

Tender Amendment-01

Project Name: Design, Supply, Installation, Integration, Testing & Commissioning for Implementation of Smart Distribution System in NESCO Area on Turnkey Basis.

Tender Reference No: 27.29.0000.107.07.001.23-30 Issue Date:02/02/2023

Document No.: 27.29.0000.107.07.001.23-46 Issue Date: 05/03/2023

Tender Package No.: GR-1

SI No	References (Section/Clause/Page No)	Current Paragraph/Bidders Request	Amended As
1	Volume 1 Section 2.0 – Tender Data Sheet D. Tender Preparation ITT 19.2	The maximum of percentage 20% of the Contract Value allowed to be subcontracted.	The maximum of percentage 40% of the Contract Value allowed to be subcontracted.
2	Volume 2 Section 7 SDSI_NPLC-CS SCADA NESCO SDSI 3.4 Software Maintenance and Development Tools Page 7- 117	Source Code should be available for SCADA applications used by Operators.	Source Code should be available for any specific customized function of SCADA applications used by Operators.
3	Volume 2 Section 7 SDSI_NPLC-CS SCADA NESCO SDSI 4.7 System Integration Page 7- 137	The System must be able to communicate bidirectionally through MultiSpeak protocol for supporting both inward and outward communication	The system must be able to communicate bidirectionally in line with IEC 61968/CIM – Common Information Model for supporting both inward and outward communication.
4	Volume 2 Section 7 SDSI_NPLC-CS SCADA NESCO SDSI 2.10 Web Server Page 7- 112	A web server shall enable view - only access to the SCADA system for the Employers authorized staff via PCs running Web Server client software.	2.10 Web Server or Remote Desktop based system A web server shall enable view - only access to the SCADA system for the Employers authorized staff via PCs running Web Server client software. Remote Desktop based system will also be accepted.

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5	Volume II Section 7 –Telecom Equipment Specifications SDSI_NPLC-TE 2.2.5 Power Supply Page 7- 206	2.2.5 Power Supply The equipment shall operate from a nominal 48 VDC battery, positive grounded. The equipment shall work satisfactorily over battery voltage variations of $\pm 15\%$. The equipment shall support dual power feed (1+1) i.e. that two power sources can be connected directly to the equipment (two connection points). The equipment shall supervise the input DC power and generate corresponding alarm in case of loss of either of power input. Modular integrated plug-in power supplies will be provided, which accept primary input power and furnish regulated output voltages to the communication equipment. External voltage converters will not be permitted.	2.2.5 Power Supply The equipment shall operate from a nominal 48 VDC or 90V~264V AC Power , positive grounded. The equipment shall work satisfactorily over battery voltage variations of $\pm 15\%$. The equipment shall support dual power feed (1+1) i.e. that two power sources can be connected directly to the equipment (two connection points). The equipment shall supervise the input DC or AC power and generate corresponding alarm in case of loss of either of power input. Modular integrated plug-in power supplies will be provided, which accept primary input power and furnish regulated output voltages to the communication equipment. External voltage converters will not be permitted.
6	Volume II Section 7 –Telecom Equipment Specifications SDSI_NPLC-TE 2.2.8 Network Topology Page 7- 206	2.2.8 Network Topology It shall be possible to build point to point, linear, ring, T, and meshed networks.	2.2.8 Network Topology It shall be possible to build point to point, linear, ring, T, and meshed networks. The equipment must support at least 150 km transmission without electrical regeneration.
7	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment POWER SUPPLY Page 8-16	POWER SUPPLY 45 Operation VDC $\pm 15\%$	POWER SUPPLY 45 Operation : VDC $\pm 15\%$ or Operation : AC 90~264V
8	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment Other requirement (new row) Page 8-18		Other requirements: 104 The minimum transmission distance without electrical regeneration: 150km

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9	Volume II Section 7 –Telecom Equipment Specifications SDSI_NPLC-TE 2.2.9 Synchronization Page 7- 206, 207	It shall be possible to synchronize the equipment using external clock sources, derived from a network or from an internal oscillator. The synchronization shall be configurable and it shall be possible to distribute the synchronization to other equipment as well. The system shall have the means of switching to select the synchronization source as well as a means of preventing the system from creating synchronization loops. Synchronous Ethernet (SyncE) According to ITU-T G.8262 to transfer clock signals over Ethernet physical layer SyncE Message Channel (ESMC) According to ITU-T G.8264 for indication of clock quality level. Precision Time Protocol (PTP) According to IEEE 1588-2008v2 for the synchronization of network clock and time of day (ToD) Configuration support for SyncE and PTP synchronization shall be available e.g. by means of wizards or guided configuration	It shall be possible to synchronize the equipment using external clock sources, derived from a network or from an internal oscillator. The synchronization shall be configurable and it shall be possible to distribute the synchronization to other equipment as well. The system shall have the means of switching to select the synchronization source as well as a means of preventing the system from creating synchronization loops. Synchronous Ethernet (SyncE) According to ITU-T G.8262 to transfer clock signals over Ethernet physical layer SyncE Message Channel (ESMC) According to ITU-T G.8264 for indication of clock quality level. Precision Time Protocol (PTP) According to IEEE 1588-2008v2 for the synchronization of network clock and time of day (ToD) Configuration support for SyncE or IEEE 1588-2008v2 PTP synchronization shall be available e.g. by means of wizards or guided configuration
10	Volume II Section 7 –Telecom Equipment Specifications SDSI_NPLC-TE 1.2 MECHANICAL CHARACTERISTICS Page 7- 204	Protection degree: IP 41	Protection degree: IP 20
11	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment PACKET SWITCHING FEATURES Page 8-15	Number of slow BFD sessions ($\geq 100\text{ms}$): ≥ 500	Number of slow BFD sessions ($\geq 100\text{ms}$): ≥ 200
12	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment PACKET SWITCHING FEATURES Page 8-15	Support of L2GP protocol: YES	Support of L2GP/ERPS protocol: YES

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13	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment PACKET SWITCHING FEATURES Page 8-15	L2GP dual homing support: YES	L2GP/ERPS dual homing support: YES
14	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment PACKET SWITCHING FEATURES Page 8-15	Support of IEEE 1588 v2 PTP ordinary clock: YES	Support of SyncE or IEEE 1588 v2 PTP ordinary clock: YES
15	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment PACKET SWITCHING FEATURES Page 8-15	Support of IEEE 1588 v2 PTP boundary clock: YES	Support of SyncE or IEEE 1588 v2 PTP boundary clock: YES
16	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment PACKET SWITCHING FEATURES Page 8-15	Support of IEEE 1588 v2 PTP transparent clock: YES	Support of SyncE or IEEE 1588 v2 PTP transparent clock: YES
17	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment AMBIENT CONDITIONS Page 8-16	Storage: ETS 300 019-1-1, class 1.2: - 20 ..+65°C / 90%	Storage: ETS 300 019-1-1, class 1.2: - 20 .. +60°C / 90%
		Transport: ETS 300 019-1-2, class 2.2: - 20 ..+65°C / 90%	Transport: ETS 300 019-1-2, class 2.2: - 20 .. +60°C / 90%
		Operation fan less: ETS 300 019-1-3, class 3.1E: - 20 ..+55°C / 90%	Operation fan less: ETS 300 019-1-3, class 3.1E: - 5 .. +55°C / 90%
18	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment ESD test Page 8-17	Contact/air discharge: 8/15 kv	Contact/air discharge: 6/8 kv

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19	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment Radiated electromagnetic field Page 8-17	80 to 1000 MHz, 80% AM, 1 kHz modulated: 20 V/m	80 to 1000 MHz, 80% AM, 1 kHz modulated: 3 V/m
20	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment Fast transient test Page 8-17	DC power supply: 4kv	DC power supply: 1 kv
		Field interfaces: 2 kV	Field interfaces: 1 kv
		Telecommunication IFs: 4kv	To be mentioned
21	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment Surge test (1.2/50 ms)- DC power supply Page 8-17	Common mode: 2.0 kv	Common mode: 500 V
		Differential mode : 1.0 kv	Differential mode : 500 V
22	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment Surge test (1.2/50 ms)- Local interfaces: Page 8-17	Common mode: 1.0 kv	Common mode: 500 V
23	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment Surge test (1.2/50 ms)- Field interfaces: Page 8-17	Common mode: 2.0 kv	Common mode: 500 V
24	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment	Common mode: 4.0 kv	Common mode (On POE Switch): 4.0 kv

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24	Equipment Surge test (1.2/50 ms)- High voltage interfaces: Page 8-17	Differential mode: 2.0 kv	Differential mode (On POE Switch): 2.0 kv
25	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment Conducted radio frequency interference Page 8-17	0.15 to 80 MHz, 80% AM, 1kHz modulated : 10 V	0.15 to 80 MHz, 80% AM, 1kHz modulated : 3 V
26	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment Power frequency magnetic field Page 8-17	Continuous: 100 A/m	Continuous: 1 A/m
		Short (1 to 3 s): 1000 A/m	Short (1 to 3 s): 1 A/m
27	Volume 2 8.07: Schedule of Guaranteed Technical Particulars – Telecom Equipment Damped oscillatory waves Page 8-17	Common mode: 2.5 kv	Common mode: 500 V
		Differential mode: 1.25 kv	Differential mode: 500 V
		Common mode: 1.0 kv	Common mode: 500 V
		Differential mode: 0.5 KV	Differential mode: 0.5 KV
		Common mode: 2.5 kv	To be mentioned
		Differential mode: 1.25 kv	To be mentioned
28	Volume II Section 7 SDSI_NPLC-CS SCADA NESCO SDSI 4.4.5 Alarm Handling: Alarm Logging Page 7- 129	The alarming subsystem shall utilize continuous paper printers where alarms are printed as they are generated.	The alarming subsystem shall utilize paper printers (when requested) where alarms are printed as they are generated.

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29	VOLUME 2 Section 6.1 - Scope of Supply 14 BILL OF QUANTITY Page 6.1- 42	<p>14 BILL OF QUANTITY</p> <p>Bill of Qunatity is shown in the below table for Contractor ease of references and are part of the tender documents.</p> <table border="1"> <thead> <tr> <th>SL No</th> <th>Plant Name</th> <th>NMCC</th> <th>NBCC</th> <th>Total:</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Server Type 1</td> <td>1</td> <td>1</td> <td>2</td> </tr> <tr> <td>2</td> <td>Server Type 2</td> <td>3</td> <td>3</td> <td>6</td> </tr> <tr> <td>3</td> <td>Communication Front End Processors (FEP) with Switches and Firewalls</td> <td>2</td> <td>1</td> <td>3</td> </tr> </tbody> </table>	SL No	Plant Name	NMCC	NBCC	Total:	1	Server Type 1	1	1	2	2	Server Type 2	3	3	6	3	Communication Front End Processors (FEP) with Switches and Firewalls	2	1	3	<p>13 BILL OF QUANTITY</p> <p>Bill of Qunatity is shown in the below table for Contractor ease of references and are part of the tender documents.</p> <table border="1"> <thead> <tr> <th>SL No</th> <th>Plant Name</th> <th>NMCC</th> <th>NBCC</th> <th>Total:</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Server Type 1</td> <td>1</td> <td>1</td> <td>2</td> </tr> <tr> <td>2</td> <td>Server Type 2</td> <td>4</td> <td>4</td> <td>8</td> </tr> <tr> <td>3</td> <td>Communication Front End Processors (FEP) with Switches and Firewalls</td> <td>2</td> <td>1</td> <td>3</td> </tr> </tbody> </table>	SL No	Plant Name	NMCC	NBCC	Total:	1	Server Type 1	1	1	2	2	Server Type 2	4	4	8	3	Communication Front End Processors (FEP) with Switches and Firewalls	2	1	3
SL No	Plant Name	NMCC	NBCC	Total:																																							
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30	VOLUME 2 Section 6.1 - Scope of Supply 14 BILL OF QUANTITY Page 6.1- 30	" However, it can be assumed that the energy meters for kWh values are equipped with pulse contact outputs. "	" However, it can be assumed that the energy meters for kWh values are equipped with pulse contact outputs or similar																																								
31	Volume 2 Section 8.09 Schedule of GTP – 48 VDC battery Charger Page 8-24	Electrical Characteristics: 16. boost Charger voltage: 56.4 VDC	Electrical Characteristics: 16. boost Charger voltage: 66-68 VDC																																								
32	Volume 2 8.10: Schedule of Guaranteed Technical Particulars - 48 VDC Battery 11- number of cells: Page 8-25	11- number of cells: nos : 40	11- number of cells: nos : 40 + 3 spares																																								
33	Volume 2 Section-7 Telecom Equipment Specifications SDSI_NPLC-TE 2 TECHNICAL CHARACTERISTICS Page 7- 204	The network equipment shall be designed to meet the most stringent functional, performance and environmental requirements of the demanding applications in power utility communication networks in a compact and robust 19-inch' wide metallic housing, supporting fan-less operation.	The network equipment shall be designed to meet the most stringent functional, performance and environmental requirements of the demanding applications in power utility communication networks in a compact and robust 19-inch' wide metallic housing.																																								
34	Volume 2 Section 8.19 GTP – Substation Firewall Page 8 -45	15. Connections per second: Minimum 35000	15. Connections per second: Minimum 25000																																								

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35	Volume 2 Section 8.19 GTP – Substation Firewall Page 8 -45	17 . Virtual Systems/ Domain/ Context: Minimum 6 from day one	17 . Virtual Systems/ Domain/ Context: To be mentioned
36	Volume 2 Section 7 CCTV TECHNICAL SPECIFICATIONS SDSI _NPLC-TS- CCTV Page 7- 298	2.6 GIGABIT SMART POE SWITCH (16 PORT) The switch shall have Capable of PoE watchdog: Ports 1 to 16 auto detect and restart the cameras that do not respond.	2.6 The switch shall have Capable of PoE watchdog or similar way like telecommunication device NMS to realize Ports 1 to 16 auto detect and restart the cameras that do not respond.
37	8.14: Schedule of Guaranteed Technical Particulars for Server Type-2 Internal Storage Page 8- 35	Server should be proposed with usable 3 TB SSD SAS.	Server should be proposed with usable 3 TB (with RAID 5) SSD SAS. One hard disk for hotspare. Minimum Number of SSD Hard Disk is 4 (3 For RAID 5, 1 For hotspare) RAID controller should support RAID 0, 1, 5, 6, 10, 50, and 60
38	8.14: Schedule of Guaranteed Technical Particulars for Server Type-2 PCIe Slots Page 8- 35	Should support multiple management interfaces including web user interface and command line interface.	Up to 8 x PCIe Gen4 slots (up to 6 x16) with support for SNAP I/O modules
39	8.14: Schedule of Guaranteed Technical Particulars for Server Type-2 Ports Page 8- 35	<ul style="list-style-type: none"> Should support Microsoft Windows Server ,Red Hat Enterprise Linux (RHEL) ,SUSE Linux Enterprise Server (SLES) , Vmware Should be proposed with necessary license and three year support of VMware vSphere 6 Standard edition or higher. 	minimum quantity of- Front Ports <ul style="list-style-type: none"> 1 x Dedicated iDRAC Direct micro-USB 1 x USB 2.0 1 x VGA Rear Ports <ul style="list-style-type: none"> 1 x USB 2.0 1 x Serial (optional) 1 x USB 3.0 2 x RJ-45 1 x VGA (optional for liquid cooling configuration) Internal Ports <ul style="list-style-type: none"> 1 x USB 3.0 Network Card <ul style="list-style-type: none"> 2 x 1 GbE LOM

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40	8.14: Schedule of Guaranteed Technical Particulars for Server Type-2 Others Page 8- 35	Proposed solution should comply with required ISO, other relevant certification and environmental safety standard	A. Operating System: Should support Microsoft Windows Server ,Red Hat Enterprise Linux (RHEL) ,SUSE Linux Enterprise Server (SLES) , Vmware B. Miscellaneous: Proposed solution should comply with required ISO, other relevant certification and environmental safety standard
41	8.15: Schedule of Guaranteed Technical Particulars for Industrial PC Clock Speed Page 8- 36	3.0 GHz (min), 8 MB Cache Memory (min)	2.10GHz (min), 25 MB Cache Memory (min)
42	8.28: Schedule of Guaranteed Technical Characteristics - Workstation INPUT/OUTPUT PORTS Page 8- 69	2 x USB-A 3.2 Gen 1	Minimum 2x Thunderbolt™ 4 1 x USB 3.2 Gen 2 (Type-C) port with Display Port Alt Mode 1x Audio (headphone and microphone combo jack)
43	8.28: Schedule of Guaranteed Technical Characteristics - Workstation Display Page 8- 69	14" WUXGA (1920 x 1200), IPS, Anti Glare, Touch, 45%NTSC, 300 nits, 60Hz, Narrow Bezel, Low Weight	Minimum 14", 4K, Touch, Anti Glare
44	VOLUME 1 Section 5.0: Schedules of Rates and Prices		Appendix-1
45	8.12: Schedule of Guaranteed Technical Particulars - IED No of Binary Input (Minimum) Page 8- 30	28 for Transformer feeder	32 for Transformer feeder
46	8.13: Schedule of Guaranteed Technical Particulars for Server Type-1 (Additional Row, Sl: 53) Page 8- 34		53: : License The Bidder shall provide 10 nos of Windows Server 2022 standard edition licenses and 2 nos of Red Hat Enterprise Linux 9 licenses for the operating system. The licenses shall be valid and fully functional for the latest version of the respective operating systems as of the date of delivery.
47	Technical Specification of Server		Appendix-2

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48	GCC 60.5 (New Clause)		<table border="1"> <thead> <tr> <th></th> <th>Type of Supplier</th> <th>Tax and VAT implications</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>Price quoted in schedule-1</td> <td>JVC (Local+foreign company)</td> <td>Supplier Shall pay 7.5% Tax. Tax will be paid by supplier at the time of LC payment. VAT will be paid by purchaser as CD VAT payment.</td> <td rowspan="4">Ref: Rule -16, Section 52, 56 of Income tax Ordinance-1984.</td> </tr> <tr> <td>Price quoted in schedule-1</td> <td>Foreign company</td> <td>Supplier Shall pay 7.5% Tax. Tax will be paid by supplier at the time of LC payment. VAT will be paid by purchaser as CD VAT payment.</td> </tr> <tr> <td>Price quoted in schedule-2</td> <td>JVC (Local+foreign company)</td> <td>Supplier Shall pay 7.5% TAX and 7.5%-15% VAT at the time of LC payment.</td> </tr> <tr> <td>Price quoted in schedule-2</td> <td>Local company</td> <td>Supplier will pay 7% TAX and 7.5%-15% VAT at the time of LC payment.</td> </tr> </tbody> </table> <p>If supplier demands any tax facility or exemption then supplier shall submit specific order regarding that entitlement from NBR. If mentioned rate contradicts with the Tax and VAT rate of NBR then Tax and VAT rate of NBR shall prevail.</p>		Type of Supplier	Tax and VAT implications	Remarks	Price quoted in schedule-1	JVC (Local+foreign company)	Supplier Shall pay 7.5% Tax. Tax will be paid by supplier at the time of LC payment. VAT will be paid by purchaser as CD VAT payment.	Ref: Rule -16, Section 52, 56 of Income tax Ordinance-1984.	Price quoted in schedule-1	Foreign company	Supplier Shall pay 7.5% Tax. Tax will be paid by supplier at the time of LC payment. VAT will be paid by purchaser as CD VAT payment.	Price quoted in schedule-2	JVC (Local+foreign company)	Supplier Shall pay 7.5% TAX and 7.5%-15% VAT at the time of LC payment.	Price quoted in schedule-2	Local company	Supplier will pay 7% TAX and 7.5%-15% VAT at the time of LC payment.
	Type of Supplier	Tax and VAT implications	Remarks																	
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Price quoted in schedule-1	Foreign company	Supplier Shall pay 7.5% Tax. Tax will be paid by supplier at the time of LC payment. VAT will be paid by purchaser as CD VAT payment.																		
Price quoted in schedule-2	JVC (Local+foreign company)	Supplier Shall pay 7.5% TAX and 7.5%-15% VAT at the time of LC payment.																		
Price quoted in schedule-2	Local company	Supplier will pay 7% TAX and 7.5%-15% VAT at the time of LC payment.																		

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Schedules of Rates and Prices

Schedule No. 1 - Plant and Mandatory Spare Parts Supplied from Abroad

1A - SCADA and DMS System

Line Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price CIP [Project site, as per GCC1.1(oo)], [USD]	CIP price per Line Item [USD]	Taxes and Duties In Local Currency (Taka)
1	2	3		4	5	6 = 4 x 5	7
1A1. Supply of SCADA System Hardware as per Scope of Supply, Specification and GTP							
1A101	Server Type 1		Lot	2			
1A102	Server Type 2		Lot	8			
1A103	Communication Front End Processors (FEP) with Switches and Firewalls		Lot	3			
1A104	Operator Workstation with 3 VDU's		Nos	6			
1A105	OTS Workstation with 2 VDU's		Nos	7			
1A106	Management Workstation (management) with 1 VDU		Nos	3			
1A107	Management Workstation (network) with 1 VDU		Nos	1			
1A108	Redundant LAN Complete with Firewalls, Routers, Switches and NMS		Lot	2			
1A109	Remote Access PC with 2 VDU's		Lot	6			
1A110	Video Wall complete		Lot	1			
1A111	GPS Time Base System		Lot	2			
1A112	Laser Printer, Colour, A3/A4		Nos	2			
1A113	Laser Printer, B&W, A3/A4		Nos	4			
1A2. Supply of SCADA System Software as per Scope of Supply, Specification and GTP							
1A201	Basic SCADA Software		Lot	1			
1A202	ICCP Link with other Control Center		Lot	1			
1A203	Data Warehousing / Historical Information System		Lot	1			
1A204	Authority Assignments / Area of Responsibility		Lot	1			
1A205	Dynamic Network Colouring		Lot	1			
1A206	Disturbance Analysis		Lot	1			
1A207	Load Shed		Lot	1			
1A208	Condition Monitoring Support		Lot	1			
1A209	Topology Processing		Lot	1			
1A210	Network Model		Lot	1			
1A211	Short Circuit Analysis		Lot	1			
1A212	Load Flow		Lot	1			
1A213	SAIDI& SAIFI		Lot	1			
1A214	Load Forecasting		Lot	1			

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Line Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price CIP [Project site, as per GCC1.1(00)], [USD]	CIP price per Line Item [USD]	Taxes and Duties In Local Currency (Taka)
<u>1</u>	<u>2</u>	<u>3</u>		<u>4</u>	<u>5</u>	<u>6 = 4 x 5</u>	<u>7</u>
1A3. Supply of MANDATORY SPARE PARTS AND TOOLS as per Scope of Supply, Specification and GTP							
1A301	SCADA Operator Workstation Complete with 3 VDU's		Nos	1			
1A302	Router		Nos	1			
1A303	Switch of Each Type		Lot	1			
1A304	Video Wall Spares		Set	1			
1A305	Complete GPS Clock		Set	1			
1A306	Laptop with Database Analytic Tool complete with licenses		Set	1			
1A307	SCADA Printer Toner Cartridge Colour		Lot	5			
1A308	SCADA Printer Toner Cartridge B/W		Nos	5			
Column 6 to be carried forward to Schedule No. 6. Grand Summary							

Note 1: All the equipment/services to be quoted as per requirement in Sec.6,7&8.

Note 2: Note: The function of C& F agent and Insurance (both foreign and local) shall have to be completed by the tenderer. The cost regarding C & F agent and Insurance shall have to be included in the contract price. No additional payment shall be made regarding this.

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorized to sign the Tender for and on behalf of the Tenderer		

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Schedules of Rates and Prices

Schedule No. 1 - Plant and Mandatory Spare Parts Supplied from Abroad

1B - RTU, SAS and Adaptation

Line Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price CIP [Project site, as per GCC1.1(oo)], [USD]	CIP price per Line Item [USD]	Taxes and Duties In Local Currency (Taka)
<u>1</u>	<u>2</u>	<u>3</u>		<u>4</u>	<u>5</u>	<u>6 = 4 x 5</u>	<u>7</u>
1B1. Supply of Remote Terminal Units (RTUs) including Gateway, Modem, 2 Industrial PC with 2 VDUs, 1 Engineering Workstation, HMI, Software Licences, UPS and Accessories as per Scope of Supply, Specification and GTP							
1B101	RTU with Gateway, modem and accesories		Set	92			
1B102	Industrial PC with 2 VDUs		Set	66			
1B103	Engineering WorkStation		Set	70			
1B104	HMI and Other Software with Licences		Set	66			
1B105	UPS		Set	66			
1B106	Extension Cards/ Input Output Devices of RTUs (minimum 32 Input/Output) with required accesories		Set	215			
1B107	Extension Cards/ Input Output Devices of RTUs (minimum 64 Input/Output) with required accesories		Set	185			
1B108	Other Necessary Accesories		Lot	120			
1B2. Supply of Managable Switch as per Scope of Supply, Specification and GTP							
1B201	Managable Switch		Set	154			
1B3. Supply of IEDs to Replace Old Relays as per Scope of Supply, Specification and GTP							
1B301	IEDs for 33KV Panels at Grid SS with Fault Location feature		Set	83			
1B302	IEDs for 33KV Panels at NESCO SS without Fault Locaton feature		Set	55			
1B303	IEDs for 11KV Panels at NESCO SS without Fault Location feature		Set	28			
1B304	IEDs for 11KV Panels at NESCO SS with Fault Location feature		Set	237			
1B4. Supply of Transformer Health Monitoring System as per Scope of Supply, Specification and GTP							
1B401	Transformer Health Monitoring System		Lot	5			
1B5. Supply of Material for Adaptation Works as per Scope of Supply, Specification and GTP							
1B501	Required Accesories and Materials for Adaptation at AIS Substations		Lot	59			
1B502	Required Accesories and Materials for Adaptation at underconstruction AIS Substations		Lot	4			
1B503	Required Accesories and Adaptation Materials at GIS Substations with existing SAS		Lot	21			
1B504	Required Accesories and Materials for Adaptation at underconstruction GIS Substations		Lot	4			
1B505	Required Accesories and Adaptation Materials at Existing Grid Substations		Lot	24			
1B506	Required Accesories and Adaptation Materials at Under Construction Switching Substations		Lot	6			
1B507	Required Accesories and Adaptation Materials at Control Centers		Lot	2			
1B508	Pre-fabricated Outdoor Kiosk Complete		Lot	1			
1B6. Supply of MANDATORY SPARE PARTS AND TOOLS as per Scope of Supply, Specification and GTP							

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Design, Supply, Installation, Integration, Testing Commissioning for Implementation of Smart Distribution System in NESCO Area on Turnkey Basis.

Line Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price CIP [Project site, as per GCC1.1(oo)], [USD]	CIP price per Line Item [USD]	Taxes and Duties In Local Currency (Taka)
<u>1</u>	<u>2</u>	<u>3</u>		<u>4</u>	<u>5</u>	<u>6 = 4 x 5</u>	<u>7</u>
1B601	Complete RTU		Lot	10			
1B602	RTU Power Supply Unit		Set	5			
1B603	RTU Control Unit		Set	2			
1B604	Extension Cards/ Input Output Devices of RTUs (minimum 32 Input/Output) with required accesories		Set	5			
1B605	Extension Cards/ Input Output Devices of RTUs (minimum 64 Input/Output) with required accesories		Set	5			
1B606	Interposing Relays complete of each type		Nos	10			
1B607	Transducer of each type		Nos	10			
1B608	Terminal Block for CT		Nos	10			
1B609	Terminal Block of each other type		Nos	10			
1B610	RTU Test Tools I/O and Protocol Test Set		Set	2			
1B611	RTU Maintenance Terminal or Notebook PC		Set	2			
1B612	RTU Hand Tools including a Multi-meter & DC mA Signal Generator		Set	2			
1B613	Fuse Set (2 nos of each type of fuse)		Set	25			
Column 6 to be carried forward to Schedule No. 6. Grand Summary							

Note 1: All the equipment/services to be quoted as per requirement in Sec.6,7&8.

Note 2: Note: The function of C & F agent and Insurance (both foreign and local) shall have to be completed by the tenderer. The cost regarding C & F agent and Insurance shall have to be included in the contract price. No additional payment shall be made regarding this.

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorized to sign the Tender for and on behalf of the Tenderer		

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Design, Supply, Installation, Integration, Testing Commissioning for Implementation of Smart Distribution System in NESCO Area on Turnkey Basis.

Schedules of Rates and Prices

Schedule No. 1 - Plant and Mandatory Spare Parts Supplied from Abroad

1C - Telecommunication and Ancillary Systems

Line Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price CIP [Project site, as per GCC1.1(oo)], [USD]	CIP price per Line Item [USD]	Taxes and Duties In Local Currency (Taka)
<u>1</u>	<u>2</u>	<u>3</u>		<u>4</u>	<u>5</u>	<u>6 = 4 x 5</u>	<u>7</u>
1C1. Supply of Telecom Equipment as per Scope of Supply, Specification and GTP							
1C101	Telecom Equipment with Firewall		Lot	120			
1C103	NMS with Workstation and 2x VDU		Lot	2			
1C2. Supply of Optical Cable and Accessories as per Scope of Supply, Specification and GTP							
1C201	ADSS short span		km	1138.19			
1C202	Light Weight Suspension Kit for ADSS		Nos	29058			
1C203	Light Weight Tension Kit for ADSS		Nos	3511			
1C204	Joint Box Complete (ADSS)		Set	620			
1C205	24-port Optical Distribution Frame, Complete		Set	238			
1C206	Pair of Patch Cords		Lot	476			
1C207	Cable Guard		metre	3000			
1C208	Stainless steel strip and buckle		Nos	32569			
1C209	Other Accesories of ADSS Installation (Horizontal/Vertical extention Bracket/Channel, Pole Band, preform etc.)		Lot	1			
1C210	Underground Fibre Optic Cable 24 Core		km	0.1			
1C211	PEHD Pipe >=50mm		km	0.1			
1C212	Joint Box Complete (UG)		Nos	1			
1C3. Supply of Call Server System as per Scope of Supply, Specification and GTP							
1C301	Call Server System Complete		Lot	1			
1C302	IP Telephone Set, Operator Console incl. PoE Supply		Set	8			
1C303	IP Telephone Set, Normal Console incl. PoE Supply		Lot	94			
1C304	Maintenance & Supervison Workstation with 1 VDU		Nos	1			
1C4. Supply of DC System as per Scope of Supply, Specification and GTP							
1C401	48 V DC Battery Charger Complete in Cubicle		Lot	120			
1C402	Maintenance Free Battery set with Accesories		Set	120			
1C403	Battery Main Fuse		Lot	120			
1C5. Supply of Ancillary Systems as per Scope of Supply, Specification and GTP							

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Design, Supply, Installation, Integration, Testing Commissioning for Implementation of Smart Distribution System in NESCO Area on Turnkey Basis.

Line Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price CIP [Project site, as per GCC1.1(oo)], [USD]	CIP price per Line Item [USD]	Taxes and Duties In Local Currency (Taka)
<u>1</u>	<u>2</u>	<u>3</u>		<u>4</u>	<u>5</u>	<u>6 = 4 x 5</u>	<u>7</u>
1C501	Diesel back-Up Generator Main Control Centre		Set	1			
1C502	Dual UPS System Complete Main Control Centre		Lot	1			
1C503	Dual UPS System Complete Back-up Control Centre		Lot	1			
1C504	Power Distribution System Main Control Centre		Lot	1			
1C505	Power Distribution System Back-up Control Centre		Lot	1			
1C506	Furniture Main Control Centre		Set	1			
1C507	Furniture Back-Up Control Centre		Set	1			
1C508	Access Control&Surveillance&Fire Detection System at NMCC		Set	1			
1C509	Access Control&Surveillance&Fire Detection System at NBCC		Set	1			
1C510	Lightning System Main Control Centre		Set	1			
1C511	Lightning System Backup Control Centre		Set	1			
1C512	Airconditioning System Main Control Centre		Set	1			
1C513	Airconditioning System Back-up Control Centre		Set	1			
1C514	Raised Floor System Main Control Centre		Set	1			
1C515	Raised Floor System Back-up Control Centre		Set	1			
1C516	False Ceiling System Main Control Centre		Set	1			
1C517	False Ceiling System Back-up Control Centre		Set	1			
1C518	Power Supply and LAN socket (for SCADA System)		Set	2			
1C519	Earthing System (Main Control Centre)		Lot	1			
1C6. Supply of ERP Solution as per Scope of Supply, Specification and GTP							
1C601	ERP Solution (Including integration with SMP, GIS,OMS and other systems)		Lot	1			
1C7. Supply of CCTV System as per Scope of Supply, Specification and GTP							
1C701	Thermographic Thermal & Optical Bi-Spectrum PTZ Camera		Pcs	44			
1C702	Bi-spectrum Thermography Network Outdoor Bullet Camera		Pcs	176			
1C703	Panoramic Color Fixed Turret Network Camera		Pcs	44			
1C704	128 GB Surveillance Grade SD Card		Pcs	264			
1C705	NVR-16 Channel		Pcs	44			
1C706	POE Switch (Gigabit) 16 Port		Pcs	44			

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Design, Supply, Installation, Integration, Testing Commissioning for Implementation of Smart Distribution System in NESCO Area on Turnkey Basis.

Line Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price CIP [Project site, as per GCC1.1(oo)], [USD]	CIP price per Line Item [USD]	Taxes and Duties In Local Currency (Taka)
<u>1</u>	<u>2</u>	<u>3</u>		<u>4</u>	<u>5</u>	<u>6 = 4 x 5</u>	<u>7</u>
1C707	8 TB Enterprise HDD		Pcs	88			
1C708	Central Video & Alarm Management Software		No	1			
1C709	General View License		No	264			
1C710	Thermal View License		No	220			
1C711	General Purpose Server		No	1			
1C712	Smart Wall Module		No	1			
1C713	55-inch 3.5mm LCD Display Unit		Pc's	16			
1C714	Frame		Pc's	16			
1C715	Pedestal		Pc's	16			
1C716	Decoder		Pc's	6			
1C717	Video Wall Controller		Pc's	1			
1C718	Input Board		Pc's	5			
1C719	Output Board		Pc's	5			
1C720	42 U server rack		Pc's	2			
1C721	24-SLOT HIGH-PERFORMANCE STORAGE		Pc's	5			
1C722	10 TB Enterprise HDD		Pc's	70			
1C723	10KVA Online UPS		Pc's	1			
1C724	10Gpbs ethernet Access switch		Pc's	1			
1C725	Surge Protector Ethernet Lighting Arrester		Pc's	265			
1C726	CAT6 UTP Network Cable		Box	44			
1C727	Power Solution		Lot	44			
1C728	Accessories-PVC Pipe, Channel & related all passive products supply & commission		Lot	44			
1C730	9U Server rack		Pc's	44			
1C8. Supply of MANDATORY SPARE PARTS AND TOOLS as per Scope of Supply, Specification and GTP							
1C801	Telecom Equipment with Firewall Complete		Set	10			
1C802	ADSS short span		km	20			
1C803	Light Weight Suspension Kit for ADSS		Set	300			
1C804	Light Weight Tension Kit for ADSS		Set	150			
1C805	24-port Optical Distribution Frame, Complete		Nos	10			

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Design, Supply, Installation, Integration, Testing Commissioning for Implementation of Smart Distribution System in NESCO Area on Turnkey Basis.

Line Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price CIP [Project site, as per GCC1.1(oo)], [USD]	CIP price per Line Item [USD]	Taxes and Duties In Local Currency (Taka)
<u>1</u>	<u>2</u>	<u>3</u>		<u>4</u>	<u>5</u>	<u>6 = 4 x 5</u>	<u>7</u>
1C806	Pair of Patch Cords		Nos	20			
1C807	Set of ODF Accessories (pigtaills, connectors etc.)		Set	20			
1C808	Switch with PoE interface		Set	8			
1C809	Redundant 48 V DC Battery Charger Complete in Cubicle		Set	4			
1C810	Diesel back-Up Generator Full Maintenance Set		Set	2			
1C811	Access Control System, Power Supply for Door Lock		Set	5			
1C812	Access Control System, Door Lock		Set	5			
1C813	Access Control System, Access Key		Nos	180			
1C814	Thermographic Thermal & Optical Bi-Spectrum PTZ Camera		Pcs	5			
1C815	Bi-spectrum Thermography Network Outdoor Bullet Camera		Pcs	20			
1C816	Panoramic Color Fixed Turret Network Camera		Pcs	5			
1C817	Fire Detection - Detector		Set	10			
1C818	Optical Fibre Fusion Splicing Machine with 2 Cleavers		Set	7			
1C819	OTDR complete		Set	7			
1C820	Optical Power Meter-Generator Pair		Set	7			
1C821	Optical Cleaning Set		Set	7			
1C822	Ethernet Analyzer Tester		Set	2			
1C823	O&M toolset with Multimeter		Lot	2			
1C824	O&M Laptop with cables		Set	4			
Column 6 to be carried forward to Schedule No. 6. Grand Summary							

Note 1: All the equipment/services to be quoted as per requirement in Sec.6,7&8.

Note 2: Note: The function of C & F agent and Insurance (both foreign and local) shall have to be completed by the tenderer. The cost regarding C & F agent and Insurance shall have to be included in the contract price. No additional payment shall be made regarding this.

Name:	<i>[insert full name of signatory]</i>	Signature with Date and Seal
In the capacity of:	<i>[insert designation of signatory]</i>	[Sign]

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Design, Supply, Installation, Integration, Testing Commissioning for Implementation of Smart Distribution System in NESCO Area on Turnkey Basis.

Line Item No	Description of Item	Country of Origin	Unit	Quantity	Unit Price CIP [Project site, as per GCC1.1(oo)], [USD]	CIP price per Line Item [USD]	Taxes and Duties In Local Currency (Taka)
<u>1</u>	<u>2</u>	<u>3</u>		<u>4</u>	<u>5</u>	<u>6 = 4 x 5</u>	<u>7</u>
Duly authorized to sign the Tender for and on behalf of the Tenderer							

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Design, Supply, Installation, Integration, Testing Commissioning for Implementation of Smart Distribution System in NESCO Area on Turnkey Basis.

Schedules of Rates and Prices

Schedule No. 2 - Plant and Mandatory Spare Parts Supplied from within the Employer's Country

2A - SCADA/DMS System

Line Item No	Description of Item	Unit	Quantity	Unit Price (Taka)	Total Price (Taka)	Sales Tax (Taka)	Total Price (Taka)
<u>1</u>	<u>2</u>		<u>3</u>	<u>4</u>	<u>5= 3 x 4</u>	<u>6</u>	<u>7</u>
2A1. Supply of SCADA System Hardware as per Scope of Supply, Specification and GTP							
2A114	SCADA Main Control Centre (Design, Material Supply, Construction, etc)	Lot	1				
TOTAL Column 5 to be carried forward to Schedule No. 6. Grand Summary							

Note 1: All the equipment/services to be quoted as per requirement in Sec.6,7&8.

Note 2: Note: The function of C & F agent and Insurance (both foreign and local) shall have to be completed by the tenderer. The cost regarding C & F agent and Insurance shall have to be included in the contract price. No additional payment shall be made regarding this.

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorized to sign the Tender for and on behalf of the Tenderer		

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Schedules of Rates and Prices

Schedule No. 2 - Plant and Mandatory Spare Parts Supplied from within the Employer's Country

2B - RTU, SAS and Adaptation

Line Item No	Description of Item	Unit	Quantity	Unit Price (Taka)	Total Price (Taka)	Sales Tax (Taka)	Total Price (Taka)
<u>1</u>	<u>2</u>		<u>3</u>	<u>4</u>	<u>5= 3 x 4</u>	<u>6</u>	<u>7</u>
2B1. Supply of Remote Terminal Units (RTUs) including Gateway, Modem, 2 Industrial PC with 2 VDUs, 1 Engineering Workstation, HMI, Software Licences, UPS and Accessories as per Scope of Supply, Specification and GTP							
2B108	Other Necessary Accesories	Lot	120				
2B5. Supply of Material for Adaptation Works as per Scope of Supply, Specification and GTP							
2B501	Required Accesories and Materials for Adaptation at AIS Substations	Lot	59				
2B502	Required Accesories and Materials for Adaptation at underconstruction AIS Substations	Lot	4				
2B503	Required Accesories and Adaptation Materials at GIS Substations with existing SAS	Lot	21				
2B504	Required Accesories and Materials for Adaptation at underconstruction GIS Substations	Lot	4				
2B505	Required Accesories and Adaptation Materials at Existing Grid Substations	Lot	24				
2B506	Required Accesories and Adaptation Materials at Under Construction Switching Substations	Lot	6				
2B507	Required Accesories and Adaptation Materials at Control Centers	Lot	2				
2B508	Pre-fabricated Outdoor Kiosk Complete	Lot	1				
Column 6 to be carried forward to Schedule No. 6. Grand Summary							

Note 1: All the equipment/services to be quoted as per requirement in Sec.6,7&8.

Note 2: Note: The function of C & F agent and Insurance (both foreign and local) shall have to be completed by the tenderer. The cost regarding C & F agent and Insurance shall have to be included in the contract price. No additional payment shall be made regarding this.

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorized to sign the Tender for and on behalf of the Tenderer		

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Design, Supply, Installation, Integration, Testing Commissioning for Implementation of Smart Distribution System in NESCO Area on Turnkey Basis.

Schedules of Rates and Prices

Schedule No. 2 - Plant and Mandatory Spare Parts Supplied from within the Employer's Country

2C - Telecommunication and Ancillary Systems

Line Item No	Description of Item	Unit	Quantity	Unit Price (Taka)	Total Price (Taka)	Sales Tax (Taka)	Total Price (Taka)
<u>1</u>	<u>2</u>		<u>3</u>	<u>4</u>	<u>5= 3 x 4</u>	<u>6</u>	<u>7</u>
2C2. Supply of Optical Cable and Accessories as per Scope of Supply, Specification and GTP							
2C205	24-port Optical Distribution Frame, Complete	Set	238				
2C206	Pair of Patch Cords	Lot	476				
2C207	Cable Guard	metre	3000				
2C208	Stainless steel strip and buckle	Nos	32569				
2C209	Other Accesories of ADSS Installation (Horizontal/Vertical extention Bracket/Channel, Pole Band, preform etc.)	Lot	1				
2C211	PEHD Pipe >=50mm	km	0.1				
2C5. Supply of Ancillary Systems as per Scope of Supply, Specification and GTP							
2C504	Power Distribution System Main Control Centre	Lot	1				
2C505	Power Distribution System Back-up Control Centre	Lot	1				
2C506	Furniture Main Control Centre	Set	1				
2C507	Furniture Back-Up Control Centre	Set	1				
2C508	Access Control&Surveillance&Fire Detection System at NMCC	Set	1				
2C509	Access Control&Surveillance&Fire Detection System at NBCC	Set	1				
2C510	Lightning System Main Control Centre	Set	1				
2C511	Lightning System Backup Control Centre	Set	1				
2C512	Airconditioning System Main Control Centre	Set	1				
2C513	Airconditioning System Back-up Control Centre	Set	1				
2C514	Raised Floor System Main Control Centre	Set	1				
2C515	Raised Floor System Back-up Control Centre	Set	1				
2C516	False Ceiling System Main Control Centre	Set	1				
2C517	False Ceiling System Back-up Control Centre	Set	1				
2C518	Power Supply and LAN socket (for SCADA System)	Set	2				
2C519	Earthing System (Main Control Centre)	Lot	1				
2C7. Supply of CCTV System as per Scope of Supply, Specification and GTP							

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Design, Supply, Installation, Integration, Testing Commissioning for Implementation of Smart Distribution System in NESCO Area on Turnkey Basis.

Line Item No	Description of Item	Unit	Quantity	Unit Price (Taka)	Total Price (Taka)	Sales Tax (Taka)	Total Price (Taka)
<u>1</u>	<u>2</u>		<u>3</u>	<u>4</u>	<u>5= 3 x 4</u>	<u>6</u>	<u>7</u>
2C729	Mounting Pole with Civil works	Pc's	88				
2C8. Supply of MANDATORY SPARE PARTS AND TOOLS as per Scope of Supply, Specification and GTP							
2C805	24-port Optical Distribution Frame, Complete	Nos	10				
2C806	Pair of Patch Cords	Nos	20				
2C810	Diesel back-Up Generator Full Maintenance Set	Set	2				
2C811	Access Control System, Power Supply for Door Lock	Set	5				
2C812	Access Control System, Door Lock	Set	5				
2C813	Access Control System, Access Key	Nos	180				
2C817	Fire Detection - Detector	Set	10				
2C823	O&M toolset with Multimeter	Lot	2				
2C824	O&M Laptop with cables	Set	4				
Column 6 to be carried forward to Schedule No. 6. Grand Summary							

Note 1: All the equipment/services to be quoted as per requirement in Sec.6,7&8.

Note 2: Note: The function of C & F agent and Insurance (both foreign and local) shall have to be completed by the tenderer. The cost regarding C & F agent and Insurance shall have to be included in the contract price. No additional payment shall be made regarding this.

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorized to sign the Tender for and on behalf of the Tenderer		

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Schedules of Rates and Prices

Schedule No. 3 - Design Services - Not Applicable

Line Item No	Description of Item	Unit	Quantity	Unit Price		Total Price	
				EXW Local Parts Local Currency	CIP Imported Parts Foreign Currency	Local Currency Portion	Foreign Currency Portion
<u>1</u>	<u>2</u>		<u>3</u>	<u>4</u>	<u>5</u>	<u>6=3*4</u>	<u>7=3*5</u>
TOTAL							

Note 1: All the equipment/services to be quoted as per requirement in Sec.6,7&8.

Note 2: Note: The function of C & F agent and Insurance (both foreign and local) shall have to be completed by the tenderer. The cost regarding C & F agent and Insurance shall have to be included in the contract price. No additional payment shall be made regarding this.

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorized to sign the Tender for and on behalf of the Tenderer		

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Schedules of Rates and Prices

Schedule No. 4 - Civil works part - Not Applicable

Line Item No	Description of Item	Unit	Quantity	Unit Price		Total Price	
				EXW Local Parts Local Currency	CIP Imported Parts Foreign Currency	Local Currency Portion	Foreign Currency Portion
<u>1</u>	<u>2</u>		<u>3</u>	<u>4</u>	<u>5</u>	<u>6=3*4</u>	<u>7=3*5</u>
TOTAL							

Note 1: All the equipment/services to be quoted as per requirement in Sec.6,7&8.

Note 2: Note: The function of C & F agent and Insurance (both foreign and local) shall have to be completed by the tenderer. The cost regarding C & F agent and Insurance shall have to be included in the contract price. No additional payment shall be made regarding this.

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorized to sign the Tender for and on behalf of the Tenderer		

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Schedules of Rates and Prices

Schedule No. 5 - Installation and Other Services

Line Item No	Description of Item	Unit	Quantity	Unit Price		Total Price	
				Local Currency Portion (Taka)	Foreign Currency Portion (USD)	Local Currency Portion (Taka)	Foreign Currency Portion (USD)
1	2		3	4	5	6=3*4	7=3*5
5A1. Installation , Configuration, Integration, Testing & Commissioning Works as per Scope of Supply, Specification and GTP							
5A101	SCADA System incl. LAN Network (NMCC and NBCC)	Lot	1				
5A102	RTU Installation with associated accessories	Lot	95				
5A103	Configuration existing SAS (including underconstruction 4 GIS substation)	Lot	25				
5A104	Telecommunication Equipment and DC System, Call Server System etc.	Lot	1				
5A105	Thermographic Camera System: Cable laying, Camera installation and configuration in each PV plant	Lot	44				
5A106	Thermographic Camera System: Cable laying, Camera installation and configuration at Central Monitoring room	Lot	1				
5A107	Optical Cable and Accessories Installation	km	1138.19				
5A108	Installation of Ancillary Systems - of NMCC and NBCC	Lot	1				
5A2. Other Services as per Scope of Supply, Specification and GTP							
5A201	Maintenance of PostgreSQL DB for 3 years	Lot	1				
5A3. As Built Drawings as per Scope of Supply, Specification and GTP							
5A301	Handing over of As built drawings and O&M Manuals for entire services (Five Hard copies and Two Softcopies)	Lot	1				
5A4. Pre Shipment Inspection, Technology Transfer and System Demonstration as per Scope of Supply, Specification and GTP							
5A401	Pre Shipment Inspection, Technology Transfer and System Demonstration	Lot	1				
5A5. Local Training as per Scope of Supply, Specification and GTP							
5A501	Training on SCADA Hardware and Software	Lot	1				
5A502	Training on Communication Network	Lot	1				
5A503	Training on SAS & RTU	Lot	1				
TOTAL Columns 6 and 7 to be carried forward to Schedule No. 6. Grand Summary							

Note 1: All the equipment/services to be quoted as per requirement in Sec.6,7&8.

Note 2: Note: The function of C & F agent and Insurance (both foreign and local) shall have to be completed by the tenderer. The cost regarding C & F agent and Insurance shall have to be included in the contract price. No additional payment shall be made regarding this.

NMCC NESCO Main Control Centre

NBCC NESCO Backup Control Centre

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorized to sign the Tender for and on behalf of the Tenderer		

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Design, Supply, Installation, Integration, Testing Commissioning for Implementation of Smart Distribution System in NESCO Area on Turnkey Basis.

Schedules of Rates and Prices
Schedule No. 6 - Grand Summary

Schedule No.	Title	Total Price	
		Foreign Currency (USD)	Local Currency (Taka)
1	1A. Plant and Mandatory Spare Parts Supplied from Abroad -SCADA/DMS Systems		
	1B. Plant and Mandatory Spare Parts Supplied from Abroad - RTU, SAS and Adaptation		
	1C. Plant and Mandatory Spare Parts Supplied from Abroad - Telecommunication and Ancillary Systems		
2	2A. Plant and Mandatory Spare Parts Supplied from Within the Employer's Country - SCADA/DMS Systems		
	2B. Plant and Mandatory Spare Parts Supplied from Within the Employer's Country - RTU, SAS and Adaptation		
	2C. Plant and Mandatory Spare Parts Supplied from Within the Employer's Country- Telecommunication and Ancillary Systems		
3	Design Services - Not Applicable		
4	Civil works part - Not Applicable		
5	Installation and Other Services		
GRAND TOTAL to be carried forward to Form PG5A-1b			

Note 1: All the equipment/services to be quoted as per requirement in Sec.6,7&8.

Note 2: Note: The function of C& F agent and Insurance (both foreign and local) shall have to be completed by the tenderer. The cost regarding C & F agent and Insurance shall have to be included in the contract price. No additional payment shall be made regarding this.

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorized to sign the Tender for and on behalf of the Tenderer		

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Schedules of Rates and Prices

Schedule No. 7 - Recommended Spare Parts

Line Item No	Description of Item	Unit	Quantity	Unit Price		Total Price	
				EXW Local Parts Local Currency	CIP Imported Parts Foreign Currency	Local Currency Portion	Foreign Currency Portion
<u>1</u>	<u>2</u>		<u>3</u>	<u>4</u>	<u>5</u>	<u>6=3*4</u>	<u>7=3*5</u>
TOTAL							

Note 1: All the equipment/services to be quoted as per requirement in Sec.6,7&8.

Note 2: Note: The function of C & F agent and Insurance (both foreign and local) shall have to be completed by the tenderer. The cost regarding C & F agent and Insurance shall have to be included in the contract price. No additional payment shall be made regarding this.

Name:	<i>[insert full name of signatory]</i>	<i>Signature with Date and Seal</i>
In the capacity of:	<i>[insert designation of signatory]</i>	<i>[Sign]</i>
Duly authorized to sign the Tender for and on behalf of the Tenderer		

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1 GENERAL HARDWARE REQUIREMENTS

The SCADA architecture shall utilize non-proprietary hardware throughout the system. The open nature of the system shall allow the customer to add any type of hardware or replace a component without the necessity of modifying the software to support the new hardware.

It is realized that the choice of equipment is intricately linked with the design of the particular system offered. Therefore, the Bidder must propose suitable equipment that is capable of meeting the specified requirements in terms of response, reliability and availability.

The Bidder shall submit full technical details of the hardware configuration proposed that will meet or exceed the processing requirements for all the specified SCADA functionality and applications requirements:

The hardware processing capacity shall be supplied adequate for implementing a SCADA system with the specified number of RTUs and gateways, plus a future expansion, i.e. 250,000 I/O-points.

All servers, workstations, network equipment, printers and peripherals shall have an authorized local representative in Dhaka for maintenance, repair and spare parts. The Bidder shall name the manufacturer authorized local representatives in Dhaka in his bid.

2.1 SERVER TYPE-1

Server Type-1 is a HCI (Hyperconverged Infrastructure) server which is a type of server that combines compute, storage, and networking resources into a single, integrated system. It will be designed to simplify the deployment, management and scaling of future infrastructure. Solution should be provided on minimum 5 HCI nodes and up to 64 nodes can be incorporated in this server.

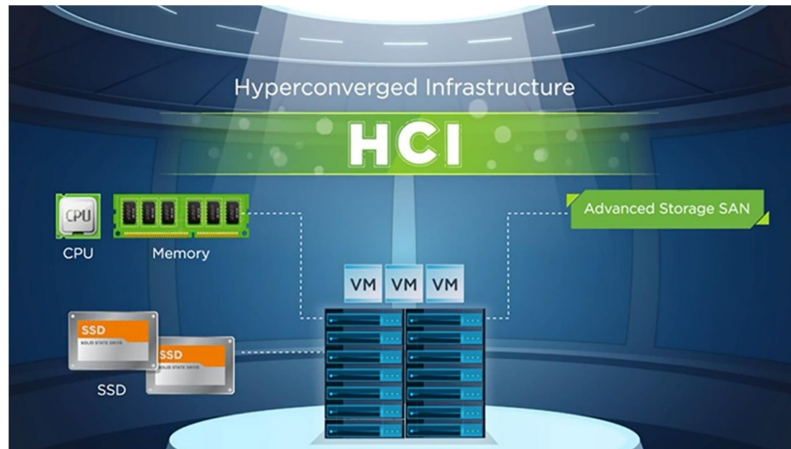


Figure: HCI (Hyperconverged Infrastructure) as server type-1

This HCI server will include a combination of hardware and software components, such as:

- Compute resources, such as processors and memory, to run virtual machines and applications. Minimum 224 core CPU with Minimum 5 TB memory should be proposed.
- Storage resources, such as disk drives and solid-state drives, to store data. 300 TB storage using SSD should be proposed.
- Networking resources, such as switches and NICs, to connect the compute and storage resources and provide access to external networks
- Software, such as a hypervisor, storage management software, and network management software, to manage the resources and provide a unified management interface. Bidder should propose VMware standard license for all HCI node.

This server will provide high availability, scalability, and disaster recovery capabilities. This type of servers typically used to run virtualized workloads, such as virtual machines, containers, and storage-intensive applications

Some key features of HCI infrastructure will include:

- I. Convenient Implementation: HCI servers can be deployed quickly and easily, with minimal configuration required. They are pre-configured and optimized for specific workloads, which means that they can be up and running in a matter of hours or days, rather than weeks or months.
- II. Scalability: HCI servers can be easily scaled up or down, as needed, to meet changing resource requirements. This can be done by adding or removing servers from the cluster, or by adding or removing resources, such as storage or networking, from existing servers.
- III. High Availability: HCI servers are designed to provide high availability, which means that they can continue to operate even if one or more components fail. This is typically achieved through the use of redundancy and failover mechanisms, such as mirroring or clustering.
- IV. Unified Management: HCI servers provide a unified management interface that allows administrators to manage the compute, storage, and networking resources from a single console. This makes it easy to monitor the health and performance of the infrastructure, and to troubleshoot and diagnose problems.
- V. Flexibility: HCI servers are designed to be flexible, which means that they can be used to run a wide range of workloads, such as virtual machines, containers, and storage-intensive applications. They can also be used to support different types of storage, such as block and file storage, and different types of networking, such as LAN and SAN.
- VI. Data protection: HCI servers are designed to protect data and minimize data loss, through features such as backup, replication, disaster recovery and more. The capacity to be configured with minimum data protection of replication factor 2 or equivalent or higher.
- VII. Proper resource utilization: Proper resource utilization is an important feature of Hyper-Converged Infrastructure (HCI) as it helps to ensure the performance and availability of the system. Automatic resource balancing, Data Deduplication and Compression, Quality of Service (QoS), Resource Pool features will help to utilize resource properly, increase storage efficiency, allowing more data to be stored on a smaller number of disk drives, reducing hardware costs and power consumption.

In server type-1 HCI environment, required servers for implementing SCADA will be installed. Some of them are listed as follows:

2.1.1 APPLICATION SERVERS

Application servers shall be the principal computational resources of the system. They shall be current models from recognized server suppliers, selected for efficient operation of the proposed system software.

The Application Servers shall be implemented according to the full hot-standby redundancy concept (two physically independent servers) and shall be equipped with sufficient hard disc capacity and main memory to hold the complete real-time database and to perform basic data analysis, verification, filter and calculation functions like topology analysis, etc., which are required for efficient application server sharing.

It shall be possible to replace or upgrade each processor with future compatible processors without changing the operating system or application software.

2.1.2 WEB SERVER

A Web Server shall enable view-only access to the SCADA system for the Employer's authorized staff via PCs running Web Server client software.

The Web Server shall enable office PCs to view station displays, alarm lists, event lists, sequence of event lists and reports. The Web Server shall be connected to the SCADA LAN through a firewall.

It is essential that the same web-based user interface (same navigator, same tools bars, i.e., same look and feel) be available to the Operator either for local use in the dispatching centre or remotely.

Specifically, it shall be possible to:

- Visualize the full-graphics displays using a standard web browser
- Call up any information supported by a web browser, such as a web page, .PDF file, Microsoft™ Word file, Excel document and any other format supported by a web browser
- Use all features of the user interface from the browser, including dialog pop-up menus, data entry and modification, selecting device, etc
- Simultaneously display multiple frames within the web browser
- Customize the user interface by adding links to corporate or external web sites, by inserting standard html web pages

It shall be possible to call-up the operator displays via the Internet using light-weight clients, web browsers and mobile applications.

The web technology shall be natively supported by the product, meaning that having the displays shown in the web browser shall not bring additional work to the maintenance engineer at display building time, nor shall it require additional third-party software products like specific plug-ins.

2.1.3 REPLICATED HIS SERVER

For security reasons, real-time Historical Information System (HIS) data from the SCADA system shall be transferred to a replicated HIS server. The replicated HIS server will be located on the office LAN and firewalled from the SCADA LAN.

Employer's staff requiring historical data will access the replicated HIS server for the required information. This reduces loading on the SCADA LAN while making historical information available to other Employer's staff.

2.1.4 PROXY SERVER

A Proxy Server is required to allow SCADA system access by authorised off-site Employer support staff. Authorised Employer support staff shall be able to access the SCADA system from a PC through a secure Internet Virtual Private Network (VPN) connection.

The Proxy Server could also be used for remote SCADA system access by Contractor engineers for system maintenance and fault finding with the permission of the Employer.

2.1.5 OTHER SERVERS:

Database Server, Historical Information Server (HIS), Inter Utility Control Communication Protocol (ICCP) Server, Communication servers and other servers required for solution will be installed in this HCI environment.

2.2 SERVER TYPE-2

Server Type-2 are rack servers which will be mounted in rack. This server will offer high performance and reliability, and will be used for critical workloads such as databases, web servers, and virtualization. They include high-performance processors, large amounts of memory, high-capacity and high-throughput storage, multiple networking interfaces, expansion capabilities, redundant power supply, advanced cooling systems,

advanced server management features, operating systems and software, and standard form factor.

Each server will have minimum two (2) Intel latest generation Processors. Each processor should have minimum 2.1GHz clock speed & 16 cores. Each server should be proposed with minimum 512 GB of DDR4 Memory and usable 3 TB SSD SAS internal storage.

Operator Training Simulator (OTS) Server and other application server will be installed in server type-2.