



**GLOBAL INVITATION FOR SUBMITTING EXPRESSION OF INTEREST (EOI) FOR SUPPLY AND DEPLOYMENT OF ELECTRIC BUSES (BATTERY OPERATED ELECTRIC VEHICLE) ALONG WITH CHARGING INFRASTRUCTURE FOR METROPOLITAN TRANSPORT CORPORATION, CHENNAI, TAMIL NADU**

**IRT Reference No.: 17/EOI-EB/CP/IRT/2022**

**KfW Reference No.: BMZ209919234/KfW508477**

***Response to Queries***

***Date: 20/07/2022***

**Issuing Authority: Institute of Road Transport, Chennai**

**Important notes:**

- 1. This invitation for Expression of Interest (EoI) issued by IRT is open to all and is an unpriced and non-binding process. This EoI is issued purely to solicit insight and understanding of cutting edge, affordable, sustainable and feasible e-bus technology from prospective bidders. This EoI bears no pre-qualification and qualification criteria for shortlisting participants for the next stage of procurement, if any. Non-submission of a response to this EoI from any prospective bidder/interested party shall not be considered as disqualification for any subsequent procurement processes with respect to procurement of e-buses in Tamil Nadu.**
- 2. This document is the response to queries on the captioned EoI issued by Institute of Road Transport (IRT), Chennai on behalf of Metropolitan Transport Corporation (MTC), Chennai in June 2022. This response to queries shall constitute part of the EoI document.**
- 3. This document is the response to queries received post publication of the EoI and considered important in the context of the EoI process. IRT has endeavoured to respond to all queries it had received. For any unanswered queries, the provisions of the EoI remain unchanged.**
- 4. The response to queries is split into two parts as follows:**
  - 1. Commercial / non-technical queries and**
  - 2. Technical queries**

**Part I: Response to queries pertaining to Clause 3, 4, 5, 6 and 7 of the EoI (i.e. Commercial / Non-technical Provisions)**

S No	EoI Pg. No.	EoI Clause Reference No.	EoI Provisions	Queries by the Participants	Draft Response
1.	17	Annexure 2: General Information (Sr. No. 6)	Vehicle Manufacturing Capacity: A certificate from the statutory auditor of the bidder shall be submitted showcasing detailed plant wise certificate for 1. Installed Capacity 2. Utilized Capacity	Request authority to kindly allow Self certification on the Bidder's letter head for providing the details regarding the Vehicle manufacturing capacity.	The EoI provision remains unchanged.
2.	17	Annexure 2: General Information (Sr. No. 6)	Vehicle Manufacturing Capacity: 1) Address of the Plant 2) Photographs of the plant 3) Installed Bus Manufacturing Capacity for the last 10 financial years.	Vehicle Manufacturing Capacity: 1) Address of the Plant 2) Photographs of the plant 3) Installed Bus Manufacturing Capacity for the last <del>10</del> 4 financial years  <b>Justification:</b> Olectra Greentech Limited is the First to induct Electric Buses in India and Our Electric Bus manufacturing was started in 2017.  Kindly consider.	Please provide installed bus manufacturing capacity for the last 4 financial years. Please note this is not going to be evaluated or scored.
3.	17	Annexure 2: General Information (Sr. No. 6)	Vehicle manufacturing Capacity: 3.Installed bus manufacturing capacity for the last 10 financial years	Request that Vehicle Manufacturing capacity assessment to be for last 3 years instead of last 10 financial years	Please provide installed bus manufacturing capacity for the last 4 financial years. Please note this is not going to be evaluated or scored.

S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
4.	18	Annexure 2: General Information (Sr. No. 11.b)	Quality System Certification (e.g., ISO: 16949-1999)	Request to accept certificate from IATF 16949:2016	OK
5.	19	Annexure 3: Financial Statement		Request authority to kindly allow the Bidder to use the credentials of its Parent company through aggregation for providing the financial details to enable wider participation.	OK. The participants can share their associate firms' (parent / subsidiary /sister concern) financial and technical capacities.
6.	19	Annexure 3: Financial Statement	Financial Statement: Annual turnover: The above turnover includes income only from transportation service business. Other incomes such as interest, dividend and trade income are excluded from the above-mentioned turnover.	Request to consider turnover of the Parent company and the subsidiary companies combined	Kindly refer to response no 5 above.
7.	20	Annexure 4: Performance Statement		Request authority to kindly allow the Bidder to use the credentials of its Parent company through aggregation for providing the Operational experience details to enable wider participation.	Kindly refer to response no 5 above.
8.	22	Annexure 6: Concept cum brief proposal	Including, but not limited to the following; a. E-bus and charging solution meeting technical and functional	Request authority to kindly allow the Bidder to submit the details mentioned in this Annexure 6 at the time of submission of the	The Eol provision remains unchanged.

S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
		for Pilot Project	<p>requirements of MTC (Which would include details in terms of area requirement for depot and charging infrastructure, operation and maintenance standards and procedures to be followed, inventory management for spare parts, key aggregates and critical components such as batteries)</p> <p>b. Detailed training programme for MTC's manpower.</p> <p>c. Support required from MTC in terms of access of bulk power, space requirement, approvals and ESHS or regulatory compliance and any other additional requirement.</p> <p>d. Tentative timelines for delivery and deployment of e-buses and support infrastructure.</p> <p>e. Limitations if any.</p>	Tender that would be floated in near future.	
9.	22	Annexure 6: Concept cum brief proposal for Pilot Project	Detailed training programme for MTC's manpower.	Request authority to kindly clarify/confirm in whose scope on comprehensive AMC and Operation of Buses.	As indicated in para 8 of the clause 1 of the Eol, MTC will procure and operate the 100 electric buses. After the RfP, the successful bidder will be required to supply the buses, along with charging infrastructure, bus repair

S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
					<p>and maintenance equipment and spares etc. at allotted depots in the city of Chennai and provide training on e-buses and charging infrastructure to MTC staff.</p> <p>The Contractor may be asked to provide comprehensive maintenance service for the 100 e-buses for a period to be specified in the RfP.</p>
10.		General Query	To be added: Subsidiary / Associate criteria clause	<p>Request authority to kindly allow the Subsidiary / Associate criteria clause as mentioned below, where the Bidder can use the credentials of the Subsidiary / Associate / Parent company for the qualification purpose of the tender. This will enable wider participation.</p> <p><b><u>Subsidiary/Associate Criteria:</u></b>  <b>Aggregating the financial, technical, manufacturing and operational experience capability of any Subsidiary /Associates / Parent of the Bidder for the purpose of meeting the</b></p>	<p>Kindly refer to response no 5 above.</p>

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				<p><b>respective Qualifications Criteria required by the Bidder shall be permitted.</b></p> <p>For the purpose hereof, the word “Parent / Subsidiary /Associate” shall mean, in relation to either Party {and/or consortium members}, a person who controls, is controlled by, or is under the common control with such Party {or consortium member} (as used in this definition, the expression “control” means, with respect to a person which is a company or corporation, the ownership, directly or indirectly, of more than 50% (fifty per cent) of the voting shares of such person, and with respect to a person which is not a company or corporation, the power to direct the management and policies of such person, whether by operation of law or by contract or otherwise);</p>	
11.		General Query		Price bid format not provided, request authority to confirm.	This is an Eol and does not need a price bid to be submitted.

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12.		General Query		kindly also update whats the process steps after the closing date of the bids submission on 22 July 2022	Kindly refer to Clause 3 of the Eol.
13.		General Query	-	<p>We have gone through the Eol published and understood that Bus Procurement and Charging &amp; Electrical Infra development are clubbed as single prospect. We wish to furnish following suggestions regarding bus charging infrastructure along with robust upstream electrical Infrastructure requirement.....</p> <p>Further we recommend to include solar PV and Bettery Energy storage in e-Bus Depots to have below advantages.....</p> <p>HT incoming supply and Liasioning with TANGEDCO is inevitable for creating Bus charging infrastructure in Tamilnadu. We are already operating in Tamilnadu</p>	<p>The invitation for Eol is a process open to all. The purpose of the Eol is purely to solicit insight and understanding of cutting edge, affordable, sustainable and feasible e-bus technology from prospective bidders. Sharing knowledge on emerging e-bus procurement deployment models is also encouraged through this process. The Authority shall take suitable decisions on e-bus procurement and deployment models based on the market perception evolved through this process.</p>



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				<p>for distribution infra works of TANGEDCO and having vast experience in Distribution infrastructure.....</p> <p>We are happy to associate with you for further developing the Charging &amp; Electrical Infrastructure for Bus Depots as well as Opportunity Charging in separate RFP for below mentioned scopes.....</p> <p>In this regard we request your consideration in releasing separate RFP for Charging &amp; Electrical Infrastructure for better quality, futuristic fleet upgradation and cost competitiveness.</p> <p>Please do let us know about your views. A line of feedback shall facilitate us to understand and take forward further discussions accordingly.....</p>	

**PART II: Response to queries pertaining to Clause 1 and 2 of the EoI (i.e. Technical Provisions)**

S No	EoI Pg. No.	EoI Clause Reference No.	EoI Provisions	Queries by the Participants	Draft Response
1.	2	1. Background and Project Scope	The bus fleet includes ordinary, express, deluxe, AC and woman cum children special services operating from 31 depot spread across Chennai Metropolitan region.	Would there be limited no of depots to be operated from? Request authority to kindly provide the depot details.	The exact depot details will be provided at RfP stage. Any of MTC's depots can be selected for deployment.
2.	2	1. Background and Project Scope	As part of the above project, GoTN is planning to procure and deploy one hundred (100) 12 m, AC e- buses along with charging infrastructure, bus repair and maintenance equipment and spares etc. to be setup by the Bus Supplier at allotted depot, in the city of Chennai and provide training for e-buses and charging infrastructure as part of Metropolitan Transport Corporation (MTC) Chennai operations on pilot basis ("Pilot e-bus Project").	Request authority to share the location and proposed plot drawing for the Depot infra development. Approx area required is around 4-5 acres for the typical 100 Bus depot charging and maintenance facility. IF it is existing depot, then request authority to share the facilities available and agreed to share with the Bidder.	The exact depot details will be provided at RfP stage. Any of MTC's depots can be selected for deployment.
3.		General Query		We request Authority to kindly confirm the Charging site/ Depot details i.e. area, layout of depots, space available and number of	The given ranges have been stated. The intention of the EoI is to allow potential bidders to demonstrate their best possible

S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
				buses in each depot, Route Plans and dead Kms.	technologies to meet with these requirements.
4.	3	2.1. Operational and Technical Requirements (b)	b) Low-floor (400 mm floor height) 12 m length buses for Public Transport (PT) system in urban areas of Chennai	Request Authority to <b>modify the floor height to 900 mm</b> for ease of operations and maintenance under flooding / harsh urban conditions.	The Eol provision remains unchanged.
5.	3	2.1. Operational and Technical Requirements (c)	Serviceable life of standard bus is 12 years or 12 lakh km whichever is earlier	Request Authority to clarify whether is this service contract covergae required upto end of 12 yrs	The warranty requirements are specified in the Eol. For the avoidance of doubt please note that this is a supply contract not a GCC
6.	3	2.1. Operational and Technical Requirements (c)	Serviceable life of standard bus is 12 years or 12 lakh km whichever is earlier d) Energy efficient, environment friendly, safe; modern, aesthetic and reliable bus design is expected	Request authority for the Serviceable life of standard bus as 10 years	The Eol provision remains unchanged.
7.	3	2.1. Operational and Technical Requirements (e)	e) Meets all statutory, legal and other requirements of: (i) all applicable Central, State and local laws (including Acts, Rules & Regulations), (ii) the Central Motor Vehicles Rules (CMVR) of India / Safety Norms (iii) Emission, noise & other norms	e) Meets all statutory, legal and other requirements of:(i) all applicable Central, State and local laws (including Acts, Rules & Regulations), (ii) the Central Motor Vehicles Rules (CMVR) of India / Safety Norms (iii) Emission, noise & other norms	OK

S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
			(iv) Compliance with Phased Manufacturing Programme (PMP) and Production Linked Incentives (PLI) Scheme issued by Govt. of India and any other similar applicable guidelines.	(iv) Compliance with Phased Manufacturing Programme (PMP) and Production Linked Incentives (PLI) Scheme <b>(As applicable)</b> issued by Govt. of India and any other similar applicable guidelines.  <b>Justification:</b> PLI Scheme is applicable to the parties who had applied for the scheme and not applicable for others.	
8.	3	2.2 Operating Conditions (d)	Operating continuously over poor-quality road structures	Need clarification, since the poor road conditions and structures may affect the vehicle and cause discomfort for the passengers as well.	Full air suspension is required to mitigate this issue.
9.	3	2.2 Operating Conditions (g)	g) Daily operating range and charging window under categories as follows: i. Category 1: Daily Operating Range of 350 km with Depot Charging during the night and a Potential charging window during the day limited to a maximum of 4 slots of a maximum of 10 minutes each	Request authority to kindly allow the Bidders complying with atleast one of the four categories and consider them as a qualified bidder.	Participants are allowed to submit solutions in one or more categories based on the technologies available with them. For the avoidance of doubt, please note that this is not a pre-qualification process and the objective of this Eol is market sounding and exploring various

S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
			<p>ii. Category 2: Daily Operating Range of 350 km with Depot Charging during the night and a potential charging window during the day limited to a single slot of a maximum of 30 minutes.</p> <p>iii. Category 3: Daily Minimum Operating Range of 250 km with Depot Charging during the night and a Potential charging window during the day limited to a maximum of 4 slots of a maximum of 10 minutes each</p> <p>iv. Category 4: Daily Minimum Operating Range of 250 Km with Depot Charging during the night and a potential charging window during the day limited to a single slot of a maximum of 30 minutes</p>		solutions available to meet MTC's functional requirements.
10.	3	2.2 Operating Conditions (g)	<p>g) Daily operating range and charging window under categories as follows:</p> <p>i. Category 1: Daily Operating Range of 350 km with Depot Charging during the night and a Potential charging window during the day limited to a maximum of 4 slots of a maximum of 10</p>	<p>Kindly request you to delete Category 1 and Category 3 as these are for Pantograph Charging.</p> <p><b>Justification:</b> Pantograph charging is new to India. No OEM in India has the</p>	<p>Please refer to Point 9 above.</p> <p>The Eol provision remains unchanged.</p>

S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
			<p>minutes each</p> <p>ii. Category 2: Daily Operating Range of 350 km with Depot Charging during the night and a potential charging window during the day limited to a single slot of a maximum of 30 minutes.</p> <p>iii. Category 3: Daily Minimum Operating Range of 250 km with Depot Charging during the night and a Potential charging window during the day limited to a maximum of 4 slots of a maximum of 10 minutes each</p> <p>iv. Category 4: Daily Minimum Operating Range of 250 Km with Depot Charging during the night and a potential charging window during the day limited to a single slot of a maximum of 30 minutes</p>	Pantograph charging technology and all existing manufacturers in India are new to the technology, kindly request you to allow charging standards as per OEM.	
11.	3	2.2 Operating Conditions (g.i)	Category 1: Daily Operating Range of 350 km with Depot Charging during the night and a Potential charging window during the day limited to a maximum of 4 slots of a maximum of 10 minutes each.	Need clarification on opportunity charging time slot. If the provided time slot will include the travel time to depot for potential charging.	The time slot mentioned is the time available for a daytime opportunity charging window. The opportunity charging locations shall be finalised to minimise the travel time to the opportunity charging area.

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					Our intent is to provide terminal-based opportunity charging but this does not preclude alternative proposals from the participants.
12.	4	2.2 Operating Conditions (g.i)	Category 1: Daily Operating Range of 350 km with Depot Charging during the night and a Potential charging window during the day limited to a maximum of 4 slots of a maximum of 10 minutes each	Request to provide 1 depot charging at night and 8 no's of opportunity charging slot of 10 min each to cover operational range of 350 km.	Participants are encouraged to submit alternative feasible solutions and show how these are better or more workable than those listed.
13.	4	2.2 Operating Conditions (g.ii)	g) ii. Category 2: Daily Operating Range of 350 km with Depot Charging during the night and a potential charging window during the day limited to a single slot of a maximum of 30 minutes.	Request Authority to give opportunity charging time of 75 min for running daily operating range 350 km.  This will also ensure smooth uninterrupted operations over the 12 year contract period.	The participants are encouraged to submit alternative feasible solution and show how these are better or more workable than those listed.
14.	4	2.2 Operating Conditions (g.ii)	Category 2: Daily Operating Range of 350 km with Depot Charging during the night and a potential charging window during the day limited to a single slot of a maximum of 30 minutes.	Since 4 slots of 10mins were considered for category 1 charging. Time slot of 40 mins of potential charging for single slot needs to be considered.	Please refer to Point 12 above.
15.	4	2.2 Operating Conditions (g.ii)	Category 2: Daily Operating Range of 350 km with Depot Charging during the night and a potential	Request to provide 1 depot charging at night and 2 no's of opportunity charging of 40 min to	Please refer to Point 12 above.

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			charging window during the day limited to a single slot of a maximum of 30 minutes.	cover operational range of 350 km.	
16.	4	2.2 Operating Conditions (g.ii)	Category 2: Daily Operating Range of 350 km with Depot Charging during the night and a potential charging window during the day limited to a single slot of a maximum of 30 minutes.	Request authority to provide 90 min of opportunity charging. As per the inputs from different corporations pan India, the km running per day is around 220kms. Request to reconsider	The operational requirements of MTC are 300+km per day. The participants are encouraged to submit alternative feasible solution and show how these are better or more workable than those listed.
17.	4	2.2 Operating Conditions (g.iii)	Category 3: Daily Minimum Operating Range of 250 km with Depot Charging during the night and a Potential charging window during the day limited to a maximum of 4 slots of a maximum of 10 minutes each	Request to provide 1 depot charging at night and 5 no's of opportunity charging slot of 10 min each to cover operational range of 250 km	Please refer to Point 12 and 16 above.
18.	4	2.2 Operating Conditions (g.iv)	g) - iv) Category 4: Daily Minimum Operating Range of 250 Km with Depot Charging during the night and a potential charging window during the day limited to a single slot of a maximum of 30 minutes	Request Authority to give opportunity charging time of 45 min for running daily operating range 250 km.  This will also ensure smooth uninterrupted operations over the 12 year contract period.	Please refer to Point 12 and 16 above.
19.	4	2.2 Operating Conditions (g.iv)	Category 4: Daily Minimum Operating Range of 250 Km with Depot Charging during the night	Is the category type 4 that would be opted for? Request authority to kindly clarify.	All four categories represent different operational schedules for MTC. The category to be



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			and a potential charging window during the day limited to a single slot of a maximum of 30 minutes		selected will be indicated at the RfP stage based on the solutions provided in response to the Eol.
20.	4	2.2 Operating Conditions (g.iv)	Category 4: Daily Minimum Operating Range of 250 Km with Depot Charging during the night and a potential charging window during the day limited to a single slot of a maximum of 30 minutes	Request to provide 1 depot charging at night and 1 no's of opportunity charging of 45 min each to cover operational range of 250 km.	Please refer to Point 12 and 16 above.
21.	4	2.2 Operating Conditions (g.iv)	Category 4: Daily Minimum Operating Range of 250 Km with Depot Charging during the night and a potential charging window during the day limited to a single slot of a maximum of 30 minutes	Request authority to provide 60 min of opportunity charging. As per the inputs from different corporations pan India, the km running per day is around 220kms. Request to reconsider	Please refer to Point 12 and 16 above.
22.	4	2.2 Operating Conditions (h)	h) Vehicles need to accept both Opp. Charge pantograph charging and CCS2 plug in charging.	Request authority to kindly modify the clause as: "Vehicles need to accept both Opp. Charge pantograph charging <b>(OR)</b> CCS2 plug in charging."  Request Authority to not make Pantogrpah flash charging mandatory as it is still in technological developmental/protyotypical stages in the country. Also, most OEMs are deploying GB-T/CCS-2	Please refer to Point 9, 12 and 16 above.

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				charging standard in STU tenders and projects in all metro cities.	
23.	4	2.2 Operating Conditions (h)	Charging type required: Vehicles need to accept both Opp. Charge pantograph charging and CCS2 plug-in charging.	Vehicle will accept plug in or Pantograph charging. Request to kindly make pantograph charging an option.	Please refer to Point 9, 12 and 16 above.
24.	4	2.2. Operating Conditions (h)	h) Vehicles need to accept both Opp. Charge pantograph charging and CCS2 plugin charging.	Kindly request you not to make the Pantograph charging requirement as mandate and request you to allow as per the Manufacturer design.  <b>Justification:</b> Pantograph charging is new to India and existing manufacturers in India are new to the technology, kindly request you to allow charging standards as per OEM.	Please refer to Point 9, 12 and 16 above.
25.	4	2.2 Operating Conditions (h)	Vehicles need to accept both Opp. Charge pantograph charging and CCS2 plug- in charging.	CCS2 plug- in charging can be provided. Request authority to accept.	Please refer to Point 9, 12 and 16 above.
26.	5	2.3: Performance	Min. grade capability on pull away - 20%	Request to modify the requirement as 17% with GVW in line with FAME 2 requiriement. Also, as per indian road congress data and our field study, max gradients are available upto 7%.	The Eol provision remains unchanged.

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				Considering overload and grade speed requirements, 12-14% gradeability may be sufficient.	
27.	5	2.3: Performance	Certified UITP e-SORT energy consumption figures to be provided at RFP stage - SORT 1, 2 & 3 - Mandatory	Request to modify the requirement as preferred. AIS 039 certificate can be provided as per current FAME 2 guideline. eSORT values can be given during proto vehicle inspection	The Eol provision remains unchanged. Kindly note that this is to be provided at the RfP stage not this Eol.
28.	5	2.3: Performance	Min Speed without limiter - 80 Kph	75 kph is the min speed without speed limiter as per CMVR	The Eol provision remains unchanged
29.	5	2.3: Performance	Min constant speed capability on a 10% incline: 30 kph	20 kph	The Eol provision remains unchanged
30.	5	2.3: Performance	Min acceleration from rest on a flat/level road: 1.0 m/s <sup>2</sup>	Will Meet as per UBS-II	The Eol provision remains unchanged
31.	5	2.3: Performance	Minimum acceleration time on a flat/level road from 0-30 kph: 8 sec	Will Meet as per UBS-II	The Eol provision remains unchanged
32.	5	2.3: Performance	Certified UITP e- SORT energy consumption figures to be provided at RFP stage : SORT 1, 2 & 3	As per CMVR/ FAME II	The Eol provision remains unchanged. Sort will be required at RFP stage as part of the evaluation process
33.	5	2.3: Performance	Min. speed without speed limiter: 80kph	Request to kindly amend to 70 + - 5 kmph	The Eol provision remains unchanged
34.	5	2.3: Performance	Min. grade capability on pull away: 20%	Request to kindly amend to 17% as per UBS-II DHI guideline	The Eol provision remains unchanged

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35.	5	2.3: Performance	Min constant speed capability on a 10% incline: 30 kph	Request this be as per CMVR	The Eol provision remains unchanged
36.	5	2.3: Performance	Min acceleration from rest on a flat/level road: 1.0 m/s <sup>2</sup>	Request this be as per CMVR	The Eol provision remains unchanged
37.	5	2.3: Performance	Minimum acceleration time on a flat/level road from 0-30 kph: 8 sec	Request this be as per UBS-II	The Eol provision remains unchanged
38.	5	2.3: Performance	Certified UITP e-SORT energy consumption figures to be provided at RFP stage: SORT 1, 2 & 3	Request this be as per CMVR	The Eol provision remains unchanged
39.	5	2.3: Performance	Min. speed without speed limiter: 80 kph	<del>80</del> <u>75</u> kph  <b>Justification:</b> Shall be as per UBS II	The Eol provision remains unchanged
40.	5	2.3: Performance	Minimum acceleration time on a flat/level road from 0-30 kph: 8 sec	<del>Minimum</del> <u>Maximum</u> acceleration time on a flat/level road from 0-30 kph: 8 sec  <b>Justification:</b> Shall be as per UBS II	The Eol provision remains unchanged
41.	5	2.3: Performance	Min. grade capability on pull away: 20%	<del>20%</del> <u>17%</u>  <b>Justification:</b> Shall be as per UBS II	The Eol provision remains unchanged
42.	5	2.3 Dimensions :	Floor height - <400 mm for >60% of passenger saloon	<b>Request to modify the requirement as 60% ±5%</b>	The Eol provision remains unchanged. The participants are encouraged to submit alternative

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					feasible solutions and show how these are better or more workable than those listed.
43.	5	2.3 Dimensions :	Floor height - <400 mm for >60% of passenger saloon	Request Authority to <b>modify the floor height to 900 mm</b> for ease of operations and maintenance under flooding / harsh urban conditions.	The Eol provision remains unchanged.
44.	5	2.3 Dimensions :	Maximum Length: 12,000 mm	Upto 12080mm length	The Eol provision remains unchanged
45.	5	2.3 Dimensions :	Maximum Height: 3,300 mm	Upto 3400+/- 50 mm height	The Eol provision remains unchanged.
46.	5	2.3 Dimensions :	Floor Height: <400 mm for >60% of passenger saloon	Low Floor area 50% total area	The Eol provision remains unchanged
47.	5	2.3 Dimensions :	Maximum Height: 3,300 mm	Requesting this be allowed upto max 3500 mm	The Eol provision remains unchanged
48.	5	2.3 Dimensions :	Floor Height: <400 mm for >60% of passenger saloon	Requesting this be allowed upto 400 mm Floor height and 50% of total saloon Area	The Eol provision remains unchanged
49.	5	2.3 : Structure	Maximum Height	3,800 mm	The Eol provision remains unchanged
50.	5	2.3: Structure	Minimum design life: 15 years	10-12 years	The Eol provision remains unchanged
51.	5	2.3: Structure	Aluminium or galvanised or stainless steel design. Minimum structural warranty period: 12 years	3 years/ 3 lac km whichever is earlier	The Eol provision remains unchanged

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52.	5	2.3: Structure	Minimum design life: 15 Years	15 years. <a href="#">Refurbishment after 8years</a>  <b>Justification:</b> Shall be as per UBS II	OK
53.	5	2.3: Passenger Capacity	Passenger Capacity	In case of 900mm floor height bus, request authority to kindly make Wheel chair requirement as OPTIONAL.	The Eol provision remains unchanged
54.	5	2.3: Passenger Capacity	No. of standees - 35 min	Request to modify the requirement as "as per AIS 052" Longer range vehicles require to carry more battery weight. Max allowed GVW in CMVR restricts the no. of standees in the type approval certificate.	The Eol provision remains unchanged. The participants are encouraged to submit alternate solutions at the Eol stage for review
55.	5	2.3: Passenger Capacity	Number of standees: 35	Minimum 31 number of standees	The EOI provision remains unchanged. The participants are encouraged to submit alternate solutions at the EOI stage for review
56.	5	2.3: Passenger Capacity	Number of standees: 35	Request that this be as per AIS-052	The Eol provision remains unchanged. The participants are encouraged to submit alternate solution at the EOI stage for review

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57.	5	2.3: Passenger Capacity	Number of seats: 35	Seating capacity max	Minimum 35 seats with 35 standing; any configurations achieving this will be acceptable
58.	6	2.3: Battery	Battery: Battery certified safety standard - UN ECE R100 - Mandatory	Request authority to accept AIS 039 certificate as both ECE R100 and AIS 039 are the same	The Eol provision remains unchanged
59.	6	2.3: Battery	Battery Type: To be proposed by manufacturer	LFP battery type will be provided	Please refer to Point 19. The solution can be considered as long as it is meeting the functional requirements outlined in the Eol.
60.	6	2.3: Battery	Capacity (kwh): To be proposed by manufacturer	400 kWh	Please refer to Point 19. The solution can be considered as long as it is meeting the functional requirements outlined in the Eol.
61.	6	2.3: Battery	Maximum battery temperature rise when being charged at 600 kW for 10 minutes: < 20°C	240 kW at 32°C	The Eol provision remains unchanged
62.	6	2.3: Battery	Battery certified standard: UN ECE R100	Will meet as per AIS 38 part 2	The standard is non-negotiable on the basis of safety. The Eol provision remains unchanged
63.	6	2.3: Battery	Batteries and the battery management system fire suppression: To be proposed by manufacturer	FDSS can be provided for fire suppression on the vehicle.	To be included in Eol response submitted by the participant

S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
64.	6	2.3: Battery	Min. life time: 8 Years	Request to change Battery life to be 5 years instead of 8 years	The warranty period shall remain at 8 years. The Eol provision remains unchanged
65.	6	2.3: Battery	Maximum battery temperature rise when being charged at 600 kW for 10 minutes: < 20°C	Request to change 20- 35 degree C	Please demonstrate this with submission of the test reports as part of the Eol.
66.	6	2.3: Battery	Minimum range on a single charge (between 90% to 20% SoC): >100 km	Request to change for 20 to 100% SOC	The Eol provision remains unchanged
67.	6	2.3: Battery	Battery certified safety standard: UN ECE R100	Request to be as per AIS 048	The Eol provision remains unchanged
68.	5	2.3: Battery	Battery certified safety standard: UN ECE R100	UN ECE R100 <a href="#">or any other equivalent safety standard</a>  <b>Justification:</b> Shall be as per UBS II	The Eol provision remains unchanged. Any other equivalent safety standards need to be provided in the response to the Eol by the bidder.
69.	6	2.3: Charging System	Maximum opportunity charging time at bus termini: 10 minutes (category 1 and 3) / 30 minutes (category 2 and 4)	For Category 2, request authority to kindly increase the Opp charging time to 75 mins and for Category request authority to kindly increase the Opp charging time to 45 mins to meet the Operational range requirements as mentioned.	Please refer to Point 19. The solution can be considered as long as it is meeting the functional requirements outlined in the Eol.
70.	6	2.3: Charging System	Maximum opportunity charging time at bus terminal: 10 minutes (category 1 and 3) / 30 minutes (category 2 and 4)	Opportunity Charging category 3&4, min 60 minutes reqd.	Please refer to Point 19. The solution can be considered as long as it is meeting the



S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
					functional requirements outlined in the Eol.
71.	6	2.3: Charging System	The supplier will be expected to provide both flash and plug-in charging equipment (to be shared between all buses at locations designated by the customer). The nominated depots and termini will have power supply (typically up to 3.5 kVA) provided within 100m of the designated charging location. The supplier will arrange for all civil works between the grid access and the charging point as well as the charger installation and commissioning. : To be proposed by manufacturer	Off board DC fast charger can be provided.	To be provided by the participant in response to Eol for review.
72.	6	2.3: Charging System	Maximum opportunity charging time at bus termini: 10 minutes (category 1 and 3) / 30 minutes (category 2 and 4)	Requesting for 2 no's opportunity charge of 40 min each or 8 no's slot of 10 min each for category 1 & 2 and 1 no's opportunity charge of 45 min or 5 no's slot of 10 min each for category 3& 4	Please refer to Point 19. The solution can be considered as long as it is meeting the functional requirements outlined in the Eol.
73.	6	2.3: Charging System	The supplier will be expected to provide both flash and plug-in charging equipment (to be shared between all buses at locations designated by the customer). The	Kindly clarify the whether it is 3.5KVA or 3.5 MVA. However it may further vary depending upon the depot and terminal charging load demand.	3.5 MVA, 3500 kVA

S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
			nominated depots and termini will have power supply (typically up to 3.5 kVA) provided within 100m of the designated charging location. The supplier will arrange for all civil works between the grid access and the charging point as well as the charger installation and commissioning.: To be proposed by manufacturer		
74.	6	2.3: Charging System	Charging solutions requiring a power supply greater than 3.5 MVA at a single location will be conditional until TANGEDCO confirms availability of power supply	Kindly clarify the whether it is 3.5KVA or 3.5 MVA. However it may further vary depending upon the depot and terminal charging load demand.	3.5 MVA, 3500 kVA
75.	6	2.3: Charging System	Full charging time with depot charger: 60 - 120 minutes	<p>60 - <del>120</del> <u>180</u> minutes</p> <p><b>Justification:</b></p> <p>1. Charging Time: Since the operations are for 20Hours, kindly consider the charging time for 3hours</p> <p>2. Pantograph charging is new to India and existing manufacturers in India are new to the technology, kindly request you to</p>	<p>Participants are allowed to submit solutions in one or more categories based on the technologies available with them.</p> <p>For the avoidance of doubt, please note that this is not a pre-qualification process and the objective of this Eol is market sounding and exploring various solutions available to meet MTC's functional requirements.</p>

S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
				allow charging standards as per OEM.	
76.	6	2.3: Charging System	Maximum opportunity charging time at bus termini: 10 minutes (category 1 and 3) / 30 minutes (category 2 and 4)	<p><del>10 minutes (category 1 and 3) / 30</del> <u>45 minutes (category 2 and 4)</u></p> <p><b>Justification:</b></p> <p>1. Charging Time: Since the operations are for 20Hours, kindly consider the charging time for 3hours</p> <p>2. Pantograph charging is new to India and existing manufacturers in India are new to the technology, kindly request you to allow charging standards as per OEM.</p>	Please refer to Point 19. The solution can be considered as long as it is meeting the functional requirements outlined in the Eol.
77.	6	2.3: Charging System	The supplier will be expected to provide both flash and plug-in charging equipment (to be shared between all buses at locations designated by the customer). The nominated depots and termini will have power supply (typically up to 3.5 kVA) provided within 100m of the designated charging location. The supplier will arrange for all civil works between the	The supplier will be expected to provide <del>both</del> flash and <u>or</u> plug-in charging equipment (to be shared between all buses at locations designated by the customer). The nominated depots and termini will have power supply (typically up to 3.5 kVA) provided within 100m of the designated charging location. The supplier will arrange for all civil works between the	Please refer to Point 19. The solution can be considered as long as it is meeting the functional requirements outlined in the Eol.

S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
			grid access and the charging point as well as the charger installation and commissioning.	<p>grid access and the charging point as well as the charger installation and commissioning.</p> <p><b>Justification:</b></p> <p>1. Charging Time: Since the operations are for 20Hours, kindly consider the charging time for 3hours</p> <p>2. Pantograph charging is new to India and existing manufacturers in India are new to the technology, kindly request you to allow charging standards as per OEM.</p>	
78.	6	2.3: Charging System	The supplier will be expected to provide both flash and plug-in charging equipment (to be shared between all buses at locations designated by the customer). The nominated depots and termini will have power supply (typically up to 3.5 kVA) provided within 100m of the designated charging location. The supplier will arrange for all civil works between the grid access and the charging point	This is in regards to the above tender, if possible, kindly send the details and technical specifications for Electrical buses and the charging ports	Kindly refer to Clause 2.3 of the Eol. The objective of this Eol is market sounding and exploring various solutions available to meet MTC's functional requirements. Any additional information shall be provided at RfP stage.

S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
			as well as the charger installation and commissioning. : To be proposed by manufacturer		
79.	7	2.3: Suspension	Suspension: Full air suspensions plus minimum kneeling capability - >75 mm	Request authority to modify the requirement as "60 mm" 60 mm is the standard kneeling recommended in 400 mm floor bus suspension design.  Also, Request authority to kindly make the kneeling requirement as Optional for 900mm Floor height bus.	The Eol provision remains unchanged.
80.	7	2.3: Suspension	Full air suspensions plus minimum kneeling capability: >75mm	Request to change to min 60mm	The participant may provide this solution based on functional requirements of the Eol document for review subject to the kneeling height being less than 325 mm.
81.	7	2.3: Suspension	Full air suspensions plus minimum kneeling capability: >75mm	<del>&gt;75</del> > 60 mm <b>Justification:</b> Shall be as per UBS II	The Eol provision remains unchanged. Please see Point 80 above.
82.	7	2.3: Braking	All round disc braking with ABS: To be proposed by manufacturer	Front Disc & Rear Drum with ABS	The Eol provision remains unchanged
83.	7	2.3: Doors		Request to consider In-Swing door as standard requirement.	The solution can be considered as long as it is meeting the functional requirements outlined

S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
					in the Eol if it can be demonstrated to prevent water ingress during storm conditions
84.	7	2.3: Doors	Front entrance glider doors with positive seal bottom edge to prevent water ingress: To be proposed by manufacturer	Ahead of Front Axle as per AIS 052	The solution can be considered as long as it is meeting the functional requirements outlined in the Eol if it can be demonstrated to prevent water ingress during storm conditions
85.	7	2.3: Doors	Rear exit plug- slide doors: To be proposed by manufacturer	In between Front axle & rear axle as per AIS 052	The solution can be considered as long as it is meeting the functional requirements outlined in the Eol.
86.	7	2.3: Doors	Front entrance glider doors with positive seal bottom edge to prevent water ingress: To be proposed by manufacturer	Request to change to Inswing Door	The solution can be considered as long as it is meeting the functional requirements outlined in the Eol.
87.	7	2.3: Doors	Rear exit plug-slide doors: To be proposed by manufacturer	Request to change to inswing/Outswing Door	The Eol provision remains unchanged
88.	7	2.3: Doors	Rear exit plug-slide doors: To be proposed by manufacturer	Rear exit plug-slide doors ( <a href="#">Ahead of Rear Axle or Behind Rear Axle</a> )  <b>Justification:</b> Shall be as per UBS II	The solution can be considered as long as it is meeting the functional requirements outlined in the Eol.
89.	7	2.3: Doors	Front entrance glider doors with positive seal bottom edge to prevent water ingress: To be proposed by manufacturer	This is in regards to the above tender, if possible, kindly send disabled people access in the door way	Please refer to Clause 2.3 of Eol. Further details shall be provided at RfP stage.

S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
			Rear exit plug-slide doors: To be proposed by manufacturer		
90.	7	2.3: Doors	Front entrance glider doors with positive seal bottom edge to prevent water ingress: To be proposed by manufacturer Rear exit plug-slide doors: To be proposed by manufacturer	Disabled people access in the door way. 1. Should it be in the front only 2. Should there be a wheel chair usage ramp too	1. No, either entrance or exit can be used as the primary stepless. 2. Refer to Clause 2.3 of Eol for the minimum requirements
91.	7	2.3: Driver's Cab	Ergonomic requirements: ISO 16121- 1, 2 and 3	AIS 52 will be followed	The solution can be considered as long as it is meeting the functional requirements outlined in the Eol.
92.	7	2.3: Driver's Cab	Ergonomic requirements: ISO 16121- 1, 2 and 3	Kindly delete this clause	The Eol provision remains unchanged
93.	7	2.3: Driver's Cab	Ergonomic requirements: ISO 16121- 1, 2 and 3	ISO 16121-1,2 & 3 <a href="#">or any other equivalent safety standard</a>  <b>Justification:</b> Shall be as per UBS II	The Eol provision remains unchanged. This is an ergonomic standard for the consideration of the driver's workspace to ensure he is not tired and may become prone to mistakes. As such it is part of a improved safety protocol
94.	7	2.3: Air Conditioning	AC: Separate adjustable vents for the driver's cab - Minimum 4-off	Fixed AC vent can be provided. Request authority to kindly provide clarity on "min 4-off"	The Eol provision remains unchanged. The requirement is for 4-off adjustable eye-ball type vents to cover the driver

S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
95.	7	2.3: Air Conditioning	The air conditioning system performance should be able to bring the saloon environment within 15 minutes after vehicle start-up.: Temperature 25°C; humidity 55%	As per UBS II norms.	The Eol provision remains unchanged
96.	7	2.3: Air Conditioning	A saloon airflow minimum of: 4,000 m3/h	As per UBS II norms.	The Eol provision remains unchanged
97.	7	2.3: Air Conditioning	Separate adjustable vents for the driver's cab	4 nos. adjustable vents can be given on extended AC duct in driver compartment	The solution can be considered as long as it is meeting the functional requirements outlined in the Eol.
98.	7	2.3: Air Conditioning	The air conditioning system performance should be able to bring the saloon environment within 15 minutes after vehicle start-up.: Temperature 25°C; humidity 55%	Requesting this be changed to "Performance should meet UBS-II Requirements"	The Eol provision remains unchanged
99.	7	2.3: Air Conditioning	Separate adjustable vents for the driver's cab: Minimum 4-off	Requesting this be changed to "Vents to meet UBS-II Requirements"	The Eol provision remains unchanged
100.	7	2.3: Air Conditioning	The air conditioning system performance should be able to bring the saloon environment within 15 minutes after vehicle start-up.: Temperature 25°C; humidity 55%	The air conditioning system performance should be able to bring the saloon environment within <del>15 minutes</del> <b>30 minutes by 15°</b> after vehicle start-up. <b>Ambient</b> Temperature <del>25°C</del> ; humidity 55%	The Eol provision remains unchanged



S No	Eol Pg. No.	Eol Clause Reference No.	Eol Provisions	Queries by the Participants	Draft Response
				<b>Justification:</b> Shall be as per UBS II	
101.	7	2.3: Air Conditioning	Separate adjustable vents for the driver's cab: Minimum 4-off	Minimum <del>2</del> 4-off  <b>Justification:</b> Shall be as per UBS II	The Eol provision remains unchanged

**Director**  
**Institute of Road Transport (IRT), Chennai**