

# Punjab Masstransit Authority

## Clarification Meeting

Subject:	<b>DEVELOPMENT, IMPLEMENTATION, OPERATIONS AND LONG - TERM MAINTENANCE OF PROVEN AUTOMATED FARE COLLECTION &amp; BUS SCHEDULING SYSTEM (AFC-BSS) FOR PAKISTAN METROBUS SYSTEM (PMBS) IN RAWALPINDI-ISLAMABAD</b>		
Date:	27 <sup>th</sup> August, 2024	Time:	1200 Hours
Venue:	Committee Room, Punjab Masstransit Authority Lahore	Chair:	Mr. Muhammad Ozair Shah, General Manager (Operations), PMA

### List of Participants:

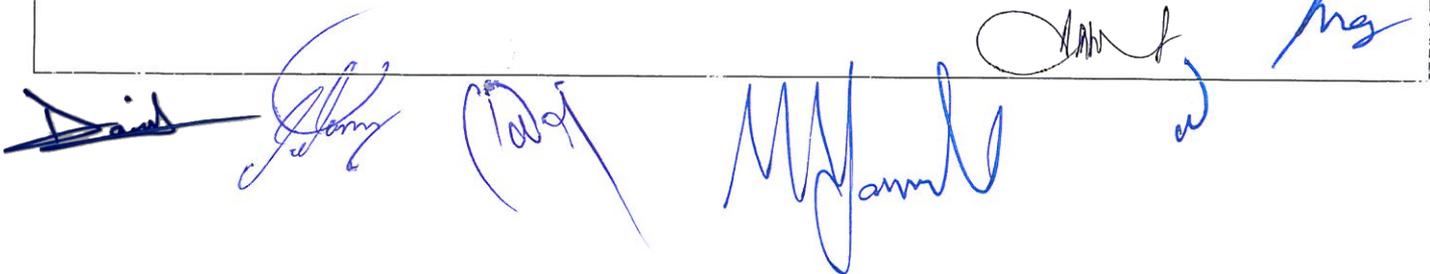
1. Mr. Muhammad Abid, General Manager (Finance), PMA (Member)
2. Mr. Wajid Saleem, Manager Operations (Technical), PMBS (Member)
3. Mr. Muhammad Yasin, Manager Operations (Technical), MMBS (Member)
4. Mr. Mian Mudassar, Deputy Manager (IT), PMBS (Member)
5. Mr. Hammad Aslam, Audit & Accounts Officer, PMBS (Member)
6. Mr. Danish Ahmed, Joint Director NPD (ITOPS), PITB (Member)

### List of Representatives from Prospective Bidders/Banks:

1. Mr. Asim Qureshi, Bank of Punjab (Participant)
2. Mr. Tariq Anees, Habib Bank Limited (Participant)
3. Ms. Bisma Ahsan, Jazz Cash/ MMBL (Participant)
4. Mr. Jawad Hafeez, Meezan Bank (Participant)
5. Mr. Rashid Chaudhary, Inbox Business Technologies Limited (Participant)
6. Mr. Faisal Hussain, United Bank Limited (Participant)
7. Mr. Majid Shahid, GCS (Participant)
8. Mr. Awais Arshad, PITB (Participant)

### DECISIONS / DISCUSSIONS

The meeting started at 12:30 PM with the recitation of the Holy Quran. Mr. Muhammad Ozair Shah, General Manager (Operations), PMA, formally welcomed the participants and presented an overview of the general scope of works of Tender Document. Following this, Mr. Mian Mudassar, Deputy Manager IT, PMBS, provided a detailed briefing on the RFP Documents. A question-and-answer session was also held subsequently. Detailed minutes of the meeting are enclosed as **Annex-A**, and the list of participants is provided in **Annex-B**. The meeting concluded at 3:30 PM with a closing expression of gratitude.





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Mr. Muhammad Ozair Shah  
General Manager (Operations),  
PMA

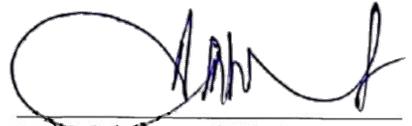
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Mr. Muhammad Abid,  
General Manager (Finance),  
PMA



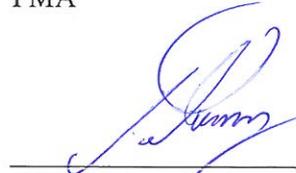
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Mr. Wajid Saleem,  
Manager Operations (Technical),  
PMBS



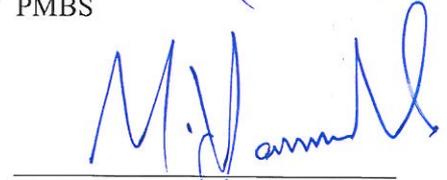
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Mr. Muhammad Yasin,  
Manager Operations (Technical),  
MMBS



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Mr. Mian Mudassar,  
Deputy Manager (IT),  
PMBS



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Mr. Hammad Aslam,  
Audit & Accounts Officer,  
PMBS



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Mr. Danish Ahmed,  
Joint Director NPD (ITOPS), PITB

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Rep. of Transport & Masstransit  
Department, GoPb

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Rep. of Finance Department,  
GoPb

## RESPONSE TO THE BIDDER'S QUERIES

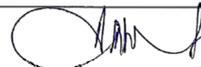
Sr. No.	BIDDER QUERIES / COMMENTS	PMA RESPONSE
<b>A. Meezan Bank</b>		
1	<p>Page 11 Sub-Clause 6.7 of Clause 6:  <i>"The bidder shall be responsible and to arrange for PCI DSS certification for PITB's developed AFC-BSS software complete in all aspects (wherever applicable) at its own cost."</i></p> <p>Will PITB provide support to meet the requirements for acquiring the certification?</p>	<p>It is clarified that the Sub-Clause 6.7 has been updated as under:</p> <p><i>"PMA through its AFC software Service Provider i.e. PITB shall be responsible for PCI DSS certifications for the developed AFC software and Mobile applications. However, the Service Provider shall be responsible for acquiring and maintaining PCI DSS certification for all relevant AFC hardware and associated application tools, including validation devices, required APIs &amp; SDKs linked with the hardware, and other related components wherever applicable at its own cost. The Service Provider shall ensure provision of all relevant certifications for the hardware and related software applications/components i.e. API &amp; SDKs as follows:</i></p> <p><i>EMV (L1, L2 &amp; L3) and PCI-DSS/PA-DSS etc. where applicable, for open loop payment system and its integration with PITB AFC-BSS software and mobile application."</i></p>
2	<p>Page 11 Sub-Clause 6.8 of Clause 6  <i>"The bidder shall ensure provision of all relevant certifications for the hardware and software for open loop payment system and its integration with PITB AFC-BSS software."</i></p> <p>Could you please specify the relevant certifications for both the software and hardware?</p>	<p>The Sub-Clause 6.8 of Clause 6 may be treated as deleted.</p> <p>Refer to response at Sr. No. 1. The Clause implies to incidental certifications not known to the employer at the stage of bidding.</p>
3	<p>Page 15 Sub-Clause 7.4 of Clause 7  <i>"Online secure dashboards, accessible by all stakeholders, via centralized system in order to facilitate timely and informed decisions."</i></p> <p>Could you please clarify whether this responsibility falls under PITB or the Service Provider?</p>	<p>It is clarified that PMA through its AFC software Service Provider i.e. PITB shall be responsible for provisioning of such dashboard. However, transactional settlement dashboard for open loop shall be provided by the Service Provider.</p>
4	<p>Page 16 Sub-Clause 6 of Clause 9  <i>"SP shall provide sample (one unit each) of all relevant hardware of AFC-BSS to PITB within 21 days after issuance of Letter of Intent (LOI) before the implementation and execution of the AFC-BSS system."</i></p>	<p>It is clarified that Sub-Clause 6 of Clause 9 has been updated as under:</p> <p><i>"SP shall provide sample (one unit each) of all relevant hardware along with relevant APIs, SDKs and payment application of AFC-BSS to PITB within 45 days after issuance of Letter of Intent (LOI) before the implementation and execution of the AFC-BSS system!"</i></p>

	The time lines should be 45 working days instead of 21.	
5	<p>Page 18 Sub-Clause 38 of Clause 9</p> <p><i>“Take prompt and reasonable action for resolution of each complaint - including complaints received from passengers as well as from PMA related to AFC-BSS operations e.g. ticket sales, turnstile facilitation etc. and generate log of each complaint along with the details of the resolution.”</i></p> <p>Please clarify that who will provide the Complaint Management System?</p>	It is clarified that PMA shall provide Complaint Management System (CMS) & Issue Tracking Management Information System (ITMIS) to the Service Provider.
6	<p>Page 21 Sub-Clause III of Clause 9</p> <p><i>“There will be a dedicated security operator for PMBS, on 24/7/365 basis, who will be responsible for the security of equipment after operations hours. However, security of equipment locked by the SP shall be to the extent of protection of breakage of locks and theft thereafter.”</i></p> <p>Please clarify that,</p> <ol style="list-style-type: none"> <li>1. If AFC-BSS equipment is damaged by riots, vandalism, or any act of terrorism then the purchaser shall be liable to pay the damages.</li> <li>2. If the BSS equipment installed in the buses got damaged due to whatever reason (Accidents / After the Closure of the Operations) then who will pay the damages?</li> </ol>	<p>It is clarified that Sub-clause III of Clause 9 has been updated as under:</p> <p><i>“There will be a dedicated security operator for PMBS, on 24/7/365 basis, who will be responsible for the security of equipment after operations hours. However, security of equipment locked by the SP shall be to the extent of protection of breakage of locks and theft thereafter. Furthermore, subject to the Clause 38, the Purchaser shall pay the damages resulting from riots, vandalism, or any act of terrorism, to the extent not paid by the insurance company provided that the Service Provider files a claim to the insurance company in writing and insurance company rejects the whole or part of such claim. Moreover, the Purchaser shall pay the damages to the BSS equipment installed in buses that are incurred by the bus operator.”</i></p>
7	<p>Page 21 Sub-Clause 5 of Clause 11</p> <p><i>“The Service Provider shall be responsible for conducting regular third-party audit (financial as well as technical), as an integral part of the project at its own cost.”</i></p> <p>Please clarify the above clause.</p>	<p>It is clarified that Sub-clause 5 of Clause 11 has been updated as under:</p> <p><i>“The Service Provider shall be responsible for conducting <b>annual</b> third-party audit (financial as well as technical) of the AFC-BSS system deployed at PMBS, as an integral part of the project at its own cost.”</i></p>
8	<p>Page 23 Sub-Clause 13.3 of Clause 13</p> <p><i>“this is must to ensure that no shortages of fare media (cards &amp; QR paper tickets) occur at any given time. SP shall arrange / supply all kinds of fare media as required during the course of the Contract (at all times, a minimum of 200,000 smart cards and a 15-day supply of paper tickets calculated at 150,000 tickets per day)”</i></p> <p>Please clarify the clause.</p>	<p>It is clarified that Sub-clause 13.3 has been updated as under:</p> <p><i>“this is must to ensure that no shortages of fare media (cards &amp; QR paper tickets) occur at any given time. SP shall arrange / supply all kinds of fare media as required during the course of the Contract (at all times, a minimum of 30,000 smart cards and a 15-day supply of paper tickets calculated at 150,000 tickets per day)”</i></p>
9	<p>Page 21 Sub-Clause 6 of Clause 11</p> <p><i>“Special smart cards offering discounts to senior citizens, disabled persons, students and working women, if so ordered by the Government shall be made available by SP as</i></p>	<p>It is clarified that Sub-clause 6 of Clause 11 has been updated as under:</p> <p><i>“Special smart cards offering discounts to senior citizens, disabled persons, students and working women,</i></p>

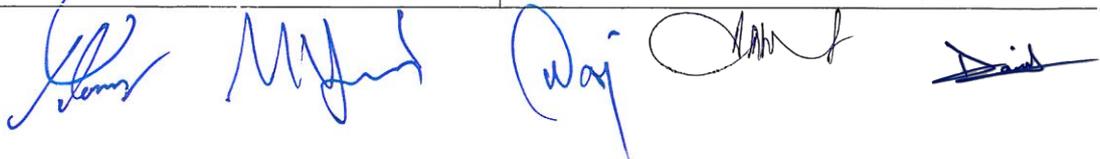
Handwritten signatures and initials in blue ink are present at the bottom of the page, including what appears to be 'Subany', 'Mh', 'Waj', and others.

	<p><i>per terms and conditions prescribed by the Purchaser, on annual renewal basis against the prescribed cost by the Purchaser.”</i></p> <p>Please provide understanding of this clause.</p>	<p><i>etc. (henceforth called special persons); if so ordered by the Government shall be made available by SP as per terms &amp; conditions and cost prescribed by the Purchaser. If such scheme is introduced for the free travel or reduced rate travel for special persons; the Service Provider shall manage such instances by issuing color tickets at the ticket booth, to the special persons desiring to travel. Service Provider shall manage their travel to the concourse area by retrieving the color ticket and by tapping a master card specially placed at each station to record instances. Also, if such scheme is introduced by the Govt. additional human resource cost (if any) will be negotiated at minimum wage rate as per Sub-Clause 14.7.1 of Clause 14. The requisite additional human resource shall be responsible to tap out the special persons from the stations by using another master card.”</i></p>
10	<p>Page 26 Clause 14</p> <p><i>“SP shall be responsible to fulfill all the requirements except requirements related to AFC-BSS software”</i></p> <p>Please specify the requirements.</p>	<p>It is clarified that as per scope of work, the Service Provider shall be responsible for fulfilling all the requirements outlined in the RFP document other than those pertaining to the AFC-BSS software.</p>
11	<p>Page 28 Sub-Clause 14.7.1 of Clause 14.7</p> <p><i>“The SP must employ adequate, well-trained staff to perform all duties and responsibilities stated in this RFP document - including all roles/duties to be performed at the stations and to support PMA authorized staff on the AFC-BSS solution. Prepare and submit station wise staff deployment plan and get it approved by the Purchaser. It is clarified that any change in the quantities of human resources defined in the approved plan will be subject to Purchaser instructions only and payments shall be adjusted accordingly.”</i></p> <p>Please clarify the following:</p> <ol style="list-style-type: none"> <li>1. How often will the Service Provider be required to submit the deployment plan?</li> <li>2. Relievers shall be incorporated against all levels of Human Resources.</li> </ol>	<p>It is clarified that Sub-Clause 14.7.1 of Clause 14.7 is self-explanatory. The Service Provider is required to submit a detailed staff deployment plan for each station to the Client for approval. In case the plan requires adjustments to ensure smooth operations during the execution of the project, such modifications will be made with the Client’s consent. Any changes in staff requirement will be managed in accordance with this clause. With respect to relievers, the Service Provider has liberty to use them as needed.</p>
12	<p>Page 50 Clause 65</p> <p><i>“The RLISP2 shall be responsible for integrating AFC, BSS, PIS. and other related equipment with the PITB AFC-BSS software, the Mobile App for both Android and iOS, and any third-party software or systems. Additionally, the provided AFC equipment must comply with EMV Level 1, Level 2, and Level 3 standards. RLISP2 will also be responsible for integrating the PITB AFC-BSS software with the Banking payment system. This integration must be</i></p>	<p>It is clarified that banking payments or digital wallets will be required.</p> 




	<p><i>carried out using secure APIs and SDKs, preferably in, but not limited to, .NET and PHP."</i></p> <p>Could you please specify whether banking payments or digital wallets are required ?</p>	
13	<p>Page 51 Sub-Clause 70.4.3 of Clause 70.4</p> <p><i>"Items of high cost and/or long lead time over thirty (30) working days."</i></p> <p>Please provide understanding for this point.</p>	Clause 70.4 and all sub Clauses have been deleted.
14	<p>Page 51 Sub-Clause 70.4.1 of Clause 70.4</p> <p><i>"The quantity of spare parts and consumable items provided and must have sufficient operating stock for the period of contract subsequently applying to all renewal years."</i></p> <p>Could you clarify the required quantity of spare parts and consumable items to ensure sufficient operating stock throughout the contract period and any renewal years?</p>	Clause 70.4 and all sub Clauses have been deleted.
15	<p>Page 55 Sr. 1 of the table</p> <p>Given that there are 24 stations and 27 booths on PMBS project currently, could you please clarify the required quantity of UPS units?</p>	It is clarified that the Service Provider shall ensure a power backup of at least 4 hours (the main outcome) for all AFC-BSS components installed at the 24 stations by provisioning UPS units with appropriate capacity to handle the load and maintain the specified backup time. However, for stations with two entrance/exit points and ticketing booths, the Service Provider may need to provide additional or higher capacity UPS units as required to effectively meet the contractual requirements.
16	<p>Page 84 SLA Clause 23</p> <p><i>"Inconsistency within Reports"</i></p> <p>The software powered by PITB will this clause of SLA will affect the service provider?</p>	It is clarified that the Service Provider shall be responsible for any inconsistencies in reports resulting from malfunctions of any hardware/system or infrastructure deployed by the Service Provider.
17	<p>Page 84 SLA Clause 24</p> <p><i>"Time Synchronization"</i></p> <p>The software powered by PITB will this clause of SLA will affect the service provider?</p>	It is clarified that PMA through its AFC-BSS software provider i.e. PITB shall be responsible for installing NTP server to ensure time synchronization.
18	<p>SLA A &amp; B should be capped with a 5% penalty charge.</p>	It is clarified that SLA-B has been removed from the RFP.
19	<p>Please specify dimensions of PIS ?</p>	It is clarified that the diagonal size of the LCD screens for Passenger Information System (PIS) will be at least 46 inches.
20	<p>Page 95</p> <p><i>Passenger Information System and Scheduler</i></p> <p>In the specifications, Sr. No. 6 and 7 are missing. Is this a typo, or were some specifications inadvertently omitted?</p>	It is clarified that the there are no Sr.6 and Sr.7. Refer to Addendum of Page 95. 

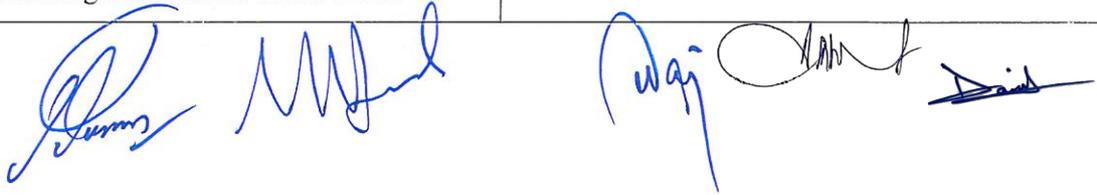


21	<p>Page 20 Sub-Clause 54 of Clause 9</p> <p><i>"SP shall also provide the payment applications for the AFC equipment i.e. Validators, Ticket Kiosk Machines, Ticket Office Machines, point-of-sale machines etc. along with source code, documentation, specifications, manuals, etc. In addition, SP shall also be responsible for the white listing of all Payment applications for Government of Punjab where applicable at its own cost."</i></p> <p>Please clarify.</p>	<p>It is clarified that Sub-Clause 54 of Clause 9 has been updated as under:</p> <p><i>"SP shall also provide the payment applications for the AFC equipment i.e. Validators, Ticket Kiosk Machines, Ticket Office Machines, point-of-sale machines etc. and ensure integration of the payment application with AFC-BSS system, along with <del>source code</del>, documentation, specifications, manuals, etc., at its own cost. <del>In addition, SP shall also be responsible for the white listing of all Payment applications for Government of Punjab where applicable at its own cost."</del></i></p>
22	<p>Page 20 Sub-Clause 55 of Clause 9</p> <p><i>"The SP shall ensure provision of all relevant certifications for the hardware and software for open loop payment system and its integration with PITB AFC-BSS software at its own cost."</i></p> <p>Please specify the required certifications.</p>	<p>It is clarified that Sub-Clause 55 of Clause 9 shall be treated as deleted. Refer to response at Sr. No. 1</p> <p><del><i>"The SP shall assess and ensure the provisioning of all relevant certifications required for the AFC hardware and software for open loop payment system and its integration with PITB AFC-BSS software and mobile application at its own cost."</i></del></p>
23	<p>Page 20 Sub-Clause 57 of Clause 9</p> <p><i>"The SP shall prepare the advertisement content to promote the open loop cards to reduce the use of single ticket and promote the use of mobile application. However, SP shall seek approval of the Purchaser prior to advertising such promotion. After approval, SP shall launch a campaign in newspapers and on other means i.e. social media, SMS, etc. to increase the usage of open loop cards and the mobile application."</i></p> <p>Need proper clarification</p>	<p>It is clarified that Sub-Clause 57 of Clause 9 has been updated as under:</p> <p><i>"The SP shall prepare the advertisement content to promote the open loop cards to reduce the use of single ticket and promote the use of mobile application. However, SP shall seek approval of the Purchaser prior to advertising such promotion. After approval, SP shall plan, design and launch at least three sequential campaigns in newspapers and on other means i.e. social media, SMS, etc. to increase the usage of open loop cards, as well as the use of mobile application and to discourage the use of single tickets and Service Provider shall bear the cost of such campaigns."</i></p>
24	<p>Page 91</p> <p>Please specify the numbers of SAM required in the validators.</p>	<p>It is clarified that the validators must have at least 3 slots for SAMs.</p>
25	<p>Page 85</p> <p>Violation of scope of services: Any act of nonconformance to PMA rules, regulations, instructions, scope of services if not covered in SLA</p> <p>The SLA should be restricted or revised as: Any act of nonconformance to PMA rules, regulations, instructions, or defined Scope of Services.</p>	<p>Please refer to response at Sr. No. 18.</p>
26	<p>MDR - Merchant Discount Rate is the fee charged on an open loop card by the Acquiring Bank which includes the "Interchange fee along with the Association fee". Please note that these</p>	<p>The Merchant Discount Rate (MDR) shall be borne by the Purchaser. The Service Provider may bill such charges and present such evidence with the monthly invoice.</p>

	<p>fees are different for the Debit and Credit cards and are levied by the Visa/Master Association.</p> <p>What about the MDR on the Credit/Debit Card transaction on the Top-up or Purchase of Ticket or Credit Card used for Entry/Exit for the journey?</p> <p>Please clarify that who will absorb MDR on the Credit/Debit Card transaction on the Top-up or Purchase of Ticket or Credit Card used for Entry/Exit for the journey?</p>	
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**B. Bank of Punjab**

27	<p>Page 4 Clause 2</p> <p><i>“All the Hardware at stations should have capability to work in decentralized/centralized mode in order to ensure maximum operations uptime.”</i></p> <p>Please explain the clause.</p>	<p>It is clarified that the equipment / hardware installed at the stations, including Ticket Office Machines, Validators, and similar devices, must be capable of operating both in online mode when connected to centralized servers and in offline mode in the event of a connection loss with the centralized servers.</p>
28	<p>Page 11 Clause 6.2</p> <p>Please explain how to manage both open loop and close loop system at the same time and how it will works either we have separate gates to manage the both system.</p>	<p>It is clarified that the validators must be capable of processing and validating both open-loop and closed-loop fare media to facilitate commuter entry/exit at the turnstile gate using both EMV cards and closed-loop fare media to the extent of QR tickets only. The Service Provider shall provide a payment application for segregation of Open-loop and Closed-loop fare media. However, there shall be no provision for closed loop cards in the validators.</p>
29	<p>Page 14 Clause 7.2</p> <p><i>“The AFC-BSS system must have the capability to handle flat rate, staged/zone based and distance based fare policies, and must be scalable/expandable to any number of stations, cities, and passenger volumes.”</i></p> <p>Please clarify whether it falls under the responsibility of the Service Provider or PITB.</p>	<p>It is clarified that PMA through its AFC-BSS Software Service Provider i.e. PITB, will be responsible for implementation of fare policy.</p>
30	<p>Page 16 Sub-Clause 6</p> <p><i>“SP shall provide sample (one unit each) of all relevant hardware of AFC-BSS to PITB within 21 days after issuance of Letter of Intent (LOI) before the implementation and execution of the AFC-BSS system. Further, SP shall submit detailed design, specifications, documentation including APIs and SDKs, and manuals (also in soft copy) of related AFC-BSS system components being implemented - for approval.”</i></p> <p>Please extend the period to 45 days instead of 21 days following the issuance of the LOA.</p>	<p>Please refer to response at Sr. No. 4/</p> 

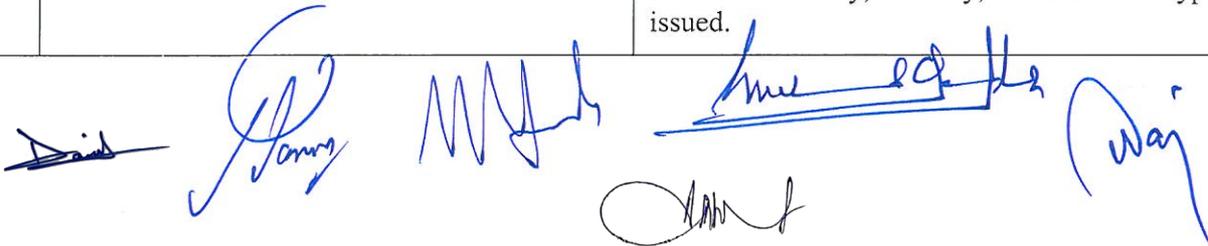


31	<p>Page 19 Sub-Clause 43 of Clause 9</p> <p><i>"The SP must provide AFC-BSS equipment to the Purchaser as and when required."</i></p> <p>Please clarify.</p>	<p>Subject to Clause 43, the Service Provider shall be responsible to provide any additional AFC-BSS equipment to the Purchase as and when required.</p> <p>The RFP has been updated as follows:</p> <p><i>"The SP must provide additional AFC-BSS equipment to the Purchaser as and when required. In addition, the Service Provider shall aim to support any change/improvements planned by the Purchaser in the AFC-BSS system."</i></p>
32	<p>Page 19 Sub-Clause 44 of Clause 9</p> <p><i>"The AFC-BSS system must have the capability to handle flat rate, staged/zone based and distance based fare policies, and must be scalable/expandable to any number of stations."</i></p>	<p>Please refer to response at Sr. No. 29.</p>
33	<p>Page 19 Sub-Clause 46 of Clause 9</p> <p><i>"Purchaser reserves the right to purchase additional AFC-BSS solutions from any other third party through competitive bidding as per the specifications mentioned in the RFP document. The SP is responsible to facilitate the integration with all such AFC-BSS solutions in an efficient &amp; timely manner."</i></p>	<p>The Sub-Clause 46 of Clause 9 has been deleted.</p>
34	<p>Page 20 Sub-Clause 54 of Clause 9</p> <p><i>"SP shall also provide the payment applications for the AFC equipment i.e. Validators, Ticket Kiosk Machines, Ticket Office Machines, point-of-sale machines etc. along with source code, documentation, specifications, manuals, etc. In addition, SP shall also be responsible for the white listing of all Payment applications for Government of Punjab where applicable at its own cost."</i></p>	<p>Please refer to response at Sr. No. 21.</p>
35	<p>Page 20 Sub-Clause 58 of Clause 9</p> <p><i>"Provide a vehicle not less than 1300 CC sedan car, not manufactured prior to 2023, along with a dedicated driver and sufficient fuel for inspection of services and other arrangements at PMBS stations. The Service Provider shall be responsible for comprehensive maintenance of the vehicle from an authorized 3S dealer. The Service Provider is authorized to substitute the vehicle with an equivalent or superior model, whether on a temporary or permanent basis. Nevertheless, any withdrawal of the vehicle except prior approval of PMA."</i></p> <p>Please specify the quantity of the fuel required per month.</p>	<p><i>It is clarified that Sub-Clause 58 of Clause 9 shall be replaced as under:</i></p> <p><i>"The Service Provider shall provide a vehicle, along with a dedicated driver for inspection of services and other arrangements. The Service Provider shall be responsible for comprehensive maintenance of the vehicle from an authorized 3S dealer. The Service Provider is authorized to substitute the vehicle with an equivalent or superior model, whether on a temporary or permanent basis. Nevertheless, the Service Provider shall not withdraw the vehicle unilaterally, without prior written approval of the Purchaser."</i></p> <p><b>58.1 <u>Vehicle Details</u></b></p> <p>a) Vehicle Type = Sedan</p> <p>b) Engine Power = Not less than 1300cc</p> <p>c) Model = 2024</p> <p>d) Exterior Color = Black</p>

		<p>e) Interior Color = Black  f) Registration No. = To be arrange by SP</p> <p><b>58.2 Driver Details</b></p> <p>a. The vehicle driver shall be appointed by the Purchaser on a monthly salary of minimum wage plus five thousand.</p> <p>b. The monthly salary of the driver shall be paid by the Service Provider, payable in the first week of every month.</p> <p>c. Two sets of white Shirt, Shalwar and Black Waistcoat will be required as driver uniform.</p> <p>d. The driver shall be in possession of a valid LTV driver's license at all times.</p> <p><b>58.3 Operation &amp; Maintenance Details</b></p> <p>The Service Provider at its own cost shall;</p> <p>a. present the vehicle with a valid registration number and carryout annual renewal of the registration at its own cost.</p> <p>b. keep the vehicle in good running condition at all times.</p> <p>c. also carry out necessary maintenance of the vehicle as prescribed in the maintenance manual.</p> <p>d. at its own discretion shall maintain comprehensive insurance of the vehicle against all hazards such as accidents, fire, theft, etc.</p> <p>e. conduct a washing service of the vehicle once a week.</p> <p><b>58.4 Fueling Details</b></p> <p>The Service Provider shall furnish to the Purchaser, a PSO fuel card of monthly prescribed limit of no less than 300 liters, renewable at the start of every month for which all charges are to be managed and paid by Service Provider."</p>
36	<p>Page 11 Sub-Clause 6.7 of Clause 6</p> <p>"The bidder shall be responsible and to arrange for PCI DSS certification for PITB's developed AFC-BSS software complete in all aspects (wherever applicable) at its own cost."</p> <p>Please clarify.</p>	<p>Please refer to response at Sr. No. 1.</p>
37	<p>Page 55 &amp; 63 Sr.4 of Tables</p> <p>The quantity of validators should be increased, as each two-way turnstile requires 2 validators.</p>	<p>It is clarified that quantity of the validators has been increased from 148 to 198.</p>

38	<p>Who will be responsible for data backup and disaster recovery drills; the Service Provider or PITB?</p>	<p>It is clarified that the Service Provider will be responsible to the extent of backups of NMS only. Similarly, in case of disaster recovery drills the Service Provider's role shall be limited to the AFC-BSS hardware including, connectivity, power backup/UPS, etc. in accordance with the scope of work defined in the RFP.</p>
39	<p>Page 21 Clause 11</p> <p><i>"...in case of open loop transaction, the instant payment shall be transferred from any third party to PMA above mentioned account..."</i></p> <p>For open-loop transactions, the payment cannot be immediately transferred to the Purchaser's account, as it requires a minimum processing time of "transaction-date + 1" (T+1) for weekdays and "transaction-date + 2" (T+2) for weekends.</p> <p>Please update the clause accordingly.</p>	<p>It is clarified that Clause 11 has been updated as under:</p> <p><i>"... in case of open-loop transactions on a working day except Friday, payment shall be deposited/settled in the Purchaser's account within time period of "transaction-date + 1" i.e. T+1. However, if the transaction occurs on Friday or on non-working day, such as weekends or public holidays, it will be settled on next working day"</i></p>
40	<p>Page 21 Clause 11 and Sub-Clauses 1, 2 &amp; 3 of Clause 11</p> <p><i>"...the SP shall arrange printing of the smart cards based on design specified by PMA and provide to the customers free of cost through following mechanism.</i></p> <ol style="list-style-type: none"> <li><i>1. The card shall be issued upon receipt of cash balance top-up of PKR.250/- all of which shall be available for travel but not more than PKR.100/- per day.</i></li> <li><i>2. For spending more than threshold amount of PKR.100/- per day within the first two days, the commuter would be required to top-up additional balance.</i></li> <li><i>3. After the first two days, 100% of the card balance shall be available for use by the commuter."</i></li> </ol> <p>It is recommended that EMV cards should not be issued free of charge. A security deposit should be required upon card issuance, or a minimum balance requirement should be enforced.</p> <p>Please also clarify the above clauses.</p>	<p>It is clarified that Clause 11 and its Sub-Clause 1, 2 &amp; 3 are to be replaced as under:</p> <p><i>"...the SP shall arrange printing of the smart cards based on design specified by PMA and provide to the customers free of cost through following mechanism.</i></p> <ol style="list-style-type: none"> <li><i>1. The card will initially be issued to the commuter for PKR 130/-. This amount will be topped up immediately upon issuance and retained in the commuter's account. This amount shall not be available to the commuter to use it for travel.</i></li> <li><i>2. The entire amount of PKR 130/- will be promptly deposited/transferred to the Purchaser's bank account. This retained amount will only be refundable upon the closure of the commuter's account.</i></li> <li><i>3. If a replacement card is requested due to damage, loss, or other similar reasons, a new card will be issued with a fine of PKR 260/- (not for top-up). This amount will be promptly deposited/transferred to the Purchaser's bank account."</i></li> </ol>
41	<p>Page 21 Sub-Clause 7 of Clause 11</p> <p><i>"Special smart cards offering weekly and monthly unlimited travel shall be made available by SP as per terms and conditions prescribed by the Purchaser, on renewal basis against the prescribed cost by the Purchaser."</i></p> <p>Please clarify the fare media for weekly and monthly unlimited travel.</p>	<p>It is clarified that Sub-Clause 7 of Clause 11 has been updated as under:</p> <p><i>"High-quality specialized QR paper tickets (not less than 200 grams) offering weekly and monthly unlimited travel shall be made available by SP as per terms and conditions prescribed by the Purchaser, on non-renewal basis to be issued against the prescribed cost by the Purchaser. This ticket shall bear an expiry date after which it shall become un-useable."</i></p>

42	<p>Please confirm whether the old closed-loop smart cards will be utilized in the new open-loop AFC system.</p>	<p>It is clarified that existing closed-loop smart cards will not be used in the new open-loop AFC system and the new Service Provider will not accept old closed-loop cards, neither at ticket booths nor at validator and TKMs.</p> <p>Please refer to Sr. 23. The SP shall simultaneously weed out the old closed-loop cards from the system through the following mechanism.</p> <ol style="list-style-type: none"> <li>PMA will initiate a newspaper and media campaign one month prior to the rollout of the new open-loop system.</li> <li>The campaign will be repeated after 15 days, at which point token issuance will be discontinued.</li> <li>On the 29<sup>th</sup> day, a final notice will be published in newspapers and media outlets.</li> <li>By the 31<sup>st</sup> day, top-up services for the old closed-loop cards will be stopped.</li> <li>On the 45<sup>th</sup> day, all turnstiles will be fully converted to the open-loop system.</li> <li>After 60 days, high-quality specialized QR paper tickets for weekly, monthly, and other fare types will be issued.</li> </ol>
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**MEMBERS ATTENDANCE SHEET**

DEVELOPMENT, IMPLEMENTATION, OPERATIONS AND LONG - TERM MAINTENANCE OF PROVEN AUTOMATED FARE COLLECTION & BUS SCHEDULING SYSTEM (AFC-BSS) FOR PAKISTAN METRO BUS SYSTEM (PMBS) IN RAWALPINDI-ISLAMABAD

**ATTENDANCE SHEET**

Place:	Date: 27-Aug-24		Time: 12:30 PM
Sr. No.	Committee Members	Contact No.	Email Address
1	General Manager (Operations), PMA, Chairperson		
2	General Manager (Finance), PMA, Member		
3	Manager Operations (Technical), PMBS, Member		
4	Manager Operations (Technical), MMBS, Member		
5	Deputy Manager (IT), PMBS, Member		
6	Audit & Accounts Officer, PMBS, Member	0312-9998998	hammad.aceer@egmail.com
7	Representative of Transport & Masstransit Department, GoPb		
8	Representative of Finance Department, GoPb		
9	Representative of PITB, GoPb Awaris Arshad	0322-4255550	awaris.arshad@punjab.gov.pk

10 SE Team  
M. Zohaib Fayyaz

*[Signature]*  
27/8/24

*[Signature]*

*[Signature]*  
27/08/24  
*[Signature]*

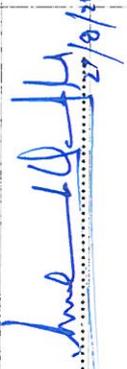
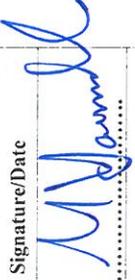
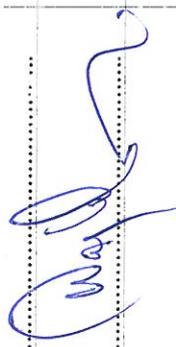
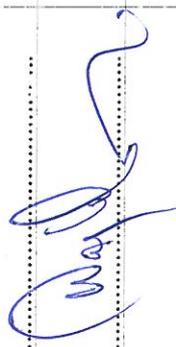
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**BIDDERS ATTENDANCE SHEET**

DEVELOPMENT, IMPLEMENTATION, OPERATIONS AND LONG - TERM MAINTENANCE OF PROVEN AUTOMATED FARE COLLECTION & BUS SCHEDULING SYSTEM (AFC-BSS) FOR PAKISTAN METROBUS SYSTEM (PMBS) IN RAWALPINDI-ISLAMABAD

**ATTENDANCE SHEET**

Place:	Conference Room, PMA Office, 5th floor, Arif Software Technology Park, 346-B, Ferozpur Road, Lahore		Date:	27-Aug-24	Time:	12:30 PM
S. No.	Bidder (Company/ Firm)	Representative's Name	Contact No.	Email Address	Signature	
1	MEEZAN BASIC	Jawwad Hafeez	0301 1186174	Jawwad.hafeez@meezanbasic.com		
2	UBL	Faisal Hussain	321 4003020	faisal.hussain@ubl.com.pk		
3	HBL	M. SAADATI HASAN	0311- 6560000	saddat.hassan@hbl.com		
4	HBL	Tariq Anees	0300-88818 -72	tariq.anees@hbl.com		
5	KENTKART	Syed Tariq	0323- 3922029	tariq.hussain@kentkart.com		
6	KENTKART	ASIF CHAUDHRY	0322- 4008811	asif.chaudhry@kentkart.com		
7	BOP	Asim Anees	0300-8289940	asim.anees@bop.com.pk		
8	GCS	Majid Shahid	03168887636	majid.shahid@gcs.com		
9	Inbox	Rashid Chaudhary	0321-2428863	rashid.ch@inboxbiz.com		
10	Inbox	Omer Javed	0316- 9993688	Omer.Javed@inboxbiz.com		
11	Jazz	Nouman Khan	0300- 8444915	nouman.khan@jazz.com.pk		
12	JAZZ	Bisma Ahsan	0307- 1418861	bisma.ahsan@jazz.com.pk		
13	GCS	Jahans Bique	0323- 322023	jahans.bique@gcs.com		
14	Inbox	Adnan Afzal	0316 9993657	adnan.afzal@inboxbiz.com		

		Tender Evaluation Committee	
		Signature/Date	Signature/Date
15			
16			
1	General Manager (Operations), PMA, Chairperson	 27/07/14	
2	General Manager (Finance), PMA, Member		6 Audit and Accounts Officer, PMBS, Member Rep. of Transport & Mass Transit Department, GoPb
3	Manager Operations (Technical), PMBS, Member		7 Rep. of Finance Department, GoPb
4	Manager Operations (Technical), MMBS, Member		8 Rep. of PITB, GoPb Awan ArstAD
5	Deputy Manager IT, PMBS, Member		9 Danish Ahmad

# Addendum No.1 to Tender Document

**DEVELOPMENT, IMPLEMENTATION, OPERATIONS AND LONG -  
TERM MAINTENANCE OF PROVEN AUTOMATED FARE COLLECTION  
& BUS SCHEDULING SYSTEM (AFC-BSS) FOR PAKISTAN METROBUS  
SYSTEM (PMBS) IN RAWALPINDI-ISLAMABAD**



**THE PUNJAB MASSTRANSIT AUTHORITY**  
**GOVERNMENT OF THE PUNJAB**  
5<sup>th</sup> Floor, Arfa Software Technology Park (ASTP)  
346-B, Main Ferozpur Road, Lahore, Pakistan.  
Phone: +92 42 3588 0136 Fax: +92 42 9923 2541  
URL: [www.pma.punjab.gov.pk](http://www.pma.punjab.gov.pk)



# Addendum No.1 to the Tender Document

Due to some clarifications required in the RFP document, the following addendum is hereby issued, which shall form a part and parcel of the original document titled

**"DEVELOPMENT, IMPLEMENTATION, OPERATIONS AND LONG - TERM MAINTENANCE OF PROVEN AUTOMATED FARE COLLECTION & BUS SCHEDULING SYSTEM (AFC-BSS) FOR PAKISTAN METROBUS SYSTEM (PMBS) IN RAWALPINDI-ISLAMABAD"**

issued and uploaded on 17<sup>th</sup> August, 2024. The highlighted contents of this addendum shall supersede/replace respective parts of the Clauses in pages 5, 7, 11, 12, 16, 19, 20, 21, 23, 24, 44, 51, 55, 63, 84, 85, 89, 91, 92, 94 and 95 of the original RFP document, and shall be read as part of the RFP document uploaded on the PPRA's e-PADS and following websites:

[www.pma.punjab.gov.pk](http://www.pma.punjab.gov.pk)

[www.ppra.punjab.gov.pk](http://www.ppra.punjab.gov.pk)

## **Important Dates**

1. Last date of Bid Submission: **September 18, 2024 (1400 Hours)**
2. Clarification meeting: **August 27, 2024 (1200 Hours) – PMA Building, 5th Floor, Haider Road, Saddar, Rawalpindi.**

- 1.23 "TEC" means the Tender Evaluation Committee, constituted for the purpose of evaluating the Proposals received.
- 1.24 "Terms of Reference" or "TOR" means the document which explains the objectives, scope of work, activities, task to be performed, respective responsibilities of the procuring entity and the bidder, and expected results and deliverables of the assignment.
- 1.25 "Works" means work to be done by the SP under the Contract.
- 1.26 "GoPb" means Government of the Punjab
- 1.27 "PITB" means Punjab Information Technology Board, GoPb.
- 1.28 "CSC" means EMV Contactless Smart Card (physical Card)
- 1.29 "Smart Card" means EMV card
- 1.30 "emulated CSC" means emulated Contactless Smart Card in Mobile Application (NFC & QR code)
- 1.31 "Concurrent Annual Contract Cost for the purpose of liquidated damages" shall mean the total annual cost of unfurnished/non-commissioned equipment/services/works
- 1.32 "RL1SP2" Rawalpindi Line 1 Service Provider 2 means Contractor/AFC-BSS Service Provider for PMBS
- 1.33 "EMV L1/L2/L3" Europay, Mastercard and Visa Level 1/Level 2/Level 3
- 1.34 "SDK API" means Software Development Kit Application Programming Interface.
- 1.35 "PCI DSS" means Payment Card Industry Data Security Standard
- 1.36 "Closed Loop payment systems" in the context of mass transit system refers to the use of proprietary closed-loop cards fare media by transit operators and closed loop cards fare media are typically used for fare payment within the specific transit system or network.
- 1.37 "Open Loop payment systems" means passengers can use their bank-issued contactless credit or debit cards, to pay journeys
- 1.38 "e-PADS" means e-Punjab Acquisition and Disposal System as approved by the Punjab Procurement Regulatory Authority
- 1.39 "e-bid/bid/proposal" means electronic bid or proposal (Technical & Financial Proposal)
- 1.40 "e-Submission" means submission of bid or proposal either by uploading PDF file or submission by using dynamic forms

Software will enable commuters to pay their fare through Mobile App (QR Code), POS generated QR Code ticket, any bank card and centralized smart card on digital payment mechanism with open loop banking system. PITB shall be responsible for the maintenance of AFC software and mobile application. PITB shall also be responsible for the data center services. In addition, PITB is also developing a robust Bus Scheduling System (BSS), for deployment in all mass transit systems in Punjab, which is nearing completion.

**The General Scope of Works/Services includes but not limited to the following: -**

- 6.1 Punjab Masstransit Authority (PMA), Government of the Punjab (The Purchaser), invite/request Proposals for the Development, Implementation, Operations, and Long-Term Maintenance (on turnkey basis) of proven Automated Fare Collection & Bus Scheduling System (AFC-BSS).
- 6.2 Key role of the bidder shall be to furnish, install, commission, operate and maintain equipment for transactions, through open loop and closed loop payment system, for ticketing at Pakistan Metrobus System operated by PMA in Rawalpindi-Islamabad. Furthermore, the bidder shall also furnish, install, commission, operate and maintain equipment for scheduling of buses, vehicle location system and passenger information system (henceforth called BSS) where required.
- 6.3 The prescribed open loop and closed loop payment system shall be deployed such that it is fully integrated with indigenous AFC software already developed by PITB for PMA. Accordingly, there shall be no equipment commissioned under the Contract that is of proprietary nature and all such equipment whether for transactions or BSS shall be able to fully hand shake with aforementioned AFC-BSS software.
- 6.4 The bidder shall ensure smooth running of Metrobus System under open loop and closed loop payment system including furnishing, installing, configuring, deploying, thoroughly testing, operating & maintaining all hardware and administering all components of transactions such as Point of Sale machines, Validators and KIOSKs, network connectivity, fare media etc.
- 6.5 Manage ticketing operations by deploying adequate human resource at PMA stations by fully utilizing the PITB AFC-BSS software. This includes bank transactions, debit/credit cards transactions for open loop, ticket sales, refunds, smart card sales & recharge, cash collection, cash deposit in the PMA designated bank account, customer facilitation at metrobus station and turnstiles etc. as per defined scope of services.
- 6.6 Coordinate with PITB to provide technical support for integration of AFC-BSS equipment with PITB Centralized AFC-BSS Software such as Web & Mobile Platform for Android & iOS, EMV L1, L2 & L3 compliance, provision of payment application for open loop system (white listing for Govt. of Punjab) and extend such coordination & integration with respect to any other third party software/system via secure API & SDK available in but not limited to DOT NET/PHP and any required platform in English language.
- 6.7 *PMA through its AFC software Service Provider i.e. PITB shall be responsible for PCI DSS certifications for the developed AFC software and Mobile applications. However, the Service Provider shall be responsible for acquiring and maintaining PCI DSS certification for all relevant AFC hardware and associated application tools, including validation devices, required APIs & SDKs linked with the hardware, and other related components wherever applicable at its own cost. The Service Provider shall ensure provision of all relevant certifications for the hardware and related software applications/components i.e. API & SDKs as follows:*  
*EMV (L1, L2 & L3) and PCI-DSS/PA-DSS etc. where applicable, for open loop payment system and its integration with PITB AFC-BSS software and mobile application.*
- 6.8 ~~The bidder shall ensure provision of all relevant certifications for the hardware and software for open loop payment system and its integration with PITB AFC-BSS software.~~

6.9 In the first phase, the AFC-BSS solution needs to be rolled out for 24 stations of Pakistan Metrobus System as per following plan.

Sr. No.	Stations	Entry Turnstile		Exit Turnstile	
		One-Way	Two-Way	One-Way	Two-Way
1	SADDAR	2	1	2	1
2	MARRIR CHOWK	2	1	2	1
3	LIAQUAT BAGH	2	1	2	1
4	COMMITTEE CHOWK	2	1	2	1
5	WARIS KHAN	2	1	2	1
6	CHANDNI CHOWK	2	1	2	1
7	REHMANABAD	2	1	2	1
8	6TH ROAD	2	1	2	1
9	KHATAM-E-NABUWAT	2	1	2	1
10	FAIZABAD	3 4	1	3 4	1
11	IJP	2	1	2	1
12	POTOHAR	2	1	2	1
13	KHAYABAN E JOHAR	2	1	2	1
14	FAIZ AHMED FAIZ	2	1	2	1
15	KASHMIR HIGHWAY	3	1	3	1
16	CHAMMAN	2	1	2	1
17	IBN E SINA	1	1	1	1
18	KATCHERY	2	1	2	1
19	PIMS	2	1	2	1
20	STOCK EXCHANGE	2	1	2	1
21	7TH AVENUE	3	1	3	1
22	SHAHEED E MILLAT	2	1	2	1
23	PARADE GROUND	2	1	2	1
24	PAK SECRETARIATE	2	1	2	1
<b>Total</b>		<b>50 51</b>	<b>24</b>	<b>50 51</b>	<b>24</b>

Eventually, the system may be rolled out for other routes as well.

6.10 The AFC-BSS solution comprises of the following core components and its associated equipment and services which should be Integrate-able with PMA Web & Mobile Platforms for Android & IOS, and any other third party software/system via secure API & SDK:

- Automated Fare Collection System
- Bus Scheduling and Vehicle Location System
- Passenger Information System

Note: All the Hardware at stations should have capability to work offline in case of disconnection with main server in order to ensure 0% downtime in ticketing operations.

High-level requirements for these systems are outlined in relevant sections in this document.

3. Agree to and abide by the scope of works and services stated under Clause 6 "Scope of Works/Services" above.
4. Deploy suitably skilled personnel (dedicated team) for configuration/customization/Integration, installation, prompt and efficient technical support/maintenance of all AFC-BSS components.
5. Adequate spare parts must be in place, in order to ensure uptime defined in the Service Level Agreements. Cost to be borne by Service Provider.
6. SP shall provide sample (one unit each) of all relevant hardware *along with relevant APIs, SDKs and payment application* of AFC-BSS to PITB within ~~21~~ 45 days after issuance of Letter of Intent (LOI) before the implementation and execution of the AFC-BSS system. Further, SP shall submit detailed design, specifications, documentation including APIs and SDKs, and manuals (also in soft copy) of related AFC-BSS system components being implemented - for approval.
7. Establish formats, standards and protocols for communication among the different sub systems of AFC-BSS.
8. Adhere to timelines of the AFC-BSS project implementation specified in this RFP document excluding AFC-BSS software.
9. Provide monthly/weekly reports on progress of AFC-BSS implementation as per scope defined in this RFP document.
10. Ensure quality, robustness, security, and functionality of all hardware components associated with AFC-BSS.
11. Implement appropriate security measures for the information and data generated from operations of AFC-BSS, and deploy standard disaster management procedures, contingency plans, and back-up plans to cope with any system failure.
12. Impart meaningful and timely training to all staff associated with AFC-BSS as well as selected staff of PMA.
13. Document a detailed equipment and AFC-BSS component maintenance plan in consultation with PMA, and implement it. The plan must cover procedures and parameters for preventive and break-down maintenance, as well as maintenance review procedures.
14. Undertake a comprehensive training program, regarding AFC-BSS hardware, and ensure that its staff acquires a good working knowledge of supply of such Services to be supplied under the Contract.
15. Prepare and implement detailed preventive and break-down maintenance plan for all AFC-BSS equipment and components. Also update the maintenance plan through

42. The SP is liable to cooperate fully with the assigned Information System Auditor's and shall extend all necessary access, support & cooperation for the completion of said audits (as and when required).
43. The SP must provide **additional** AFC-BSS equipment to the Purchaser as and when required.
44. The AFC-BSS system must have the capability to handle flat rate, staged/zone based and distance based fare policies, and must be scalable/expandable to any number of stations.
45. Adequate resources of SP must be available to ensure smooth operations of AFC-BSS.
- ~~46. Purchaser reserves the right to purchase additional AFC-BSS solutions from any other third party through competitive bidding as per the specifications mentioned in the RFP document. The SP is responsible to facilitate the integration with all such AFC-BSS solutions in an efficient & timely manner.~~
47. The SP is responsible for operating the entire AFC-BSS system including all its components and peripherals, reliably and securely at all times during the course of the contract. After complete initial system deployment, User Acceptance Testing (UAT) and commissioning of the system, the SP shall not make any changes to the system configuration parameters and security settings without prior written approval of the Purchaser in a timely manner.
48. In case of failure of all entry or exit turnstiles at a particular station, the SP shall deploy portable ticket validators to process entry / exit of passengers so as to avoid unprocessed travelling. The SP will be responsible to arrange and maintain necessary power backup so that these handheld validators may be utilized for 18 hours a day operations.
49. In case new articulated buses are procured by the Purchaser, the SP will be required to ensure compatibility of equipment in coordination with the Bus Service Provider and/or the bus manufacturer. The SP is also responsible for the deployment of equipment from old buses to new buses in coordination with AFC-BSS manufacturer. In this respect, the SP shall bear all expenses for deployment of AFC-BSS equipment in at least up to 68 new articulated buses.
50. The SP must ensure synchronization of data generated by all the AFC-BSS devices to the centralized servers in real time and without any delay (limited to hardware and connectivity).
51. The SP must submit employee's salary disbursement certificate for the last month along with banking transactions scroll with the current month invoice.
52. The SP must ensure that all the hardware at stations should have capability to work in decentralized/centralized mode in order to ensure maximum uptime in operations i.e. all the hardware at stations should have capability to work offline in case of disconnection

with main server in order to ensure 0% downtime in ticketing operations.

53. The provided AFC-BSS solution must be able to function on a 24x7x365 basis.
54. SP shall also provide the payment applications for the AFC equipment i.e. Validators, Ticket Kiosk Machines, Ticket Office Machines, Point-of-Sale machines etc. *and ensure integration of the payment application with AFC-BSS system*, along with ~~source code~~, documentation, specifications, manuals, etc. *at its own cost*. *In addition, SP shall also be responsible for the white listing of all Payment applications for Government of Punjab where applicable at its own cost.*
55. *The SP shall ensure provision of all relevant certifications for the hardware and software for open loop payment system and its integration with PITB AFC BSS software at its own cost.*
56. The SP shall provide all the AFC-BSS hardware, managed services, operations and maintenance at its own cost. In addition, the cost of service agreed between the parties shall be full and final and include any and all cost for provision of services.
57. *The SP shall prepare the advertisement content to promote the open loop cards to reduce the use of single ticket and promote the use of mobile application. However, SP shall seek approval of the Purchaser prior to advertising such promotion. After approval, SP shall plan, design and launch at least three sequential campaigns in newspapers and on other means i.e. social media, SMS, etc. to increase the usage of open loop cards, as well as the use of mobile application and to discourage the use of single tickets and Service Provider shall bear the cost of such campaigns. The SP shall simultaneously weed out the old closed-loop cards from the system through the following mechanism.*
- a. PMA will initiate a newspaper and media campaign one month prior to the rollout of the new open-loop system.*
  - b. The campaign will be repeated after 15 days, at which point token issuance will be discontinued.*
  - c. On the 29<sup>th</sup> day, a final notice will be published in newspapers and media outlets.*
  - d. By the 31<sup>st</sup> day, top-up services for the old closed-loop cards will be stopped.*
  - e. On the 45<sup>th</sup> day, all turnstiles will be fully converted to the open-loop system.*
  - f. After 60 days, high-quality specialized QR paper tickets for weekly, monthly, and other fare types will be issued.*
58. *The Service Provider shall provide a vehicle, along with a dedicated driver for inspection of services and other arrangements. The Service Provider shall be responsible for comprehensive maintenance of the vehicle from an authorized 3S dealer. The Service Provider is authorized to substitute the vehicle with an equivalent or superior model, whether on a temporary or permanent basis. Nevertheless, the Service Provider shall not withdraw the vehicle unilaterally, without prior written approval of the Purchaser.*
- 58.1. *Vehicle Details*
- a. Vehicle Type = Sedan*
  - b. Engine Power = Not less than 1300cc*
  - c. Model = 2024*
  - d. Exterior Color = Black*
  - e. Interior Color = Black*
  - f. Registration No. = To be arrange by SP*
- 58.2. *Driver Details*
- a. The vehicle driver shall be appointed by the Purchaser on a monthly salary of minimum wage plus five thousand.*
  - b. The monthly salary of the driver shall be paid by the Service Provider, payable in the first week of every month.*
  - c. Two sets of white Shirt, Shalwar and Black Waistcoat will be required as driver uniform.*
  - d. The driver shall be in possession of a valid LTV driver's license at all times.*

**58.3. Operation & Maintenance Details**

*The Service Provider at its own cost shall;*

- a. present the vehicle with a valid registration number and carryout annual renewal of the registration at its own cost.*
- b. keep the vehicle in good running condition at all times.*
- c. also carry out necessary maintenance of the vehicle as prescribed in the maintenance manual.*
- d. at its own discretion shall maintain comprehensive insurance of the vehicle against all hazards such as accidents, fire, theft, etc.*
- e. conduct a washing service of the vehicle once a week.*

**58.4. Fueling Details**

*The Service Provider shall furnish to the Purchaser, a PSO fuel card of monthly prescribed limit of no less than 300 liters, renewable at the start of every month for which all charges are to be managed and paid by Service Provider.*

handled by the Purchaser at stations. No deductions will be imposed on SP under such circumstances. It is however clarified that prior approval of PMA shall be obtained by the SP before shutting down equipment except in case of emergencies in which human lives are at risk.

III. *There will be a dedicated security operator for PMBS, on 24/7/365 basis, who will be responsible for the security of equipment after operations hours. However, security of equipment locked by the SP shall be to the extent of protection of breakage of locks and theft thereafter. Furthermore, subject to the Clause 38, the Purchaser shall pay the damages resulting from riots, vandalism, or any act of terrorism, to the extent not paid by the insurance company provided that the Service Provider files a claim to the insurance company in writing and insurance company rejects the whole or part of such claim. Moreover, the Purchaser shall pay the damages to the BSS equipment installed in buses that are incurred by the bus operator.*

#### 10. Key Service-level parameters

Any breach of defined service levels in “SLA A” will entail penalties which shall not exceed more than 10% of the monthly payments to the SP ~~while penalties defined in “SLA B” shall be deducted separately which shall not be included in 10% limit.~~ Service level parameters are outlined in Annexure- J.

#### 11. Revenue collection and payment mechanism

Each fresh instance of sale of ticket, recharge/top-up, etc. shall be handled as a direct and instant deposit in PMA Bank of Punjab Account No. 6580045522200034 titled METROBUS AUTHORITY RIMBS FUND ACCOUNT. In addition, *in case of open-loop transactions on a working day except Friday, payment shall be deposited/settled in the Purchaser’s account within time period of “transaction-date + 1” i.e. T+1. However, if the transaction occurs on Friday or on non-working day, such as weekends or public holidays, it will be settled on next working day.* Furthermore, the Service Provider shall arrange printing of the smart cards based on design specified by PMA and provide to the customers free of cost through following mechanism.

1. *The card will initially be issued to the commuter for PKR 130/-. This amount will be topped up immediately upon issuance and retained in the commuter’s account. This amount shall not be available to the commuter to use it for travel.*
2. *The entire amount of PKR 130/- will be promptly deposited/transferred to the Purchaser’s bank account. This retained amount will only be refundable upon the closure of the commuter’s account.*
3. *If a replacement card is requested due to damage, loss, or other similar reasons, a new card will be issued with a fine of PKR 260/- (not for top-up). This amount will be promptly deposited/transferred to the Purchaser’s bank account.*
4. Sale of tickets (smart cards/QR tickets) and top up to mobile application (using mechanism defined by the Purchaser) shall be the responsibility of the SP.
5. *The Service Provider shall be responsible for conducting annual third-party audit (financial as well as technical) of the AFC-BSS system deployed at PMBS, as an integral part of the project at its own cost.*
6. *Special smart cards offering discounts to senior citizens, disabled persons, students and working women, etc. (henceforth called special persons); if so ordered by the Government shall be made available by SP as per terms & conditions and cost prescribed by the Purchaser. If such scheme is introduced for the free travel or reduced rate travel for special persons; the Service Provider shall manage such instances by issuing color tickets at the ticket booth, to the special persons desiring to travel. Service Provider shall manage their travel to the concourse area by retrieving the color ticket and by tapping a master card specially placed at each station to record instances. Also, if such scheme is introduced by the Govt. additional human resource cost (if any) will be negotiated at minimum wage rate as per Sub-Clause 14.7.1 of Clause 14. The requisite additional human resource shall be responsible to tap out the special persons from the stations by using another master card.*
7. *High-quality specialized QR paper tickets (not less than 200 grams) offering weekly and monthly unlimited travel shall be made available by SP as per terms and conditions prescribed by the Purchaser, on non-renewal basis to be issued against the prescribed cost by the Purchaser. This ticket shall bear an expiry date after which it shall become un-useable.*
8. *The Merchant Discount Rate (MDR) shall be borne by the Purchaser. The Service Provider may bill such charges and present such evidence with the monthly invoice.*

There are different types of fare media i.e. mobile ticketing (emulated CSC in mobile application using NFC & QR code), QR paper tickets and EMV contactless card. Cards are used for long term planned repeated journeys whereas for short/occasional or single journeys on Masstransit systems disposable QR paper tickets will be used.

Required number of cards necessary to efficiently serve passenger volumes must be in stock with the SP at all points of time – this is must to ensure that no shortages of fare media (cards & QR paper tickets) occur at any given time. SP shall arrange / supply all kinds of fare media as required during the course of the Contract (at all times, a minimum of ~~200,000~~ 30,000 smart cards and a 15-day supply of paper tickets calculated at 150,000 tickets per day). The Service Provider shall also be responsible for the sale of personalized smart cards at all Metrobus stations and designated bank branches in Rawalpindi and Islamabad. The personalized smart cards must be issued on-site with minimal delay to ensure passenger convenience.

The type of **closed loop** smart cards in use are Mifare Plus S2K having operating frequency of 13.56 MHz that is also ISO 14443 complaint. The dimensions of the **closed loop** smart cards comply with ISO 7810. The resistance of the **closed loop** smart cards to mechanical stress and chemicals comply with ISO 10373. All **closed loop** smart cards have a unique external identification number that is linked to the card's manufacturer supplied internal identification number which will not be erasable or changeable.

**Note:** Fare rates will be determined by Government of Punjab and cost of media will not be transferrable to passengers purchasing tickets for single or daily journey. It is clarified that the SP will be responsible to arrange/supply the smart cards/QR paper tickets as required for ticketing of passengers.

#### **13.4 Automated Fare Collection and Fare Policy**

Passengers will be charged flat fare as per prevailing fare policy. However, AFC-BSS is able to handle fare policies based on flat rate, zones/stages/time, as well as distance travelled. AFC-BSS is also able to handle the full fare, concessional fare and free fare policies. AFC-BSS also caters to on-board as well as off-board ticketing modes and is able to handle transfers across on-board and off-board ticketing modes.

#### **13.5 Top Ups/Printing Tickets/Allotting and Refunds**

Ticket Office Machines (TOM) are to be made available by the AFC-BSS Service Provider, at all Metrobus stations, to issue QR paper tickets, top-up smart cards and AFC-BSS mobile application with the desired amount paid by the passenger. TOM is manually operated and has ticket selling and supplementing function. TOMs must be NFC enabled and should have the capability to read QR code and must be EMV compliant. TOM must reliably transmit transactional data to any intermediary system and/or central database. TOM must be able to refund any reported incidents of overcharging after due diligence to passenger, if it is agreed that such reimbursements are to be adopted as policy. All such functionality must be a typical feature of proposed TOM. Every Metrobus station must have at least one TOM available in fully functional condition at any point of time.

#### **13.6 Portable Ticket Validators (as backup)**

Portable validators i.e. handheld ticket validators will be used by turnstile controllers as backup medium to validate entry/exit of passengers to/from paid area of the platform, in case of

failure of all entry/exit turnstiles at any platform. The portable ticket validators must also be capable of issuing QR paper tickets. The SP will be responsible to make all necessary provisions so that portable validators can be used under such circumstances.

### 13.7 Ticket KIOSK Machines (TKMs)

TKMs shall be deployed in unpaid area of station for passenger to carry out self-service. TKMs shall dispense QR paper tickets for single journey and high-quality specialized QR paper tickets (not less than 200 grams) for weekly and monthly travels smart-cards, top up smart cards and mobile application and generate QR code based paper tickets. TKMs must have NFC and QR scanner, built in POS machine, built in thermal printer etc. It should also be capable to operate as stand-alone system.

### 13.8 Bus Scheduling and Vehicle Location System

Concerned authority of the PMA will share bus schedule with the AFC-BSS Software Provider to update into the system or update the bus schedule from PMA admin web application. The Bus Scheduling System have flexibility to plan different travel time for same route within single day. SP shall ensure that all buses are equipped with GPS enabled trackers in On-board unit (OBU) i.e. Driver Console Unit that integrate with the relevant software. The OBU shows plan scheduling time on OBU for driver adherence. AFC-BSS software will generate reports that will form a basis for payments to operators - based on agreed formula (determined by scheduled trips/kilometers, distance travelled as fetched via Vehicle Location System and any other associated/integrated components proposed as part of the solution).

Every bus will have to be equipped with GPS devices and relevant components (on bus and off bus), that can gather location wise data and transmit to central servers and related software modules. Data gathered in this fashion will help monitor movement of the bus via GIS interface, in real time against bus schedule defined in the relevant software module. Distance travelled, and number of trips made by every bus, must be reported via AFC-BSS. All such buses need to be equipped with GPS enabled trackers that integrate with the PITB BSS Software for implementation as part of the AFC-BSS solution.

The SP shall provide support to any third party in integration of live location fetching through GPS or alternative implemented solutions along with equipment's SDKs and APIs in DOT NET/PHP and any other platform in English language.

The Vehicle Location System shall enable operations team to monitor vehicle movement in real-time and synthesize the field data to deliver the same on the public information system devices installed on Bus Stations, Buses, customer portal etc.

The Driver Console Unit shall be used to provide vehicle tracking accurately and reliably. The back end system shall be able to produce MIS reports of vehicle schedule adherence report and kilometers travelled by each bus, by route and by fleet of each operator.

The Driver Console/OBU is capable to display messages and play voice recordings accordingly to timely inform passengers of the next approaching station as well as to make any other critical announcements. The Driver Console/OBU is also capable of storing other critical announcements of at least one (01) hour duration and playing some prescribed voice recordings through driver OBU interface.

Purchaser, taking into account the number of stations and number of buses for which AFC- BSS has been successfully provisioned. However, it is clarified that if a station is closed by the Purchaser, not because of the fault of RL1SP2 but, to riots, strikes, natural calamities or by the action of law or government etc. the Purchaser shall make the prorated deductions in the invoice processing. Subsequently, the RL1SP2 shall submit its separate invoice for incurred costs during such instance of closure and the Purchaser shall evaluate the invoice and pay such agreed costs; however, the Purchaser shall not pay any profits i.e. 15% in such instances. ***The Purchaser shall make separate deductions in the COP on account of strikes and subsequent revenue loss if such acts are caused by the Service Provider or any of its staff.***

#### 42. **Contract Price**

The RL1SP2 shall not charge prices for the equipment and services provided and for other obligations discharged, under the Contract, varying from the prices quoted by the RL1SP2 in the Financial Proposal (Form of Bid/Financial Proposal Submission Form) or not agreed by the Purchaser as per this Contract. The quoted price, in the financial bid, is inclusive of all applicable taxes, as per Laws of the Government of Pakistan, except Sales Tax on Services which shall be added by the Purchaser over and above the quoted amount, as applicable/required under the relevant Tax Laws, to arrive at the Contract Price. Accordingly, the Contract Price shall be subject to adjustments for change in rate of Sales Tax on Services as and when applicable.

**The RL1SP2 need not include escalation in cost for the contract period because the bid price is completely indexed with minimum wage and consumer price index (CPI). All changes in minimum wage and CPI will be passed on the RL1SP2 as per the mechanism given below.**

Component prices P<sub>3</sub> and P<sub>4</sub> of the bid price P shall be adjusted for minimum wage whenever a new minimum wage rate affecting the city of operations is notified. Component price P<sub>2</sub> of the bid price P shall be adjusted at the end of each fiscal year for the change in consumer price index (CPI) since the bid submission date.

The monthly gross amount (exclusive of sales tax on services) P<sub>n</sub> shall be as follows:

$$P_n = P + E_n$$

Where

$$E_n = P_2 \times \left( \frac{CPI_n}{CPI_0} - 1 \right) + (MW_n - MW_0) \times SS \times \frac{365}{(365 - 52 * -14 **)}$$

Where

**E<sub>n</sub>** is the cumulative escalation in monthly price in PKR since the bid submission date.

**MW<sub>n</sub>** is the notified minimum wage for the invoice period.

**MW<sub>0</sub>** is the notified minimum wage on the date of bid submission.

**SS** is the total number of defined human resources in Component P<sub>3</sub> and P<sub>4</sub>.

**CPI<sub>n</sub>** is the value of consumer price index (CPI) on the last date of the previous fiscal year as published by Pakistan Bureau of Statistics, i.e. 30<sup>th</sup> June, 2023 for invoices submitted for the period of 1<sup>st</sup> July, 2023 and onwards and 30<sup>th</sup> June, 2024 for invoices submitted for the period 1<sup>st</sup> July, 2024 and so on.

## 67. Power

The Goods/Equipment/Items supplied under the Contract, unless otherwise specified, shall be capable of operating normally with single phase AC power, within the range of 220-240V, with the corresponding frequency of 50 Hz, inclusive, and should be protected from over-voltage, over-heating and out-of-tolerance current surges. RL1SP2 must ensure that all equipment as installed on the stations does not undergo power outage resulting from malfunctioning of UPS (UPS must provide uninterrupted power supply of 4 hours in all cases to all AFC-BSS related equipment deployed on the station). Purchaser will be responsible for the provisioning of power at all stations.

## 68. Safety

68.1 The RL1SP2 shall be responsible for the embedding of safety features in the inherent design of the Goods/Equipment/Items, for elimination of identified hazards, including but not limited to high voltage, electromagnetic radiation, sharp points and edges, etc., and reduction of associated risk to personnel and equipment.

68.2 The RL1SP2 shall be responsible for the detailed survey and submission of the report in regards to the protection of the power sources, controls, and critical components of the redundant systems and subsystems by shielding or physical separation when possible.

## 69. Support and Maintenance

The RL1SP2 will support and maintain Goods/Equipment/Items for the period of contract including all renewals if applicable.

## 70. Spare Parts and Support

70.1 The RL1SP2 shall ensure that the Goods/Equipment/Items provided by the RL1SP2, under the Contract are genuine, brand new, non-refurbished and un-altered in any way and are as per standard and incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.

70.2 The RL1SP2 shall further ensure that the Goods/Equipment/Items provided by The RL1SP2, under the Contract shall have no defects, arising from design, materials, installation, configuration, or from any act or omission of The RL1SP2 that may develop under normal use of the Goods.

70.3 The RL1SP2 shall maintain sufficient backup stock of spare parts and tools, for the maintenance of the supplied Goods/Equipment/Items, to be replaced/repaired at RL1SP2's cost for the time of contract including all renewals *as well as the following items in adequate quantities:*

70.3.1 *Items (repairable spares, parts and consumable supplies) that are needed to maintain design performance, reliability and availability standards prescribed in the Technical Specifications. The quantity of spare parts and consumable items provided and must have sufficient operating stock for the period of contract subsequently applying to all renewal years.*

70.3.2 *Critical items, whose failure would cause a system failure.*

70.3.3 *Items of high cost and/or long lead time over thirty (30) working days.*

70.4 The RL1SP2 shall also identify the following:

~~70.4.1 Items (repairable spares, parts and consumable supplies) that are needed to maintain design performance, reliability and availability standards prescribed in the Technical Specifications. The quantity of spare parts and consumable items provided and must have sufficient operating stock for the period of contract subsequently applying to all renewal years.~~

~~70.4.2 Critical items, whose failure would cause a system failure.~~

~~70.4.3 Items of high cost and/or long lead time over thirty (30) working days.~~

## 71. Inspection and Testing

71.1 The Purchaser shall conduct the quantitative inspection of the Goods/Equipment/Items and

## 74. Technical Evaluation Criteria

A point system will be used for technical qualifying for the bidders.

**PASS MARKS:** An eligible bidder, based on conditions listed in Section below, not meeting the 65% pass mark limit will be rejected in Technical evaluation, and its Financial Proposal will not be opened on e-PADS. All bidders scoring greater than or equal to 65% of the marks will be accepted in technical proposal, and their respective financial bids will be opened on e-PADS as per rules and regulations. In case of JV, marks shall be evaluated jointly for all members unless stated otherwise.

The Purchaser reserves exclusive rights to reject the proposal submitted at any time without giving any reason thereof.

According to the Technical Evaluation Criteria, the Technical proposal will be rated as follows. Bidders may fill in the below evaluation sheet and do their own evaluation for submission, but the evaluation done by the Purchaser/ Evaluator shall be the valid evaluation and shall hold:

For each component listed below, provide detailed specifications with relevant materials including information on standards compliance.

### COMPLIANCE SHEET FOR BID

Sr. No	Component	Estimated Quantity	Requirements Met (Y/N)
1	Provisioning and installation of UPS  (Necessarily to provide power backup of at least 4 hours at any given time for all AFC-BSS components including but not limited to 6 turnstiles, 6 validators and at minimum 2 Ticket Office Machines, Ticket KIOSK Machine, internet routers and/or other necessary equipment material)	24	
2	Provisioning and installation of Ticket Office Machines	62	
3	Turnstiles  (6 for each station for roughly 24 stations, 100 one-way turnstiles, 48 two-way turnstiles)	148 150	
4	Turnstile Validators	148 198	
5	Driver console, including GPS Trackers for Buses	68	

## 76. Equipment Cost

**MUST BE SUBMITTED AS AN ANNEXURE WITH FINACIAL PROPOSAL ALONGWITH PRICE SCHEDULE/BID PRICE/FORM OF BID**

**(Will be used for the purposes of estimating and analyzing solution costs)**

EQUIPMENT COST		COL- A	COL-B	COL-C= COL-A * COL-B
Sr. No	Components	Estimated Quantity	Unit Price (Inc. Taxes)	Total Price (Inc. Taxes)
1	Uninterruptable Power Supply (UPS) (with at least 4 hours of backup time)	24		
2	Ticket Office Machines	62		
3	Turnstiles (6 for each station for roughly 24 stations, 100 one-way turnstiles and 48 two-way turnstiles)	148 150		
4	Turnstile Validators	148 198		
5	Driver console, including GPS Trackers for Buses	68		
6	Fare Media; QR paper tickets  (fare media to be supplied for the period of support i.e. 10 years)	Based on anticipated ridership volumes given in section 7		
7	Provisioning of data connectivity to each station through secondary medium that could be any and integration with the primary medium, Fiber optic network provisioned by the purchaser. In addition, provisioning of data connectivity to equipment installed at all buses.	24 stations & 68 buses (approximately)		
8	Provisioning of reliable data computing and network at each station - including servers, switches, routers, wiring at station and all other components necessary to provision and operate AFC-BSS components efficiently. Please list all components.	24		
9	Provisioning of handheld/portable ticket validators	15		
10	Passenger Information System (On Station Sign) Boards (2 Screens per station each with dual side display)	24 stations		
11	Ticket KIOSK Machines	24		

22	Unmanned Ticket Office Counter	No human resource at ticket office counter observed over a period of one minute	N/A	PMA record	Rs. 5,000/- on each incident + Rs. 5,000/- for each subsequent five minute period
23	Inconsistency within Reports	Reports generated from the system are inconsistent with each other	N/A	PMA record	Rs. 5,000/- on each incident + Rs. 5,000/- for each subsequent hour
24	Time Synchronization	System reports/equipment/live time not conforms with Pakistan Standard Time	N/A	PMA record	Rs. 5,000/- on each incident + Rs. 5000/- for each subsequent hour
25	Resource Management	Number of shift days for which resource present at the designated location / Total number of shift days	100%	Attendance track call log, Audit call/visits measured on a monthly basis, must be available to PMA via centralized online system	The payments shall be deducted on a pro-rata basis. Moreover, 1. For TOM & TKM Operators and Turnstile Controllers: an equivalent amount of penalty shall also be applied. 2. For Operations Supervisor: Penalty shall be applied at Rs. 4000/- for each absence of resource / shift system
26	Delayed Invoice Submission	Failed to submit invoice in first 10 days of the month	N/A	PMA record	Rs 30,000/- on each incident

**Service Level Agreement (SLA-B)**

Sr. No	Service	Parameter	Service level	Validation	Penalty
1	Revenue Loss	Any deliberate action intended to stop/impede/resist Purchaser's Operation	N/A	PMA record	Revenue loss based on historical data
2	Violation of scope of services	Any act of non-conformance to PMA rules, regulations, instructions, scope of services if not covered in SLA	N/A	PMA record	Rs 5,000/- *A on each incident Where A=[1-100] depending on the sensitivity of non-conformance as per decision by the Purchaser

**Calculation of Uptime:**

$$\left[ \frac{\text{Actual Uptime} + \text{Scheduled Downtime}}{\text{total number of operation hours in a month}} * 100 \right]$$

"**Total Operation Hours**" means the total hours over the measurement period i.e. one month (24 \* number of days in the month for 24 hours operation and 18 \* number of days in the month for 18 hours operation).

"**Actual Uptime**" means, of the Total Operation Hours, the aggregate number of hours in any month during which each equipment is actually available for use.

"**Scheduled Downtime**" means the aggregate number of hours in any month during which each equipment, is down during Total Operation Hours, due to preventive maintenance, scheduled maintenance, infrastructure problems or any other situation which is not attributable to the SP's (or SP's) failure to exercise due care in performing SP's responsibilities.

For 24/7 hours operation, the PMA would provide a maximum of 04 hours of planned downtime for the preventive maintenance (as part of scheduled downtime) per month per equipment/service. In other case the PMA would not provide any planned downtime for the preventive maintenance (as part of scheduled downtime) per month per equipment/service.

**Downtime Calculation:**

The recording of downtime shall commence at the time of registering it with SP for any downtime situation for the equipment. The registration could be done through auto alert, Downtime shall end when the problem is rectified and the application/ service is available to the user. Down time will not be considered for Pre-scheduled preventive maintenance and health checks (Scheduled Downtime).

a) The compliance report shall be submitted monthly along with the monthly invoice, by the SP.

## Annexure-K: High-level Equipment Specifications

### Notes:

1. All hardware equipment supplied as part of AFC-BSS must carry industry standard certifications like U/L, CE etc. to ascertain that the equipment has been manufactured and certified based on international standards.
2. The Equipment supplied shall withstand the harsh working conditions of vibration, heat, dust, moisture, rough usage, Radio interference.

Ticket KIOSK Machine (TKM)		
Sr.#	ITEM	DESCRIPTION
1	Ticketing Material	Capable to <del>dispense and</del> top-up smart cards
		Capable to dispense QR paper tickets <i>for single journey</i>
		<i>Capable to dispense high-quality QR paper tickets for weekly, monthly and other promotional offers</i>
		Capable to top-up AFC-BSS Mobile Application Wallet (using NFC or QR)
2	Housing/Locking	Stainless steel housing with very high break-in resistance
3	Quality	Service Provider must ensure that proposed TKMs conforms to the industry standards
4	Utility/Modules	Smart card reader
		QR paper ticket printer
		NFC enabled
		QR Scanner
		EMV Card Reader for open loop payments
5	GUI Language	Urdu and English language support

Turnstile		
Sr. #	ITEM	DESCRIPTION
1	In/Out	Tripod Arms Turnstiles, must be suitable for outdoor usage
2	Operational Temperature	-10C to + 70C
3	Passage Warning	Visible warning sign
4	Speakers	Equipped with Speakers for alarms
5	Accessories	Standard
6	Quality/Standard	ASTM standards as set forth by the materials industry
		Interchangeable parts made out of high quality stainless steel materials
		Precision machined
		All parts capable of sustaining wear and tear
		All relevant components hardened and surface treated to ensure long life and reliable service
		Self-centring mechanism should be used in order to automatically return arms to the basic position regardless of force used to pass through the turnstile

QR Paper Tickets		
Sr.#	ITEM	DESCRIPTION
1	Quality	Should be optimal material for smooth scanning of QR code at validators
2	Print material	Thermal Paper/Cardboard

Validators for Turnstiles (Off Board)		
Sr.#	ITEM	DESCRIPTION
1	Modules	Smart Card Reader
		QR Code Reader (Paper Ticket and Mobile Ticket)
		NFC enabled
		EMV Card Reader
		Must have at least three slots for Secure Access Module (SAM)
2	Validation	Validator must be EMV Compliant and capable of performing a transaction with open loop and closed loop smart cards, single trip QR paper tickets, QR paper tickets for weekly, monthly and other promotional offers, emulated CSC (Mobile Tickets: QR & NFC)
		Capable to read cards at a distance of 0mm to 30mm, but shall not operate at a distance that introduces a risk of unintentional operation (tolerance limit + 10%)
		Capable to read, write and verify all required data for the transactions associated with fare media to permit the application of all the business rules and the collection of all records required for the PMA's accounting and reporting purposes
		Transaction time shall not exceed 300ms for agreed and used types of EMV open loop and closed loop cards/QR paper tickets/emulated CSC (QR & NFC)
		Have an anti-pass back mechanism to avoid double validation of fare media, preventing passengers to check-in twice or more without passing (in case of single commuter ticket)
		Capable to facilitate family ticket (multiple commuters can travel on a single family ticket)
		Have a feature to reject the fare product if the media is outside of its validity period when presented to a validator
		Capable to reduce the balance of the card / emulated CSC to cause deduction of fare, and also capable to store all real-time scanned information
		Control the access gates based on the validation process
3	GUI	Provide suitable interface proposed turnstile barriers for operations as defined by the Purchaser
		Urdu and English language support
4	Memory	Onboard memory to manage business rules
5	User Messages	Audio and visual signal to show the success or failure of the validation to passenger

TICKET OFFICE MACHINE (TOM)		
Sr. No.	ITEM	DESCRIPTION
1	Modules	Contactless card reader/writer
		QR reader (Paper ticket and mobile ticket)
		QR paper ticket printer
		NFC enabled
		EMV Card Reader for open loop payments
		Receipt Printer
2	Features	Capable to sell contactless smartcard
		Capable to issue QR paper tickets <i>for single journey</i>
		<i>Capable to dispense high-quality QR paper tickets for weekly, monthly and other promotional offers</i>
		Capable to top-up contactless smartcards
		Capable to top-up mobile application wallet using QR code and NFC
		Capable to print receipts
		Capable to refund any reported incidents of overcharging after due diligence to passenger
		Capable to transmit transactional data reliably to the centralized system (AFC).
		Capable to store violation data and to communicate to the centralized system (AFC).
		The validation & read/write cycle time for smart cards and QR paper tickets/emulated CSC should be less than 300ms.
		Capable to read cards at a distance between 0mm to 30mm and shall not operate at a distance that introduces a risk of unintentional operation (tolerance limit + 10%).
		Capable to read, write and verify all required data for the transactions associated with smart cards to permit the application of all the Purchaser's business rules and the collection of all records required for the Purchaser's accounting and reporting purposes.
Capable to print receipts for all transactions		
Capable to print transactional/activity logs		
3	GUI	Provide suitable interface proposed for operations as defined by Purchaser
		Urdu and English language support
4	Memory	Onboard memory to manage business rules

Vehicle Location System – Driver Console, including GPS Tracker		
Sr.#	ITEM	DESCRIPTION
1	Modules	Contactless card reader
		GPS Tracker
		Smart LED panel with touch screen

<b>Voice Announcement System on Buses</b>		
3	Features	The Voice Passenger Information System play clearly audible pre-recorded voice announcements informing passengers of the next bus station on route
		The voice PIS interface with the on-bus GPS module to gather location information and make appropriate next station announcement
<b>Passenger Information System at Stations</b>		
4	Features	<b>Smart TFT/LCD screens with a minimum 46-inch diagonal for outdoor usage</b>
		Multiple feeds of content can be displayed at the same time
		Different feeds of content can be assigned to different parts of the screen
		Suitable for split-screen content
		Best quality image/video resolution
		Display route and estimated arrival time (ETA)
		Capable to display public service information, advertisements, news, etc.
		PIS display system displays the next arriving bus with its color code, transit line and time
		The Outdoor message shall be readable by a person with 20/20 vision, from a distance of not less than 110 feet
		The Outdoor PAS shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display
		The intensity of the illumination of the screens shall appear, to the naked eye, to be approximately uniform throughout the full viewing cone
		The entire display area of all screens should be readable in direct sunlight, at night, and in all lighting conditions between those two lighting extremes, with evenly distributed illumination appearance to the un-aided eye in all conditions
		Must be able to operate without any dependency on additional cooling/heating mechanism and must also have weatherproof design
		Display Interface: Ethernet and VGA/DVI etc.
Durable and long-lasting		
Ability to display information in multiple languages		
Integration with GPS, Vehicle Location System (VLS), traffic management systems, weather data, other components of AFC-BSS and PITB AFC-BSS Software		
5	Quality Standards	All Outdoor Passenger Information Signs (PIS) shall be enclosed in a manner such as to inhibit entry of dirt, dust, water and other contaminants during normal operation or cleaning

<b>Voice Announcement System at Stations</b>		
6	Feature	Broadcast scheduled and any other information onto the existing Public Address System at stations
		Capable to gather location information of the next bus and make appropriate announcement using existing Public Address System
		Capable to integrate with existing Public Address System