



## UITP develops toolkit to support electric bus procurement

It provides guidance on the specific procurement model to be selected as a function of various decision-making criteria. The toolkit is categorized in three sections:

1. Guiding toolkit to select mode of procurement
2. Toolkit for finalizing outright purchase RfP
3. Toolkit for finalizing gross cost contract RfP

However, it may kindly be considered that the toolkit only includes an indicative list of guidelines and key clauses. STUs may consider typical procurement clauses in addition to this as well.

### 1. Guiding toolkit to select mode of procurement

No	Description	Mode of Procurement	Justification
1	Bus Operation Mode	<ul style="list-style-type: none"><li>• If the STU is <b>owning and operating majority of its buses</b>, then the ideal procurement model would be <b>Outright Purchase</b></li><li>• If the STU has <b>privatized the city bus</b> operation the ideal procurement model would be <b>Gross Cost Contract</b></li></ul>	<ul style="list-style-type: none"><li>• While deciding the mode of procurement it is essential for the STU's to look into their current mode of operations.</li><li>• In the event all the buses are being operated by the STU itself, moving into GCC Model might be difficult due to change in management issues. On the contrary, if STU has the experience of privatizing the city operations, fully or partially, then opting GCC model would be feasible</li><li>• Cost of operation v/s earning per km, as explained at sr no 3, also shall be one of the deciding factors.</li></ul> <p><b>Potential Pitfalls:</b></p> <ul style="list-style-type: none"><li>• GCC model may insure the technological risk. However, as the said model is technology agnostic, interoperability during scaling up operation would be a great challenge</li><li>• Outright Purchase Model may address the interoperability and scaling up issues, but the greatest challenge is the Technology risk</li></ul>

No	Description	Mode of Procurement	Justification
2	Funding Availability	<ul style="list-style-type: none"> <li>If the STU has its own source of <b>full funding</b> then the ideal mode of procurement would be <b>Outright Purchase</b></li> <li>If the STU <b>doesn't have its own full funding</b> for procurement of buses then the STU may opt for <b>Gross Cost Contract</b></li> </ul>	<ul style="list-style-type: none"> <li>If the STU's has the funds tied upfront (own source) then the ideal mode of procurement would be outright purchase as this would reduce the financing cost</li> <li>In the event of State or GoI support, it would be better to opt GCC model.</li> </ul>
3	Cost/Km vs Earnings/km	<ul style="list-style-type: none"> <li>If the current <b>Cost Per Kilometer</b> is <b>less than</b> the current <b>Earning per Kilometer</b>, then the mode of procurement shall be <b>Outright Purchase</b> else it shall be Gross Cost Contract.</li> </ul>	<ul style="list-style-type: none"> <li>In the event Earning per Kilometer is less than the Cost per Kilometer it would not be advisable to go on Outright purchase Contract as the STU's will not have sufficient money to fund the project. It is anticipated that under GCC model, cost of operations will be less owing to reduced overhead expenditure of the private operator besides higher efficiency of operations.</li> </ul>
4	Depot Availability	<ul style="list-style-type: none"> <li>In the event of opting GCC model, it would be advisable to provide <b>dedicated depot</b> for <b>bus maintenance and operation</b>.</li> </ul>	<ul style="list-style-type: none"> <li>Shared depot infrastructure may create operational complications.</li> <li>Optimal selection of depot location may also reduce the operating cost by reducing the dead kilometers.</li> </ul>
5	Ownership of Buses	<ul style="list-style-type: none"> <li>If the <b>ownership of the bus</b> has to be in the <b>name of the STU</b> then the ideal mode of procurement shall be <b>Outright Purchase</b></li> </ul>	<ul style="list-style-type: none"> <li>In case of Gross Cost Model only part funding will be provided by the STU for the balance the Operator has to do a project finance hence the Ownership of the bus has to be in the name of Operator.</li> <li>This will also reduce the risk of STU</li> </ul> <p><b>Pitfall:</b></p> <ul style="list-style-type: none"> <li>Securitization of the incentive amount by way of BG increases the financing cost</li> <li>Joint ownership of bus still not a viable model.</li> </ul>
6	Technology	<ul style="list-style-type: none"> <li>In the event of <b>detailing a specific technology</b> it is preferable to go for <b>Outright Purchase</b></li> </ul>	<ul style="list-style-type: none"> <li>As it is an emerging technology, it is better that STUs don't take the risk of technology. As such it is recommended to adopt GCC model as the same is outcome specific and not technology specific</li> </ul>



No	Description	Mode of Procurement	Justification
			<ul style="list-style-type: none"> <li>The range per single charge may be specified and time available between shifts may be provided for the Operator to decide the sizing of the battery and the type of chargers</li> </ul>
7	Routes	<ul style="list-style-type: none"> <li>If <b>routes</b> on which the Electric Buses are to be <b>deployed has already been identified and fixed</b>, then it is preferable to go for <b>Gross Cost Model</b>. If there is a flexibility required on the routes be operated then Outright Purchase would be preferred</li> </ul>	<ul style="list-style-type: none"> <li>In a Gross Cost Contract, the minimum range of operation in a day needs to be fixed upfront so that the flexibility of reducing smaller length of routes would be minimized</li> </ul>
8	Maintenance of Bus and Chargers	<ul style="list-style-type: none"> <li>If the <b>operation and maintenance responsibility</b> is to vest with the <b>Operator</b>, then the preferable mode of procurement shall be <b>Gross Cost Contract</b> else STUs may prefer Out Right Purchase model.</li> </ul>	<ul style="list-style-type: none"> <li>Technical Know How is very limited in India on Electric Buses. In the event of going for Outright Purchase model, detailed training and capacity building program would be essential for the STU personnel.</li> </ul>

## 2. Toolkit for finalizing outright purchase RfP

No	Description	Details			Reasons/Clarification
1	Tender Time Table	NO	DESCRIPTION	DATE & TIME	<ul style="list-style-type: none"><li>In general minimum 30 -45 days' time is provided from the date of issue of tender notification. Further, pre bid conference is organized after 2 weeks of tender notification</li></ul>
		1	TENDER NUMBER AND DATE:		
		2	TENDER AVAILABLE DATE AND TIME		
		3	PRE BID MEETING DATE AND TIME		
		4	LAST DATE AND TIME OF RECIPT OF TENDER		
		5	DATE AND TIME OF OPENING OF TECHNICAL BID		
		6	DATE AND TIME OF OPENING OF FINANCIAL BID		
		7	TENDER INVITING AUTHORITY		
		8	ADDRESS		
		9	E-MAIL ID FOR CORRESPONDENCE		
2	Scope of Work	<ul style="list-style-type: none"><li>Supply of Buses</li><li>Installation of chargers and Charging Infrastructure</li><li>Comprehensive Warranty</li></ul>			<ul style="list-style-type: none"><li>In general, in an outright purchase contract the contract will be only for supply of buses. But in the current case, as it is an electric bus, it would be advisable to vest the responsibility of setting up of charging infrastructure and the chargers with the OEM</li><li>Commission and Trial Run phase is also essential for a period of minimum 6 months before giving the final acceptance for supply of the buses</li><li>Comprehensive AMC of minimum 5 years shall also be made part of the contract.</li><li>Warranty for replacement for Battery shall be minimum for 3/5 years</li></ul>

No	Description	Details	Reasons/Clarification												
3	Quantity and Delivery Schedule	<ul style="list-style-type: none"><li>The quantity and type of bus to be supplied needs to be clearly specified</li><li>Realistic time frame for deployment shall be proposed</li></ul>	Indicative Delivery Schedule												
			<table><tr><th>NO</th><th>DESCRIPTION</th><th>TIME LINE</th></tr><tr><td>1</td><td>TYPE TESTING/HOMOLOGATION</td><td>3 MONTHS FROM THE DATE OF ISSUE P.O</td></tr><tr><td>2</td><td>SUPPLY INSTALLATION, COMMISSIONING OF CHARGING INFRASTRUCTURE IN IDENTIFIED AREAS</td><td>6 MONTHS FROM THE DATE OF ISSUE OF P.O</td></tr><tr><td>3</td><td>ONE LOT OF BUSES (50 O)</td><td>3 MONTHS FROM THE DATE OF HOMOLOGATION</td></tr></table>	NO	DESCRIPTION	TIME LINE	1	TYPE TESTING/HOMOLOGATION	3 MONTHS FROM THE DATE OF ISSUE P.O	2	SUPPLY INSTALLATION, COMMISSIONING OF CHARGING INFRASTRUCTURE IN IDENTIFIED AREAS	6 MONTHS FROM THE DATE OF ISSUE OF P.O	3	ONE LOT OF BUSES (50 O)	3 MONTHS FROM THE DATE OF HOMOLOGATION
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3	ONE LOT OF BUSES (50 O)	3 MONTHS FROM THE DATE OF HOMOLOGATION													
4	Specification	<ul style="list-style-type: none"><li>The specification of buses and chargers are to be elaborated in detail</li><li>Some of the major specifications to be detailed are:<ul style="list-style-type: none"><li>AC/NON-AC</li><li>Low floor vs High floor</li><li>No of seating and standee passenger capacity</li><li>Type of breaking and suspension system</li><li>Type of Charger</li><li>No of charger’s required</li><li>Charger Protocol for Standardization</li><li>Charger communication protocol -CCS/CHAeDO</li></ul></li></ul>	<ul style="list-style-type: none"><li>In general, to start with the STU may propose the existing bus specification that are to be replaced which will set the bench mark</li><li>With respect to battery size and charger type the STU shall first conduct a study and identify the routes where the Electric Buses are likely to be deployed, the possible locations where charging infrastructure can be installed and time required for charging, as the size of the battery is directly proportional to the cost of battery and the time required for charging the battery is inversely proportional to the cost of charging infrastructure.</li><li>Some of the guiding factors are:<ul style="list-style-type: none"><li>In case of shorter route length of 60-100 km the STU may propose 100-150 KWH battery with fast charging facility</li><li>In case of longer route &gt; 200 km the STU may propose 250 -300 KWH with depot charging facility</li></ul></li></ul>												
5	Condition Precedent to Supply of buses	<ul style="list-style-type: none"><li>The STU’s shall provide the necessary voltage and power for the OEM to setup the Charging Infrastructure</li></ul>	<ul style="list-style-type: none"><li>Setting up of charging infrastructure is very essential for bus operations. Hence this activity should be completed before commencement of supply of buses</li></ul>												

No	Description	Details	Reasons/Clarification
		<ul style="list-style-type: none"> <li>The OEM shall start commencement of supply of vehicles only after installing the charging infrastructure</li> </ul>	
6	Qualification Criteria	<ul style="list-style-type: none"> <li>No Consortium proposed</li> <li>Only OEM to bid</li> <li>The OEM should have supplied at least 50% of the quantity of buses sought in the tender</li> <li>The OEM should have a tie up with a local reputed service provider for providing Comprehensive AMC during the period of 5 years</li> </ul>	<ul style="list-style-type: none"> <li>Insistence of an Agreement with a reputed Service Provider is mandatory to ensure smooth operations</li> </ul>
7	Major Contractual Obligations	<ul style="list-style-type: none"> <li><b>Warranty</b> - The Warranty for the Battery and charging infrastructure shall be for minimum 5 years and all other parts shall be as per standard industry practice</li> <li><b>Comprehensive AMC for 5 years</b> – All preventive maintenance and docking needs to be provided by the OEM and the cost towards the same shall be a part of the Quote</li> <li><b>Spares Availability</b> – The Spares to be supplied within 24-48 hours. Three months spares to be stored locally.</li> <li><b>Performance Security</b> – Generally 10%/5% of the contract value</li> <li><b>Validity Period</b> – 50% to be refunded after trial and commission run period, balance 50% post project completion period.</li> <li><b>Liquidated Damages</b> – Proposed for late delivery</li> </ul>	<ul style="list-style-type: none"> <li>As battery and chargers forms major cost of the bus cost warranty for the same is sought for 5 years</li> <li>Further as there is no proper Technical Know How it is always better to go for comprehensive AMC for the entire 5 years</li> <li>Performance security may be sought for 10%. Post completion of supply and commission &amp; trial run 50% is proposed to be refunded to facilitate better cash flow for the OEM</li> </ul>
8	Training and Capacity Building	<ul style="list-style-type: none"> <li>Training and capacity building in an Outright Purchase contract is very essential</li> <li>Training for the identified number of Drivers and Mechanics of the STU shall be provided for the first 3 months</li> <li>Drivers will be trained in terms of driving of the buses</li> <li>Mechanics will be trained on regular maintenance and charging of the buses</li> <li>Training shall be carried out in the OEM's premises.</li> </ul>	<ul style="list-style-type: none"> <li>As the day to day operations and maintenance are to be managed by STU, training is an essential part of the RFP</li> </ul>

No	Description	Details	Reasons/Clarification															
		<ul style="list-style-type: none"><li>All cost towards the training and capacity building shall be borne by the OEM</li></ul>																
9	Insurance and Permits	<ul style="list-style-type: none"><li>Shall be the responsibility of the STU</li></ul>	--															
10	Progressive payment terms- suggestive can be customized	<ul style="list-style-type: none"><li>Upon supply and issuance of acceptance certificate by the authority - 30% of the contract amount. (note: if multiple mile stones for supply of buses are prescribed for buses then the 30% shall be apportioned appropriately)</li><li>Upon successful installation and commissioning of charging infrastructure and supplying of allied chargers as per requirement – 20 % of the contract amount</li><li>upon successful commissioning and trial run for 6 months of bus operation and meeting the desired SLA - 30% of the contract amount</li><li>Balance 20% of contract amount will be released in 28 equal quarterly installments upon meeting desired SLA as prescribed by the authority</li></ul>	With a view to overcome the Technological risk in an outright purchase model, progressive payment terms may be proposed															
11	Service Level during 5 years AMC period	<table><tr><th>NO</th><th>PARAMETER</th><th>SLA/MONTH</th></tr><tr><td>1</td><td>SCHEDULE KM VS OPERATED KM</td><td>&gt;90 %</td></tr><tr><td>2</td><td>SCHEDULED TRIP VS OPERATED TRIP</td><td>&gt;95%</td></tr><tr><td>3</td><td>BREAK DOWN FOR THE FIRST SIX MONTHS</td><td>&lt; 3</td></tr><tr><td>4</td><td>ELECTRICITY CONSUMPTION FACTOR</td><td>&lt; 1.3 KWH/KM*</td></tr></table>	NO	PARAMETER	SLA/MONTH	1	SCHEDULE KM VS OPERATED KM	>90 %	2	SCHEDULED TRIP VS OPERATED TRIP	>95%	3	BREAK DOWN FOR THE FIRST SIX MONTHS	< 3	4	ELECTRICITY CONSUMPTION FACTOR	< 1.3 KWH/KM*	<ul style="list-style-type: none"><li>Indicative can be modified</li></ul>
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2	SCHEDULED TRIP VS OPERATED TRIP	>95%																
3	BREAK DOWN FOR THE FIRST SIX MONTHS	< 3																
4	ELECTRICITY CONSUMPTION FACTOR	< 1.3 KWH/KM*																
12	Financial Evaluation parameter	<ul style="list-style-type: none"><li>CAPEX +AMC COST</li></ul>	<ul style="list-style-type: none"><li>L1 Based tender proposed.</li></ul>															

### 3. Toolkit for finalizing Gross Cost Contract RfP

No		Description		Details		Reasons/Clarification	
1	Tender Time Table	NO	DESCRIPTION	DATE & TIME			<ul style="list-style-type: none"><li>In general minimum 30 -45 days’ time is provided from the date of issue of tender notification. Further, pre bid conference is organized after 2 weeks of tender notification</li></ul>
		1	TENDER NUMBER AND DATE:				
		2	TENDER AVAILABLE DATE AND TIME				
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		4	LAST DATE AND TIME OF RECIPT OF TENDER				
		5	DATE AND TIME OF OPENING OF TECHNICAL BID				
		6	DATE AND TIME OF OPENING OF FINANCIAL BID				
		7	TENDER INVITING AUTHORITY				
		8	ADDRESS				
		9	E-MAIL ID FOR CORRESPONDENCE				
2	Scope of Work	<ul style="list-style-type: none"><li>Supply of Buses</li><li>Installation of chargers and Charging Infrastructure</li><li>Deployment of Drivers and Mechanics</li><li>Responsible for cleanliness of the bus</li><li>Operating and maintenance of buses on a daily basis</li><li>Responsible for maintaining daily timings of the schedules and trips</li><li>Fare Collection not responsibility of the Operator</li></ul>					<ul style="list-style-type: none"><li>In general, in Gross Cost Contract the entire responsibility of operating and maintaining the bus and its allied infrastructure shall be the responsibility of the Operator.</li><li>The ownership of the bus vest with the Operator and he will be paid based on the number of km the bus is run for a month/quarter.</li><li>Detailed Service Level Agreements are upfront declared in the bid and non-meeting the SLA attracts fine’s to the Operator</li></ul>



No	Description	Details	Reasons/Clarification		
3	Quantity and Delivery Schedule	<ul style="list-style-type: none"><li>The quantity and type of bus to be supplied needs to be clearly specified</li><li>Realistic time frame for deployment shall be proposed</li></ul>	Indicative Delivery Schedule		
			NO	DESCRIPTION	TIME LINE
			1	TYPE TESTING/ HOMOLOGATION	3 MONTHS FROM THE DATE OF ISSUE P.O
			2	SUPPLY INSTALLATION, COMMISSIONING OF CHARGING INFRASTRUCTURE IN IDENTIFIED AREAS	6 MONTHS FROM THE DATE OF ISSUE OF P.O
			3	ONE LOT OF BUSES (50 O)	3 MONTHS FROM THE DATE OF HOMOLOGATION
4	Specification	<ul style="list-style-type: none"><li>The specification of buses and chargers need not be elaborated in detail. However, it is advisable to provide some of the major specifications as follows:<ul style="list-style-type: none"><li>AC/NON-AC</li><li>Low floor vs High floor</li><li>No of seating and standee passenger capacity</li><li>Type of breaking and suspension system</li><li>Type of Charger</li><li>No of charger’s required</li><li>Charger Protocol for Standardization</li><li>Charger communication protocol - CCS/CHAeDO</li></ul></li></ul>	<ul style="list-style-type: none"><li>In general, to start with the STU may propose the existing bus specification that are to be replaced which will set the bench mark</li><li>With respect to battery size and charger type the STU shall first conduct a study and identify the routes where the Electric Buses are likely to be deployed, the possible locations where charging infrastructure can be installed and time required for charging, as the size of the battery is directly proportional to the cost of battery and the time required for charging the battery is inversely proportional to the cost of charging infrastructure.</li><li>Some of the guiding factors are:<ul style="list-style-type: none"><li>In case of shorter route length of 60-100 km the STU may propose 100-150 KWH battery with fast charging facility</li><li>In case of longer route &gt; 200 km the STU may propose 250 -300 KWH with depot charging facility</li></ul></li></ul>		
5	Condition Precedent to Supply of buses	Condition Precedent to Authority:	<ul style="list-style-type: none"><li>Setting up of charging infrastructure is very essential for bus operations. Hence this activity should be completed before commencement of supply of buses</li></ul>		

No	Description	Details	Reasons/Clarification
		<ul style="list-style-type: none"> <li>The STU's shall identify the depot/depot space and hand over the same to the Operator with minimum civil infrastructure</li> <li>The STU's shall also provide the necessary voltage and power for the OEM to setup the Charging Infrastructure</li> </ul> <p><b>Condition Precedent to the Operator:</b></p> <ul style="list-style-type: none"> <li>The OEM shall start commencement of supply of vehicles only after installing the charging infrastructure.</li> <li>The OEM shall also provide the list of drivers and mechanics staff details prior to commencement of Operations</li> </ul>	<ul style="list-style-type: none"> <li>Providing manpower is also one of the major activity of the Operator, hence the same to be concluded before commencement of Operations</li> </ul>
6	Qualification Criteria	<ul style="list-style-type: none"> <li>Consortium Allowed</li> <li>Operator/OEM to participate</li> <li>The OEM should have supplied at least 50% of the quantity of buses sought in the tender</li> <li>The operator should have prior experience in operating city bus operations</li> </ul>	<ul style="list-style-type: none"> <li>OEM/Operator support letter is mandatory incase the bidder decides to bid alone.</li> </ul>
7	Major Contractual Obligations	<ul style="list-style-type: none"> <li><b>Payment Terms</b> – The Payment to the Service Provider shall be calculated as [Payment] = [Number of Km operated for a month (KM) x quoted rate/km (R)</li> <li><b>Minimum Assured Km</b> – Generally for the safety of Operator, the STU has to declare the minimum assured km that is guaranteed for the Operator for a day. Normally, the same is fixed based on the route length in which the buses are being deployed it may vary from(75 km to 250 km)</li> <li><b>Payment for non-utilized km</b> – With a view to insure the Operator, if non the actual utilization is below the assured utilization, for reasons not attributable to the operator, then the authority would pay the operator on the minimum assured km for the half yearly period.</li> </ul>	<ul style="list-style-type: none"> <li><b>Warranty&amp; Comprehensive AMC for 5 years</b> – No specific warranty clause proposed as operating and maintenance of the said bus vests with the Operator</li> <li><b>Refurbishment of the entire bus proposed at the end of 5 years</b> to ensure effective service delivery to the Commuters</li> </ul>

No	Description	Details	Reasons/Clarification
		<ul style="list-style-type: none"> <li>• <b>Payment Cycle</b> – With a view to ensure steady cash flow to the Operator it is generally proposed to have a 45-day payment cycle. The Operator will raise invoice for a month and the payment will be released within 15 days from the date of receipt of invoice.</li> <li>• <b>Performance Security</b> – Generally 10%/5% of the contract value for the entire contract period</li> <li>• <b>Liquidated Damages</b> – Proposed for late delivery The operator shall pay a LD that shall be calculated at the rate of 0.3 times the quoted rate /km for the assured km for a day for each day of delay until fulfilment of the Conditions Precedent like delay in supply of buses, delay in setting up of charging infrastructure, subject to a maximum of the performance security value. <b>Fines</b> – In addition to the above LD, fines are to be proposed for non-adherence to the SLA</li> </ul>	
8	Payment Guarantees	<ul style="list-style-type: none"> <li>• With a view to ensure assured payment to the Operator it is proposed to open a <b>dedicated Escrow Account</b> by the authority for payments to the Operator where minimum 3-month operating expenditure will be maintained.</li> </ul>	To ensure assured payment to the Operator
9	Insurance and Permits	<ul style="list-style-type: none"> <li>• Insurance shall be the responsibility of the Operator</li> <li>• Permits shall be the responsibility of the STU</li> </ul>	--
10.	Ownership	<ul style="list-style-type: none"> <li>• Previous FAME-1 RFP's contemplated on Joint Ownership of buses. It is advisable not to go for joint ownership, instead with a view to securitize the incentive or subsidy amount it is advisable to have BG for the said incentive amount</li> <li>• Post completion of the Contract period the bus ownership shall vest with the Operator itself</li> </ul>	<ul style="list-style-type: none"> <li>• Joint ownership may restrict the Operator's to raise funding from Banks and Financial Institutions.</li> </ul>



No	Description	Details			Reasons/Clarification
11	Service Level during 5 years AMC period	NO	PARAMETER	SLA/MONTH	<ul style="list-style-type: none"> <li>Indicative can be modified</li> </ul>
		1	SCHEDULE KM VS OPERATED KM	>90 %	
		2	SCHEDULED TRIP VS OPERATED TRIP	>95%	
		3	BREAK DOWN FOR THE FIRST SIX MONTHS	< 3	
		4	ELECTRICITY CONSUMPTION FACTOR	< 1.3 KWH/KM*	
12	Financial Evaluation parameter	<ul style="list-style-type: none"> <li>CAPEX COST + REFURBISHMENT COST+ TOTAL COST OF OPERATIONS –SALVAGE VALUE)/ TOTAL BUS KM FOR 10 YEARS</li> </ul>			<ul style="list-style-type: none"> <li>L1 Based tender proposed.</li> </ul>