



## CORRIGENDUM-1

Ref: Tender Enquiry No.: **TPWODL/PN/O/SU/013/CORRIGENDUM/001**

Date: 22.06.2021

Sub: - Amendment of Clauses / Extension of due date for payment of Tender Fee towards purchase of Tender Documents and Revised Calendar events.

All interested prospective bidders may kindly note the following modification to the calendar of events of the open Tender No. **TPWODL/PN/O/SU/013**- EGIS System implementation and maintenance at TPWODL

Sr No	Calendar of Events	Existing Schedule	Revised schedule
1	Date by which interested and eligible vendors to pay tender fee and confirm participation in accordance with "Procedure /for participating in tender"	12 <sup>th</sup> June 2021; 1500 Hrs.	25 <sup>th</sup> June 2021; 1500 Hrs.
2	Last Date of receipt of pre-bid queries, if any	19 <sup>th</sup> June 2021; 1500 Hours	29 <sup>th</sup> June 2021; 1500 Hours
3	Last Date of Posting Consolidated replies to all the pre-bid queries as received	26 <sup>th</sup> June 2021; 1500 Hours	1 <sup>st</sup> Jul 2021; 1500 Hours
4	Last date and time of receipt of Bids	3 <sup>rd</sup> July 2021; 1500 Hours	6 <sup>th</sup> Jul 2021; 1500 Hours

**Amended Clause:**

Sl. No.	RFP Reference No.	Concise description Section/Clause of RFP	Amended Clause / Clarifications
1	Annexure-2 Technical Specifications Compliance. Page : 24	<ul style="list-style-type: none"><li>• 1.18 to 1.23</li><li>• 2.1 to 2.4</li><li>• 7.1</li></ul>	Bidder to read Revised Annexure (attached below) in conjunction to RFP.
2	Mobility solution	All Section of RFP related to Mobility solution	Bidder to read 'Mobile Application requirements' as it is, however the price of the same is to be quoted separately and TPWODL reserves the right to include or drop it while finalizing the overall proposal during Techno-commercial evaluation.

**Annexures:**

Revised Annexure-2: Technical Specifications Compliance. (attached below)

All other terms and conditions of the above tender will remain same.

By Order

Chief (Contracts & Store), TPWODL

## Annexure-2: Technical Specifications Compliance

S No.	Description	Bidders Compliance	Remarks
1	<b>General Features of the solution</b>		
1.01	Should have out of box industry standard Electric Distribution data-model , that should be flexible for customization as per utility requirements		
1.02	Should have mechanism for workflow based utility network digitization with in-built QC and update feature features		
1.03	The solution shall provide an integration toolkit and have standard, published API sets to allow the integration with ERP for Asset Replication and work management business workflow integration.		
1.04	The synchronisation between ERP & GIS shall be bi-directional, changes in GIS shall synchronise to ERP, and changes in ERP shall synchronise to GIS. For ex. when changes in GIS occur to records such as Consumer meter, cables, wires, isolating equipment data will be sent to update/delete or create corresponding records in ERP.		
1.05	GIS update workflows shall be configured to initiate a synchronisation for changes made within in GIS for an ERP project. This shall ensure that project changes, where approved or completed, will be reflected within ERP in near real time.		
1.06	The solution shall support an efficient network extension and customer connection process by providing the ability to create an integrated workflow-based process between GIS and ERP with the synchronised status of the project maintained in both systems.		
1.07	The GIS shall maintain the cost objects based on data mastered in ERP and synchronised to GIS with respective cost for labour, services and material. These cost objects shall be utilised for planning network extensions in GIS and then create the Bill of Quantities for the material and labour required for the project.		
1.08	<p>A facility for configurable work flow for supporting business processes and workflows. The workflow also should get integrate with other systems.</p> <p>Sample example integrated workflow for network extension project is as follows, bidder is required to provide compliance for the same:</p> <ol style="list-style-type: none"> <li>1. Project gets initiated in ERP with status “New” and the corresponding project with status “New” shall be created in GIS automatically through integration points.</li> <li>2. The GIS user shall then update the project status to “In Design”, create the planned extension using the ERP synchronised Cost Units and validate the network extension in a Network Analysis application like Cymdist.</li> <li>3. A BOQ shall be generated and project status shall be changed to “Approval Pending” to submit the project to ERP for approval and associating the Cost Units from the BOQ with the project in ERP.</li> <li>4. The project can either be approved and a construction PO to be initiated from ERP or the project can be sent back for optimization of design.</li> <li>5. Once the PO is released by ERP and construction started, the project status shall change to “In Construction”.</li> <li>6. During construction of project, if there are any deviations to the planned network, the changes are submitted to GIS and the status of project shall change to “Construction updates”.</li> </ol>		

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	<p>7. Once the field updates for the as-built view are captured in GIS, the project status is updated to As-built updated.</p> <p>8. The network extension is then energised, and the status of project is updated in GIS and ERP to "In Service".</p> <p>9. At this point the extended network shall be made part of as-built view and the project shall reach the "Complete" status.</p> <p>&gt;&gt; The above is a sample and not limited to details mentioned above.</p>		
1.11	The solution shall support modelling of High voltage, Medium voltage and Low voltage distribution network and associated assets including Generators, HV lines, HV Transformers, MV lines (OH & UG cables), Poles, Primary Substations, LV lines (OH, ABC & UG cables, 1Phase, 2Phase & 3Phase) , Switchgears, Auto-Reclosers, Load Break Switches, DDLO's, Distribution Transformers, LV fuses, Retail & Bulk customers, meters, dist communication etc using appropriate GPS coordinate system.		
1.12	The proposed GIS shall support modelling of distribution generation capacity including roof top solar, solar farm, wind farm etc.		
1.13	The GIS product shall have an industry standard Data Model and shall be CIM compliant. Standard adaptors to export the data in CIM model should be available off the shelf.		
1.14	The proposed GIS shall support structured export of connected network in CIM/XML format for one-time initial load as well as incremental changes. Shall also support structured publishing of proposed network changes with ADMS system.		
1.15	The proposed GIS shall support for Standard distribution operations such as Phase Change/Phase propagation, Replacement or Addition of Conductor, Rotation of phasing information, updating flow directions, updating voltages etc.		
1.16	Availability of a mechanism to ensure the circuit/feeder number and proper phasing are propagated to topologically connected assets when a permanent electric network change occurs		
1.17	The proposed GIS shall have standard Designing and Workflow Management Tool with easy to use design layout tools, Bill of Material(BoM) generation and cost estimation, Reporting for streamlining the entire design process and making it easier for users to "design to standards" and "build to design".		
1.18	The proposed GIS shall have in built QA/QC tools for network and Landbase data integrity and sustenance. There should be a Quality Management framework that shall provide robust data quality analysis and reporting, enabling users to reduce data quality related costs. It should have a graphical user interface-driven management tool for use with application.		
1.19	The solution shall support Open Layers and map API integration such as Google, Bing, Open street maps		
1.20	Solution shall support Terrain analysis , DEM		
1.21	Solution shall support vegetation corridor management or corridor management		
1.22	Solution shall support integration with weather plugin		
1.23	Local Language (Hindi , Odiya) support for web and mobile applications will be an added advantage		

S No.	Description	Bidders Compliance	Remarks
2	<b>Integration &amp; Interoperability</b>		
2.1	The system must have ready capability for SOA based integration, and the bidder shall be responsible to do necessary adaptations (GIS side) for development of interface for but not limited to - 1. Energy Auditing 2. Technical Feasibility for New Connection 3. CAPEX management 4. Asset Lifecycle Management		
2.2	The system must be CIM compliant and provide out of box support for CIM based integration with Advanced Distribution Management Systems / SCADA / DMS / OMS		
2.3	The offered GIS system shall support methods, tools and services for data management in order to acquire, process, analyse, access, present and transfer such data between different users, systems and locations as per the OGC standards for geographic information. These standards are intended to support data and service interoperability between different environments. The contractor shall be responsible to demonstrate that the offered Software will provide these capabilities.		
2.3.1	Get Capabilities service		
2.3.2	Web Map Service (WMS)		
2.3.3	Web Feature Service (WFS) to provide access to geographic feature data		
2.3.4	Real-time data exchange capabilities based on Geography Markup Language (GML)		
2.4	Data Exchange: Shall support export to and import from other standard formats, including but not limited to : 1. GeoJSON 2. CSV 3. KML 4. Shapefiles 5. AutoCAD (DWG)		
2.5	<b>Coordinate System:</b> Should support multiple Geographic Coordinate Systems as well as custom coordinate system. Shall be able to perform coordinate transformations and use tools such as Transform and facilities to accurately geo-reference multiple GIS sources data both raster and vector. Management of multiple coordinate spaces – or worlds – with full interaction between them for viewing, updating and tracing. For ex. a substation boundary shall be available in the geographic map but to avoid cluttering of map, the internal equipment and their connectivity shall be available in a separate view with intelligent interaction between the view for viewing, updating and tracing the network		
2.6	It shall be possible to overlay geographic data (map/feature/content) from other GIS sources. The data shall then be rendered into a single interactive map accessible to the users via the web.		
3	<b>Data Model - The proposed solution shall have a proven Utility specific electric distribution data model with a flexible circuit model. The data model shall include the following:</b>		

S No.	Description	Bidders Compliance	Remarks
3.1	The proposed Utility data model and application shall be matured industry standard product supported by OEM with existence for more than 3 years and have been implemented by at least 3 electric distribution utilities. OEM shall share a self-certification along with the list of reference customers meeting the said criteria.		
3.2	The GIS database shall have deployment readiness on standard OEM supported RDBMS (Oracle, SQL Server etc.) - Bidder has to ensure the support of proposed RDBMS from its respective OEM.		
3.3	The data model shall offer features to partition the network by voltage level, into EHT, HT and LT networks. It shall be possible to associate voltage level with equipment (object) and only objects in the same network should be able to connect.		
3.4	<b>Circuits and Sections:</b> for a comprehensive model to record all the conducting equipment that comprises a specific circuit. This circuit can be broken up into discrete circuit sections for improved partitioning and management of the network. Circuits may be fed from other circuits (for example, meshed networks).		
3.5	<b>Asset:</b> A real physical conductor or item of equipment (single phase or multi-phase) in the network shall be modelled as an Asset. Each Asset shall have a specification, which records its inherent unchanging attributes. The remaining asset attributes shall be those which distinguish it from all physically and electrically identical assets in the network, such as Asset ID, Serial Number and Date Manufactured. Assets will not have geometry.		
3.6	<b>Installation:</b> An installation record shall be used to represent a location at which a single three-phase asset or up to three single-phase assets are placed, and manage all the connectivity of the assets in the electrical network. An installation must have a geometry. The attributes of an installation shall be those which are common to all of the assets 'within' that installation, such as the type of network to which the assets are attached. The specifications of the assets within an installation will often be identical, but do not have to be.		
3.7	<b>Phases:</b> Electrical networks may consist of one, two or three phases. To aid visualisation of objects a single line or point shall be used on the map to represent electrical objects with multiple phases in the network. For the management of phases and the physical assets supporting the respective network installation, certain electrical objects shall be able to be managed as assets, installations and specifications.		
3.8	<b>Specification:</b> The data model shall maintain Specification records to define the non-changing properties of electrical assets. Assets shall be joined to a specification record. An asset's specification describing its unchanging physical and electrical properties, that is, those properties which are independent of whether the asset is connected to the network or not and how it is connected. Many individual assets in the network could have the same specification. Attributes stored in specifications might include manufacturer, rated current, rated voltage, resistance per unit length, material and so on.		
3.9	The application shall be able to model the contents of structures, such as substations in a separate container object in its respective internal world map. The internal features shall be electrically connected with the geographical features.		

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4	<b>Existing, future and past views of the network</b>		
4.1	The data model shall support an existing and future view of the network, primarily to support network builds for consuming systems such as outage management systems and distribution management systems. These systems need to know both the current and future configuration of the network. The current view of the network shall represent the existing 'as-built' state and the future view shall show the effects of proposed changes on the existing network.		
4.2	Assets shall be associated with an installation in a way that allows users to view current (as-built), future (designed) and past views of the network.		
4.3	The lifecycle status of an asset shall be derived from the status of its installation and shall determine whether an installation is considered as part of the current or future network, or both.		
4.4	The Past Phase shall allow users to track where a specific asset used to be installed in the electrical network. Electrical equipment can have a very long lifespan and is often recovered from the field, serviced and then installed elsewhere, so GIS shall allow users to identify where an asset has previously been in the network.		
5	<b>Asset Management</b>		
5.1	The solution shall provide native facilities for asset management or can integrate with an external asset management system.		
5.2	The solution shall provide functionality to record essential information about assets, such as installation and maintenance dates, ownership and specification information together with the asset's identifier and geographic location. The solution shall be able to record this information independently of other packages and can fulfil the asset management needs for electrical network.		
5.3	Every asset shall have an asset identifier. When integrated with the asset management system, this asset id shall be used as a link to the corresponding data in the asset management system. In this case the asset management system records the properties of the asset, including the specification data. When the connected network model is exported from GIS to the ADMS or analysis engines such as load flow (for example, CYMDIST), the electrical properties required to support these complex electrical functions can be retrieved from the asset management system, because each asset in GIS can identify the correct reference to look up the properties. In this instance, there is no need to capture this detailed asset data in GIS		
5.4	Should have mechanism for work flow based utility network digitization with in-built QC features.		
5.5	Shall support data-model and applications for Flood area demarcation, high tide zones demarcation and the utilization of the same for Network Planning, Damage Assessment etc.  Suitable data-model and applications need to be made available as per utility requirement.		
6	<b>FEATURES OF DESKTOP CLIENT</b>		
6.1	<b>General Editing</b>		
	Feature for Bulk Update		
	Perform Unlimited Undo/Redo operations		
	Snap Tips Indicating What Is Being snapped to		



S No.	Description	Bidders Compliance	Remarks
6.2	<b>Topology Processing</b>		
	Add Topology		
	Add Feature to Topology		
	Add Rule to Topology		
	Create Topology		
	Remove Feature from Topology		
	Remove Rule from Topology		
	Set Tolerance levels		
	Validate Topology		
6.3	<b>Workflow/Wizard based digitization:</b> Shall have capability to automate repetitive tasks with a workflow based framework and user interface. With this framework, one shall be able to build, save, and share simple and complex workflows with a simple GUI based editor. Workflows can include logic and initiate calls to other workflows—all with a single mouse click, improving productivity, efficiency and consistency in results. The workflow management which is automated and configurable; so as to stream line work procedures		
6.4	<b>Productivity Enhancement Tools:</b> Shall have ready made and configurable templates for digitizing complex/structured feature sets		
6.5	i) "RMU Panel + Switches" ii) "Pole + HVDS Transformer + Primary Fuse + Secondary Fuse"		
6.6	Note - The above examples are only indicative, the solution shall provide a framework for creation of templates		
6.7	<b>Schematic display:</b> The System shall support automatic generation of schematic representations of geographic networks managed in the GIS databases e.g. Electric and Communication networks.		
6.8	This shall allow users to dynamically create a schematic of a complete circuit or only the downstream or downstream from a selected device.		
6.9	The Schematic application shall represent any type of network and diagrams within a symbolic system, in a defined space and without scaling constraints. It shall produce diagrams, which can represent physically or logically and type of network.		
7	<b>System and Data Administration Features</b>		
7.1	<b>Version Management -</b>		
	The EGIS system shall have version management for supporting long transactions, with facility for parallel data update, merging, posting and conflict resolution.		
	Shall have transaction journal to record details of original and modified data, user ID, machine ID etc. The log file shall preferably be a database table for analysis.		
	Shall have tools to view analyse and resolve the conflicts graphically.		
	Shall support automatic conflict resolution for actually non-conflicting changes and also allow for configuring rules for automatic conflict resolution		
	Shall support large numbers of versions in the range of 500 minimum		
	Isolate Editing Projects in Separate Versions (Create Version)		
	Merge Versions		



S No.	Description	Bidders Compliance	Remarks
	Manage Conflicts between Editors by Row or Column		
	Manage Conflicts between Editors Interactively or Automatically		
	Delete Versions		
	Compression, Extraction and Replicas		
	Shall have provision of clean up (Compression)		
	Shall have provision of Extraction from main database		
	Shall have provision of setting Replicas of main database (Create and Manage Checkout/Check- In, One-Way, or Two-Way Database Replicas)		
7.2	<b>Short Transaction Editing</b>		
	Shall support non-versioned data update (Geometry + Attribute)		
	Data Archiving capabilities		
	Shall have facility for viewing the Database at a Specific Point in Time		
7.3	<b>User Management</b>		
	Shall support LDAP / Active Directory based user authentication. Shall also support Single Sign On(SSO)		
	Shall have feature of creating user groups and assigning rights to group that will allow cascading of the rights to all user of the group		
	Shall have facility to restrict users to update data only on certain alternatives (versions of data)		
	Shall have facility to restrict users to update or view data based on spatial bounds of administrative boundaries		
7.4	<b>Data Modelling Tool</b>		
	A GUI based data-modelling tool shall be available for defining new data objects, adding new attributes to existing objects, adding values to enumerated sets of attributes etc. Need to elaborate on hard and soft changes		
8	<b>FEATURES OF WEB CLIENT</b>		
8.1	The system shall have a thin client based application where in users shall be able to assess and visualize spatial/non spatial data on normally supported web browsers like MS Edge, Chrome etc. without any installation of apps.		
8.2	The application shall be a single page web-app that shall enable users to notify geometry changes (in form of redline sketches) and update configurable non-geometry attributes without using the full desktop client application		
8.3	The application shall be tightly integrated with desktop application providing thick client users with defined workflow to review and accept changes and run quality check tools before the updates are integrated to the as-built network.		
8.4	Supporting pre-defined Zooms scales and configurable set of layers to be displayed at each scale		
8.5	Map generation in maximum 5 seconds		
8.6	Create , View and submit Redlines		
8.7	View all previously submitted Redlines		
8.8	Generate Plots from pre-configured Map templates		
8.9	Measure dimensions between features of the map (Dynamic Ruler)		
9	Responsive Design for display support on varied screen sizes - including Laptops, Mobiles and Tablets		

S No.	Description	Bidders Compliance	Remarks
9.1	The application shall be configurable to enable only the specific types of updates and by the authorised users.		
9.2	The user shall be able to review the changes before submitting the changes to the back-end office users.		
9.3	The user shall be able to view the changes already submitted.		
10	<b>Technology Platforms</b>		
	The EGIS Software shall be supported in the following systems:		
	Linux 7.6, Windows 2016 or above for servers		
	Windows 10 and above for Desktop client OS		
	Chrome, Microsoft Edge for Web Client		
	The software shall have integration readiness with commercially available e-mail environments including MS Exchange and support SMTP, POP3, and IMAP.		
	The GIS database shall have the provision of deployment on standard RDBMS (Oracle, SQL Server etc.) - Bidder to provide complete list of supported RDBMS		
	Integration Framework – Service Oriented Architecture		
	Directory Access : LDAP, Active Directory		
	High Availability Cluster should be supported		
11	<b>User Management: Authentication and Authroization</b>		
11.1	The proposed solution shall provide authorisation facilities to: <ul style="list-style-type: none"> <li>control access to tables in a user dataset, with separate controls on fields and records</li> <li>control access to as-built view and design views of a user dataset</li> <li>give named rights to users</li> </ul>		
11.2	Shall have feature of creating user groups and assign rights and privileges to group that will allow cascading of the right to all users of the group.		
11.3	Shall have facility to restrict users to update data only on certain alternatives (Versions of data) and layers		
11.4	Shall have facility to restrict view or update data based on specific bounds of administrative boundaries.		
11.5	The system shall support local user authentication: users, their passwords and their group memberships are maintained within the proposed GIS Authorisation database.		
11.6	The system shall also support LDAP user authentication where users, their passwords and their group memberships are defined by an LDAP server. LDAP user groups will be mapped to the user groups of the proposed GIS system authorization system.		
12	<b>SECURITY</b>		
12.1	The security functionality shall ensure protection of objects, data, and the software. Standard security and protection shall be provided, including physical access controls by: Application geography Workspace (versioned Alternative)		
12.2	Multiple classes and levels of security must be able to be defined/assigned. Four levels of data/map access control are preferred which are as follows: o Full control o Add/Modify/Edit o Delete		

S No.	Description	Bidders Compliance	Remarks
	o View only		
12.3	The level of security required is at User level and User group level. Users can be grouped as normal users, view only users, system developers, system Administrators, Data entry operators, department based users etc. This facility of user grouping shall be available in the offered system.		
13	<b>Administration Requirements: Version Management</b>		
13.1	The e-GIS system shall have version management features for supporting long transactions, with facility for parallel data update, merging, posting and conflict resolution.		
13.2	The transaction journal shall have details of original and modified data, user id, machine id etc. The log file shall preferably be a database table for analysis and not a text file.		
13.3	Shall have tools to view, analyze and resolve conflicts graphically.		
13.4	Shall support automatic conflict resolution for actually non-conflicting changes, and also allow for configuring rules for automatic conflict resolution		
13.5	Shall support large number of versions in the range of 5000 minimum		
13.6	Multiple editors shall simultaneously edit the same features in a multi user database.		
13.7	Isolate editing projects in separate versions ( create version)		
13.8	Merge versions		
13.9	Manage conflicts between Editors by row or column		
13.11	Mange conflicts between editors interactively or automatically		
13.12	Delete versions		
14	<b>SYSTEM MAINTAINANCE</b>		
14.1	System Maintenance/System Administration includes the management of user accounts, passwords, and management of Applications, operating systems and Databases. Adequate tools shall be provided to facilitate the administration of the system and the users (through a simple GUI) as well as the installation and configuration of the Software.		
14.2	User's accounts, passwords and Security levels, access, permissions shall be managed through a GUI based interface.		
14.3	Performance monitoring tools shall be provided.		
14.4	Log Files, Error Logs, access logs shall be provided automatically. It shall be possible to enable/disable the log files and customize the output and the level of details shown in these logs.		
14.5	System shall have failover/restart capability that allows users to automatically recover data and system recovery mechanism in case system crashes or has abnormal shutdown.		
14.6	Transaction history/log to be available showing the audit trail of data modified/deleted/added, what and when.		
15	<b>Backup &amp; Recovery Procedure:</b>		
15.1	The backup/recovery mechanism shall support the following backup types:		
15.2	Full: A backup that is non- incremental, that is, it backs up all used data blocks in the data files together with all required system/applications files as required.		

S No.	Description	Bidders Compliance	Remarks
15.3	Incremental: A backup of data files that includes only the blocks that have changed since a previous incremental backup. Incremental backups require a full Backup to serve as a basis.		
15.4	Open: A backup of any part of the target database when the database is open with users connected.		
15.5	Closed: A backup of any part of the target database when it is mounted but not open.		
15.6	A multi-level incremental backup strategy is expected to be followed for GIS system. The backup/recovery strategy shall support an automated backup and recovery tasks by recovery manager.		