Clarification No I dated 10/07/2025 to the Bidding Documents of **ERS package ERS-III associated with Procurement of ERS suitable for 400kV Transmission lines; Spec. No. CC/NT/G-ERS/DOM/A00/25/06825**

Sl. No.	Clause ref. No	Bidder's Query	POWERGRID's Reply
1.	Technical Specification	Upon review of the Technical Specifications, we observed a discrepancy: In Section II, Clause 1.0, it is stated that "The Emergency Restoration System (ERS) shall generally conform to IEEE-1070." As per IEEE 1070, under Clause 3.1 (Technical Requirements), it is specified that: "All structural shapes and plates used in the fabrication of all sections, foundations, guy plates, and box sections should be of 6061-T6 and 6061-T651 aluminum alloy." However, in Clause 1.2.2 of the same section, it is mentioned that: "The structure components shall be lightweight, made of high-strength Aluminum Alloy or Hot Dip Galvanized Structural Steel or a combination of both." This creates a contradiction in material specifications. Allowing multiple material options (Aluminum Alloy and Hot Dip Galvanized Steel) leads to inconsistency. We therefore request you to kindly review this matter and consider standardizing the material requirement across the tender to ensure a fair, uniform, and competitive bidding process.	Bidder to comply with the requirements stipulated in the bidding documents.
2.	Technical Specification	We would like to bring to your attention key considerations regarding Emergency Restoration System (ERS) towers in light of the current tenders aimed at enhancing India's power grid resiliency and disaster management. It is our understanding that the tenders are intended to procure aluminum ERS towers, which have become the global standard. Steel ERS towers, introduced in the 1970s, saw a sharp decline in use globally after aluminum became the preferred material. If PGCIL opts for steel ERS towers, several challenges may arise: 1. Operational Challenges: Steel components tend to seize when stored for long periods or in cold temperatures, making deployment during emergencies difficult. Steel Base articulations often requires heavy hammering to loosen seized components, which compromises galvanization and accelerates rusting.	Bidder may refer clause 1.2.2, Section-II of the technical specification wherein maximum permissible length and weight of structure column section has been specified. As per the above clause, maximum weight of 200 kgs and maximum length of 4.2m (±5%) is permitted for each structure column section.

		2. High Maintenance Costs: Despite galvanization, steel requires regular maintenance. In environments prone to sand or salt contamination. These maintenance expenses will increase the total cost of owning the towers. 3. Rusting and Deterioration: Over time, steel undergoes unavoidable wear and tear, particularly from regular ERS use. Scratches and exposure to harsh conditions further expedite rusting, leading to a decrease in operational efficiency and asset utilization. 4. Logistical Challenges: Steel towers are heavier than aluminum, requiring more personnel for transportation and assembly. 5. Storage Concerns: Steel tower sections stored outdoors are prone to corrosion due to continuous exposure to environmental elements. These factors have driven the industry-wide transition to aluminum as the standard material for ERS towers. We present these points to support PGCIL in making an informed decision aligned with global best practices—ensuring India's power grid remains resilient against both natural and man-made disasters. We request you to consider only aluminum ERS towers so as to have a fair and competitive bidding for ERS tenders.	Bidder to comply with the requirements stipulated in the bidding documents.
3.	Technical Specification	Objection to Inclusion of Steel-Based ERS Systems We submit the following non-negotiable concerns and technical facts regarding the inclusion of steel-based ERS systems, which, if permitted, would undermine the reliability, efficiency, and emergency-readiness of this critical infrastructure project: • <u>Zero Deployment History in India (Including PGCIL)</u> Not a single steel-based ERS system has ever been procured or used by PGCIL or any Indian utility. PGCIL has always adopted modular aluminum-based ERS systems, establishing a national benchmark. • <u>Violates Proven Track Record Principle</u>	Bidder may refer clause 1.2.2, Section-II of the technical specification wherein maximum permissible length and weight of structure column section has been specified. As per the above clause, maximum weight of 200 kgs and maximum length of 4.2m (±5%) is permitted for each structure column section.

		Introducing steel ERS at this scale lacks any historical performance validation. It would amount to risking national critical infrastructure with untested and commercially unproven solutions. • Fails Modularity and Rapid Deployment Test Steel systems are not modular. They require more manpower, time, and equipment to assemble - defeating the core objective of an Emergency Restoration System meant for rapid Deployment. • High Weight, Low Mobility Steel is up to 3x heavier than aluminum, significantly increasing transportation, handling, and erection difficulty - especially in inaccessible terrain or disaster zones. • Rusting & Corrosion Risks Steel is prone to oxidation and long-term corrosion, leading to compromised structural integrity - especially during long storage or deployment in humid or saline zones. • Thermal Reliability Concerns at Sub-Zero Temperatures This ERS is expected to operate in environments reaching -40°C. Steel becomes brittle at sub-zero temperatures, increasing failure risk, while aluminum retains its ductility and strength. • Commercial Misrepresentation Risk Allowing steel-based systems creates an artificially lower price point in commercial bids, misleading the evaluation process and undermining technically compliant solutions. • Incompatible with Existing PGCIL Fleet Steel structures will not integrate with the current aluminum ERS inventory of PGCIL, causing inconsistencies in training, spares, interchangeability, and operations. • Contradicts Global Best	Bidder to comply with the requirements stipulated in the bidding documents.

		Practices Globally, major utilities and grid operators (including in the USA, Europe, and GCC) standardize on aluminum ERS systems for emergency transmission recovery - steel is not considered a viable substitute. • Fails IEEE 1070 Compliance in Practice While steel may claim theoretical compliance, it lacks a field-proven implementation history under IEEE 1070, especially in modular emergency restoration use-cases. Our Firm Request In the interest of safety, uniformity, speed of deployment, and historical consistency with PGCIL's own practices, we strongly urge you to: Explicitly exclude steel-based ERS systems from the scope of this tender and confirm that only modular aluminum ERS structures - conforming to IEEE 1070 and related standards - shall be acceptable. This will not only preserve procurement integrity but also ensure operational readiness and long-term asset reliability across the grid.	
4.	Technical Specification	Please refer our above letter vide which we explained the drawbacks for using Steel ERS and requested to exclude Steel based ERS items. Your confirmation is still awaited. Please note that we are participating for Aluminium ERS, but since you are introducing Steel ERS also, we need extra time for re-working and revising all documents accordingly. Besides please specify following points : 1) Detailed specification & Grade for Steel ERS to be procured / considered by POWERGRID. 2) Technical & commercial Qualification criteria for Steel ERS manufacturing companies.	Relevant specification, technical & commercial qualification criteria are covered in the bidding document.

5.	Technical Specification	(1) We would like to highlight here that as per Clause No.3.1 of IEEE 1070-2006 Guide of the Design and Testing of Transmission Modular Restoration Structure Component – "All structural shapes and plates used in fabrication of all sections, foundations, guy plates, and box sections should be of 6061-T6 and 6061-T651 aluminum alloy." Based on above clause of IEEE 1070-2006 Guide, majority of ERS manufacturers around the word, have designed their ERS based on ALUMINIUM ALLOY 6061-T6 & T651 only because of many direct indirect technical advantage e.g Life time anti-corrosion property, lighter weight, better elasticity over steel etc. (2) Price of 1kg Aluminium Alloy 6061-T6 & 6061-T651, is 4 to 5times higher than price of 1kg steel in the market. Commercially both metals are non- comparable. Based on PGCIL's Clause No. 1.2.2, only Steel made product supplier has evidently commercially advantage over Aluminium 6061-T6 made product supplier, which shall be totally demotivating factory for Aluminium ERS supplier to participate in such tender. Hence, our sincere request to PGCIL to remove Galvanized Steel & keep only "The structure components shall be of light weight, made of high strength Aluminum Alloy or a combination of high strength Aluminum Alloy and Hot Dip Galvanized Structural Steel.	Bidder to comply with the requirements stipulated in the bidding documents.
6.	Technical Specification	We respectfully submit that inclusion of steel-based ERS systems in the scope of this tender has raised serious concerns across the industry. We strongly urge the committee to re-evaluate this aspect due to the following technical and commercial reasons: • Lack of Precedent: …….. To date, not a single Indian utility — including PGCIL — has ever procured or deployed a steel-based ERS system. Globally as well, aluminium remains the preferred choice, with over 90% of utilities worldwide relying on aluminium-based ERS due to its proven performance, superior modularity, and long-term reliability in demanding environments • Weight & Mobility: Steel structures are significantly (approx. three times) heavier compared to aluminium, affecting transportability and speed of erection — two critical	Bidder may refer clause 1.2.2, Section-II of the technical specification wherein maximum permissible length and weight of structure column section has been specified. As per the above clause, maximum weight of 200 kgs and maximum length of 4.2m (±5%) is permitted for each structure column section.

		aspects during emergency restoration. ERS standard IEEE 1070 also demands ERS to be of Aluminium because of its light in weight and corrosion resistance for century. • Corrosion & Durability: Steel is inherently prone to corrosion, particularly during prolonged field deployment and exposure to extreme weather conditions. This vulnerability becomes even more critical in high-altitude, coastal, or border-zone regions — precisely the kind of challenging environments where ERS systems are frequently deployed to restore vital transmission infrastructure. Any delay in restoration caused by heavier, corrosion-prone steel systems can lead to prolonged power outages, directly impacting industrial productivity, public services, and regional economies — often resulting in losses running into crores per day • Low-Temperature Performance: In sub-zero environments — such as -40°C conditions often encountered in high-altitude or northern regions — steel tends to lose flexibility and resilience, increasing the risk of brittleness and structural failure. In contrast, aluminium retains its mechanical performance and structural integrity, owing to its superior metallurgical properties, making it a far more reliable choice for ERS deployment in extreme climates • Commercial Parity: While steel-based ERS may seem cost-effective initially, it lacks the modularity, interchangeability, and global field validation that aluminium-based systems offer. Critically, steel ERS solutions do not comply with the internationally recognized IEEE 1070 standard — a benchmark that defines performance, safety, and design parameters for Emergency Restoration Systems. Globally, utilities follow this standard to ensure uniformity, reliability, and operational readiness during emergencies. Deviation from such best practices not only compromises technical integrity but also risks fragmenting the standardization efforts that PGCIL and other Indian utilities have diligently maintained for over two decades. In view of the above, we humbly request that only modular aluminium-based ERS systems, conforming to IEEE 1070 and relevant international standards, be permitted — in alignment with PGCIL's historical procurement practices and performance benchmarks.	Bidder to comply with the requirements stipulated in the bidding documents.

7.	Annexure-A (BDS)	**Request for Confirmation** We seek your kind confirmation on the following point: Whether the Indian aluminium hardware manufacturer (who has not previously manufactured ERS systems) is eligible as a bidder under Route-2, provided all documentation and technical responsibility requirements are met by…… a qualifying collaborator under Clause 1.1. This structure supports Make in India through local manufacturing, while ensuring global technical compliance and project reliability through proven OEM backing. We sincerely appreciate PGCIL's leadership in setting new benchmarks for ERS deployment in India and look forward to your kind clarification and consideration on the above matters.	Provisions of the Bidding Documents are amply clear and shall prevail. Bidder may refer various alternate routes specified under Annexure-A (BDS) for qualification of the bidder and provisions regarding requirements of applicable formats/ documents/ performance guarantee etc. as specified in the bidding documents. Bidder may also refer clause 3.0 of Annexure-A (BDS) regarding furnishing of documentary evidence in support of the qualifying requirements.
8.	Technical Specification	We would like to draw your attention that a similar specification was also observed in your previous tender, in Spec. No.: 5002002310/OTHERS/DOM/A02-CC CS -3 July 2022. and simultaneously, PGCIL had corrected/ amended the specification. This confirms the usage of only aluminium alloy in structural components via Amendment No. 2 dated 12.07.2022, addressing certain aspects for Package ERS-1. (Copy enclosed). We earnestly seek your clarification for the above-mentioned tender specifications.	Bidder to comply with the requirements stipulated in the bidding documents.
9.	Technical Specification	PGCIL has followed global standards of ERS industry by correcting/amending the specifications to include only Aluminum ERS structures in 2022, in previous tender/Specification number 5002002310/OTHERS/DOM/A02-CC CS -3 July 2022. This was done via Amendment No. 2 dated 12.07.2022. The ERS industry due to its requirements of mobility during emergencies, usage after long storage times, avoiding corrosion in storage and usage – has shifted to aluminum alloy. Utilities in many countries state that they require aluminum towers clearly in tenders. While steel towers	Bidder may refer clause 1.2.2, Section-II of the technical specification wherein maximum permissible length and weight of structure column section has been specified. As per the above clause, maximum weight of 200 kgs and maximum length of 4.2m (±5%) is

		may appear lower cost, they are always expensive in the long run due to corrosion/rusting of equipment, higher weight for transport, and re-galvanizing requirements. We hope PGCIL will support aluminum-based make-in-India ERS, and avoid steel ERS brought to India by foreign companies. This is very important for reliable disaster recovery in India, since steel ERS usually rust in storage or after field use. This will lead to wasted investment of public/taxpayers' money, on top of revenue loss due to inability to restore transmission lines. We look forward to your clarification on this.	permitted for each structure column section. Bidder to comply with the requirements stipulated in the bidding documents.
10.	General	We understand that in the above-referenced tenders, certain specification clauses permit foreign bidders or their agents in India to supply ERS structures. This contradicts the spirit and intent of the Government of India's Make in India policy, as outlined in letter No. CEA/PLG/R&D/MII/2025 dated 5th March 2025, issued by the Chief Engineer (ET&I) and Nodal Officer (Make in India), Ministry of Power. We would like to highlight critical challenges associated with the use of steel ERS structures, and the global preference for aluminium alloy, based on the following: 1. Logistical Challenges: Steel is nearly three times heavier than aluminium (density of 7.85 g/cc vs. 2.7 g/cc), increasing transportation and assembly efforts. As the yield strength is same, both the material require almost same bearing area to resist structural loads. 2. Operational Difficulties: Steel components tend to seize during prolonged storage or in cold climates, complicating emergency deployment. Releasing stuck parts often damages galvanization, promoting rust. 3. High Maintenance Costs: Galvanized steel demands ongoing maintenance, especially in corrosive environments (e.g., coastal or border state regions). Over 10–15 years, total costs may double. 4. Corrosion and Degradation: Steel deteriorates under harsh environmental exposure, reducing the operational lifespan and effectiveness of ERS assets.	It is to clarify that the subject tenders are floated under domestic competitive bidding only and as such foreign bidders cannot participate. Further, bidders are requested to refer ITB Clause 2.1 in Section-III (BDS) of BuyerATC in this regard. Regarding considering aluminium alloy ERS systems, bidder may refer clause 1.2.2, Section-II of the technical specification wherein maximum permissible length and weight of structure column section has been specified. As per the above clause, maximum weight of 200 kgs and maximum length of 4.2m (±5%) is permitted for each structure column section. Bidder to comply with the requirements stipulated in the bidding documents.

		5. Storage Issues: Steel components stored outdoors are highly vulnerable to rust and corrosion, affecting readiness. Due to these reasons, the global ERS industry has largely transitioned from steel to aluminum alloy, which is now the accepted international standard. We urge PGCIL to align with these best practices and promote domestic manufacturing under the Make in India initiative and considering only aluminium alloy ERS systems in tenders.	