

Prayas (Energy Group)'s Comments and Suggestions on Draft Tariff based competitive bidding guidelines for procuring storage capacity/stored energy from Pumped Storage Hydro Electric Projects, 2024 by Ministry of Power

Ministry of Power (MoP) has issued the Draft Tariff based competitive bidding guidelines for procuring storage capacity/stored energy from Pumped Storage Hydro Electric Projects on 22nd August, 2024. MoP has invited comments on the [draft TBCB guidelines](#) within 15 days.

While significant capacity addition of Pumped Storage Projects (PSP) is proposed in the National Electricity Plan (27 GW /175 GWh) by FY 2032, an even bigger PSP capacity of nearly 143 GW across various states is at different stages of the MoEFCC Environmental Clearance (EC) process. Competitive bidding in Battery Energy Storage Systems (BESS) have already demonstrated falling tariffs (where the discovered price has reduced from Rs. 10.8 lakh/MW/year in 2021 to Rs. 3.8 lakh/MW/year in 2024). PSP and BESS have some complimentary strengths in energy/capacity storage and hence the introduction of Tariff Based Competitive Bidding (TBCB) guidelines by the Ministry of Power (MoP) for PSP is more than timely. We hope that the MoP incorporates comments from sector actors and finalises the TBCB guidelines at the earliest, so that the sector can benefit from the efficiency advantages of competitively bid PSPs.

Careful assessment for the specific need for PSP plants & procurement only based on competitive bidding

The ISTS waiver for PSP plants was recently amended as follows, *'To promote development of Pump Storage Plants (PSP), the criteria for availing the complete waiver of ISTS charges for PSP projects has now been linked to the **date of award of the project rather than commissioning of the project**. This shall be applicable in cases where construction work is awarded on or before 30th June, 2025.'*¹

This is very likely to create a rush for PSP projects in the coming year. Thus it is very important on the part of SERCs to first critically examine the need for long hours of energy storage (>6/8 hours) as per the DISCOM's RA and IRP studies. Only then does it make sense to specifically procure PSP capacity/energy. Once and if the specific need for PSP has been established, all procurement should only be done through competitive bidding and projects should not be given a go ahead under section 62 of the Act, especially given the well known issues of cost and time over-runs in large hydro projects.

Beyond this broader comment on planning and regulatory processes, we have some specific suggestions and comments on the draft, which are discussed below.

1. Applicability of Guidelines

Section 3.3 Applicability: The clause mentions that the guidelines are applicable to existing, under-construction and new projects. Is this provision meant to address the required additional investment to facilitate PSP functionality to defunct PSP projects or adding PSP capability to under-construction hydro projects, where PSP functionality was not initially considered? We suggest that the guidelines should be applicable only to new projects. If applicability criteria is to be widened, there should be

¹ <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1928128>

clarity on the conditions based on which the guidelines are applicable to under-construction or existing projects.

2. Modes of Procurement under Special conditions of Bid

The guidelines detail out two possible modes of procurement. Mode 1, in which the site is identified by the procurer and Mode 2 in which site is identified by the bidder or the project is already built.

Various news reports note of several MoUs signed by various states with private and PSU developers for new PSP projects. Specific sites have been earmarked/allocated to various developers/companies under such MoUs. The MoP's 'Guidelines to promote development of Pump Storage Projects (PSP)' dated April, 2023 (See Annex 1 for more details) specifies four routes for Allotment of project sites as per section 3.1. The second route is as follows,

(ii) Allotment through competitive bidding

PSP project may also be awarded to private developers by following a two stage competitive bidding process. PSUS may also be allowed to participate in the bidding process. The first stage shall be for pre-qualification based on criteria of financial strength, experience of developing infrastructure projects of similar size, past track record of developing projects, turnover and ability to meet performance guarantees. In the second stage, bids are to be called based on quantifiable parameters such as concession period of the project or any other parameter as specified by the Central/State Government.

Thus, it is unclear what roles/responsibilities and rights have been granted under the MoU based allocation of sites to developers. Given this context, it is unclear as to whether such sites will be treated as procurement under Mode 1 or Mode 2? It is very likely that these will be able to participate only in Mode 2. However there is also a possibility of such projects going in for tariff fixation under section 62 to the Appropriate Commission. The guidelines should bring in clarity in this regard. This is critical since a site agnostic bid is likely to have significant competition as against a site specific bid.

3. Transfer for Asset under Mode 1

3a. Mode of procurement, Mode 1, notes that, "*in BOOT mode of implementation, project will be transferred after the end of term to the entity identified by the state government ...*". We feel that the procurer should have the first right of refusal for transfer. Further the language should be modified to 'appropriate government' since the Central Govt. could also be involved. Finally, the guidelines should also make it clear that it be transferred to a publicly owned/ state owned entity identified by the appropriate government. A possible modification to the guideline could be as follows,

"in BOOT mode of implementation, project will be transferred after the end of term to a publicly owned/ state owned entity identified by the appropriate government. Provided that the procurer has the first right of refusal."

4. Technical Eligibility Criteria

5.6 a Technical eligibility criteria for bidders notes that "*.. experience in developing infrastructure projects within the past five years*". PSPs are very similar to hydro projects in terms of construction and operation. Considering that we wish to leverage on Indian experience in this sector, we feel that bidders should have experience in developing hydro electric projects of similar size. This will ensure that companies undertaking PSP projects will have a good understanding the risks of hydro like cost and time overruns. A possible modification to the guideline could be as follows,

“.. experience in developing large hydro/PSP projects within the past ten years”.

5. Commencement of storage schedule

For Mode 1, guidelines suggest 48 and 66 months respectively (for off-river and on-river) for SCSD after effective date of PPA. For Mode 2, schedule is as per the requirement of the procurer. In both these cases, strict monitoring to reduce delays and associated costs are crucial since cost and time over-runs in large hydro projects is a well known and to some extent expected.

Cost over-runs and long gestation periods of hydro projects: Large hydropower is a well-established conventional generation technology, being in existence for over a century. In response to a Rajya Sabha question on stalled hydro projects, the Ministry of Power stated that: *‘As on 01.07.2017, there are 14 under construction Hydro Power Projects (above 25 MW), totalling 5,055 MW, which are stalled due to various reasons. The cost overrun calculated by CEA due to these stalled projects is Rs. 25,593.78 cr.’*² Thus, there is on average a Rs 5 Crore/MW cost overrun for these projects. Further, the gestation period for hydro projects is significantly long, coupled with uncertainty due to various factors. The CEA quarterly review dated December 2019³ notes the time delay for on-going projects. The average time overrun for the 35 listed projects is a staggering 7.7 years (Prayas analysis). As of June 2023, 42 projects have been listed by CEA with cost and time over-runs.

Clauses related to force majeure should be critically looked at given the geological and other potential uncertainties which are well known for large hydro projects and may have some relevance for PSP plants.

Further, clause 13a notes that, *“For delay in commencement of supply beyond SCSD, the developer event of default shall have been construed to have occurred and consequences shall be in accordance with these guidelines.”* Clause 7 under special conditions of the bid notes that *extension charges will be Rs 1000/MW of contracted capacity per day of delay in SCSD.* These appear to be too low and should be higher to deter delays in SCSD. For a 500 MW plant, with capex of Rs 5cr/MW (Rs 2500 crore), a delay of 12 months would mean an extension charge of a mere Rs 18 crore (0.7% of the project cost).

6. Additional Points

- a. **ESO:** As far as the charging energy used in PSP is renewable, such PSP plants should qualify for the Energy Storage Obligation as defined by MoP notifications. This could be mentioned in the TBCB guidelines.
- b. **Multi-purpose PSPs:** The guidelines could bring in some clarity with regard to operational aspects of multi-purpose PSPs, which have some machines having PS capability, and have irrigation demands.
- c. **Consider technology agnostic energy storage TBCB guidelines.** There are several energy storage technologies available for deployment, each with their unique advantages and disadvantages in terms of price, scale, reliability, response time, gestation period etc. Presently, lithium-ion based BESS and PSP are the two established technologies in terms of price competitiveness and deployment at scale. BESS and PSP have some differences. BESS is modular and can be deployed rather quickly in 12-18 months. Presently most projects are for shorter energy storage support (2-4 hours) and has very quick response times. On the other hand, PSP is a schedulable storage

² https://powermin.nic.in/sites/default/files/uploads/RS24072017_Eng.pdf

³ <http://www.cea.nic.in/reports/others/hydro/hpm/QUARTERLY%20REVIEW%20NO.%2099.pdf>

resource, since it can take 7-15 min to switch modes. Traditionally, compared to BESS, PSP can provide longer hours of storage (6-8 hours).

The type of energy storage procurement by DISCOMs depends primarily of the hours of energy storage and the time-frame when they would like this supply. Given the rapidly changing economics of various energy storage technologies, MoP should consider coming out with **technology agnostic energy storage TBCB guidelines as well.**

* * * * *

Annexure 1: Guidelines to promote development of Pump Storage Projects (PSP) – reg, MoP, 10th April, 2023

3. Guidelines for promotion of PSPs

The following guidelines are being issued for the promotion of Pumped Storage Projects:

3.1 Allotment of project sites

The State Governments may allot project sites to developers in the following

(i) On nomination basis to CPSUS and State PSUS

For early development, States may award projects directly to hydro CPSUS or State PSUS on a nomination basis. Due consideration shall be given to the experience and financial strength of the CPSUs/State PSUs. The projects may also be allotted to Joint Ventures (JVs) between CPSUS and/or State PSUS for development of such PSPS. Further the CPSU/State PSU shall ensure that award of contracts for the supply of equipment and construction of the project, either through a turnkey or through well-defined packages, is done based on competitive bidding.

(ii) Allotment through competitive bidding

PSP project may also be awarded to private developers by following a two stage competitive bidding process. PSUS may also be allowed to participate in the bidding process. The first stage shall be for pre-qualification based on criteria of financial strength, experience of developing infrastructure projects of similar size, past track record of developing projects, turnover and ability to meet performance guarantees. In the second stage, bids are to be called based on quantifiable parameters such as concession period of the project or any other parameter as specified by the Central/State Government. In case of allocation through modes 3 (i) & (ii) above, the home state shall have the right of first refusal upto 80% of the project capacity and tariff shall be fixed by the Appropriate Commission u/s 62 of the Electricity Act, 2003 The developer would be free to sell the balance storage space under short / medium / long term PPA, or in power markets or through bilateral contract

(iii) Allotment through TBCB

PSPS may also be awarded on a TBCB basis to developers. For this purpose, the task of carrying out S&I and preparation of DPR may be given to an SPV under a CPSU/State PSU. SPV may be responsible for pre-construction activities such as preparation of project report, land acquisition, environment and forest clearance, etc. Such a dispensation would ensure the possibility of tariff determination based on competitive bidding. The DPR may be subsequently bid out for construction and SPV transferred to the successful bidder on the basis of:

- a. Composite tariff (including the cost of input power) in case input power is arranged by the developer or*
- b. Tariff for storage on a per Megawatt Hour basis if the input power is to be arranged by the procurer of the storage capacity.*

The appropriate Commission shall adopt the above tariff u/s 63 of the Electricity Act, 2003.

(iv) Self-Identified off-stream Pumped Storage Projects

In addition to the above methods, developers may also self-identify potential off-stream sites where PSPs can be constructed. Since these sites are away from the riverine system and do not utilize the natural resources like river streams, allotment from State Governments would not be required for the development of PSP projects on such sites. Further, all statutory clearances need to be obtained from State and Central agencies before starting construction. It will help in harnessing the off-stream potential in the country at a faster pace. Projects developed in such a manner would be provided all concessions mentioned in these guidelines, subject to the directions issued by the Government from time to time.

* * * * *