at their own cost with no liability to MPPMCL.

### Timelines

MPPMCL to understand the potential market and to attract international players for participation will hold stakeholder presentations in India as well as potential international sites. Following will be the tentative schedule for proposal submission and Stockholder discussion:

Description	Date	Duration (Days)
Issue of EoI on website	3 <sup>rd</sup> June '2019	-
Date of Publication of EoI notice	Dates will be	T0*
Last date for Submission of Queries through e-mail	updated on	T0+30 Days
Last date for Submission of proposal through e-mail	website	T0+60 Days
Evaluation and intimation to shortlisted agencies	-	T0+75 Days
Presentation by shortlisted Agencies & Stakeholders discussion at Bhopal (MP)	-	T0+90 Days (Tentative)

*\*Here T0: date of publication of EoI notice*

**Note:**

The EoI will be available on MPPMCL website, <https://www.mppmcl.com> (Opportunities > business) from 3<sup>rd</sup> June'2019, However timelines (T0) will started from the date of publication of EoI notice. All the participants are requested to visit website <https://www.mppmcl.com> on regular basis to get latest updates/modification in dates & timelines.

The date of publication of EoI notice (here refer as T0) will be updated on website of MPPMCL for the reference of all participants.

## Way forward

- Based on the response received during Stakeholder discussion, roadshows/discussion sessions will be organized.
- Shortlisting of the technology/model for implementation of Energy Storage solution in Madhya Pradesh.
- Adoption of best practices shared by participants for the promotion of Energy Storage manufacturing facilities and Services in Madhya Pradesh.
- Finalization of storage solution for the requirement for the state of Madhya Pradesh.

\*\*\*\*\*