

SOUTH DELHI MUNICIPAL CORPORATION

"PRESS NOTICE" – Expression of Interest

NIT NO. : 28/TC/EEE-IV/2014-15

Dated: 1/9/2014

The Executive Engineer (E) –IV, SDMC, Under Sewa Nagar Flyover, Bhisim Pitahmah Marg, New Delhi 110003 on behalf of the Commissioner, South Delhi Mpl. Corporation invites applications from well established, reputed specialized agencies for the work "Providing Street lighting Monitoring and Control System (Scada System) for South DMC Roads".

1. Brief Description and requirement of installing street light monitoring & control system:-

The Modus includes Survey and GIS mapping of the street lighting, Unique code to each Streetlight, Web Based application software for broadly monitor, control & store the following field data (Detailed SRS is attached for reference please):-

- Energy Meter Data (Detailed Parameters defined below)
- Sensor Data – Temperature
- Instantaneous, Scheduled or Event based ON / OFF of individual streetlight along with the read back status from the contactors.
- Efficiency % of Street Lights – Basic objective of automation of street lights is to calculate the efficiency % of operational lights and take urgent remedial actions, Efficiency % should encompass voltage compensation (Lamp wise power consumption at various voltage ranges) and is broadly to calculated by:

1. Real time Snapshot Includes:- Total Number of Devices, Connected/Disconnected devices, Operational / Non Operational lights, individual streetlight impacted by power failure by Discoms.
2. Operational Running Hours Includes:- This is similar to above category, but calculates the efficiency % with a snapshot of every one minutes (or configurable from 1 to 5 minute) for entire operational duration.

The purpose of inviting this EOI is to study the technology available in the market for the required solution. The interested as well as invited firms / companies will give their full demonstration as well as presentation physically and will also provide the precise detail of their new era technologies where system have been provided by the firm. The department will visit the sites of the firm / companies where the firm has completed the work.

Based on the discussion / presentation so held, one or more acceptable technical solutions will be decided upon laying down detailed technical specifications for each acceptable technical solution qualify bench mark, warranty requirement, delivery milestone etc.

Once the technical specification and evaluation criterion is finalized, the techno commercial bids will be invited as per usual tendering system. The final selection will depend upon the quoted financial bids and the evaluation matrix decided upon.

2. Eligibility Criteria :-

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- The agencies must have an experience in the work described at S.No. 1
 - Desirous firms should submit attested copies of TIN Number as issued by Trade and taxes / Sales Tax Department and proof of having submitting latest VAT / CST return etc.
3. Application for Expression of Interest supported by documents should be submitted in sealed envelope duly superscripted with the name of work and due date of opening. The applications will be received up to 03:00 PM on 10.10.2014 and will be opened in the "office of Superintending Engineer (Elect), 10th floor, Dr. SPM Civic Centre, JLN Marg, Delhi" on the same date at 03:30 P.M.
 4. If any information furnished by the applicant is found incorrect at a later stage, he shall be liable to be debarred from tendering/ taking up of work in South DMC. The department reserves the right to verify the particulars furnished by the applicant independently.
 5. The application received shall be scrutinized and only those applicants found suitable shall be intimated separately regarding date & time of sale of tender documents consisting of Technical Bid & Financial Bid.
 6. The department reserves the right to reject any or all applications without assigning any reason thereof and to restrict the list of pre-qualified contractors to any number deemed suitable by it, if too many applications are received satisfying the basis of PQ criteria.

Note:- The EOI is also available at website www.mcdetenders.gov.in.

Executive Engineer (E)-IV-
M C Primary School, Police Colony,
Hauz khas, New Delhi 110016.
Contact No. 011-246.44.25.6



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SOFTWARE REQUIREMENT SPECIFICATION (SRS) for STREET LIGHT AUTOMATION

- The web based application software and services shall be ready to use PROPOSED TECHNOLOGY application for monitoring and controlling of individual streetlights or group of street lights
- The web based application software and services should be able to be accessed from a simple Internet browser from anywhere. There should not be any need for additional licenses / applications on remote machines accessing the application software.
- The web based application shall broadly monitor , control & store the following field data:
 - Energy Meter Data (Detailed Parameters defined below)
 - Sensor Data –Temperature of individual street light fixture
 - Instantaneous, Scheduled or Event based ON /OFF of Individual Street lights alongwith the real-time status from the lights
- Events / Alerts and various other reports as mentioned below
- Mobile Application suitable for Android devices also shall be provided by the bidder to monitor and control all the functions that are supported by Web based application.
- All the existing Streetlights / Semi High Mast Lights / Fancy Lights surveyed by the bidder should be automatically mapped on GIS Map with Longitude/Latitude, once they are connected with control system.. The software should have provision for further mapping of lights/ to be added in future.
- A unique code should be automatically assigned to tag each Streetlights / Semi High Mast Lights / Fancy Lights.
- There should not be any tag(s) limitation enforced by the application software and the server can be expanded as per the scalability of the lights.
- The web based application software and services shall be built on Service Oriented open interface based Architecture with capability to integrate with third party systems like existing / future PROPOSED TECHNOLOGY systems / GIS or other platforms using Web services /OPC standards for receiving as well as sending the data. The software shall be complied to IPV6 protocols.
- The web based application shall be real-time based and shall have assured delivery protocol without having the need of polling devices, and devices should always be real-time two way connected to the central server. The PROPOSED TECHNOLOGY application shall keep a track of real time connectivity and disconnectivity details with a time stamp. Users shall be able to view the individual street wise current status and history of the same.
- Efficiency % of Street Lights – Basic objective of automation of streetlights is to calculate the efficiency % of operational lights and take urgent remedial actions, Efficiency % should encompass voltage compensation (Lamp wise power consumption at various voltage ranges)and is broadly to calculated by:
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Operational/ Non Operational lights, Individual street impacted by power failure by Discoms.

- OperationalRunningHoursIncludes--Thisissimilartoabovecategory,butcalculatesthe efficiency % with a snapshot of every minute(oruser configurable for 1 to 5 minute) forentireoperational duration.
- The Web Interface should be on secured layer using http-secure protocol based on 128-bit SSL encryption with future compliance to IPV6 security protocols.
- Each Light should have unique connection channel for communication with the central server at central data center. The Lights should be capable to automatically connect to central server for hassle free field data transmission, event logging, and control command execution and remote device configuration using the same dedicated unique communication channel.
- The Lights should publish their data to the central server on their own on real-time basis and also configurable by User as per required time block i.e. different for day and night so as to save unnecessary communication and data piling. If the status remains same not changed during the period specified by the department, the data must be overridden till the status remains unchanged.
- **The system should have the functionality of Remote over the Air firm ware upgrade for easy software upgrade of hardware devices.**
- In case of failure of the system / proposed technology, due to any reason, the backup arrangement must be there for (i) system functionality through software & (ii) data recovery. During the back up there should not be any functional failure of lights.
- The free up gradation of software against any possible threat, technology up gradation etc. should be available for at least next five years.
- An algorithm should be there to maintain the operating voltage in a particular range during the designated period as required by user.
- The software should have dedicated complaint redressal mechanism including escalation, forwarding and reporting features.
- The software should have provision for operating a link on MCD website for registering complaint by the citizens of Delhi of particular area. The necessary interface from MCD IT Deptt. shall be provided.
- The complaint so logged should be clearly visible as a pop-up/alert on a screen/supervisor work station exclusively.
- The software should be capable to integrate the service level to be defined by the deptt. in its module as an integral part and shall able to generate reports based on real time scale for the agency (third party) maintaining the street lights.
- The Web Based PROPOSED TECHNOLOGY system primarily needs to have following functionality /Reports and Interfaces:
 - I. Overall System Monitoring
 - II. On/Off Operations
 - Schedules
 - InstantRemoteOn/OffoperationsandStatus


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- III. Reporting Module
- IV. Alarms and Alerts—Emails, SMS & Mobile App
- V. Admin & Configuration Modules
- VI. Rule Engine
- VII. Effective Management & Maintenance Systems with Exception Reporting


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- **DETAILED REQUIREMENT OF REPORT AND INTERFACES**

- I. **Overall System Monitoring:**

- **Real Time Status Monitoring** of each street lighting / Semi High Mast Lighting / Fancy lights, Number of Connected Fittings, Number of Disconnected Fittings, Total Operational Fittings, Total Fittings Not working due to Power Failure and Total Efficiency%
- Above aggregation should be available for entire installed base alongwith Road Wise/Individual Street light wise detail
- Above should have a minimum of following report filter criteria(s):
 - Zone Wise
 - Agency Wise
 - Discom Wise
 - Type–Road/Flyover/Under pass etc wise
 - Location (Road) Wise
 - Date and Time–For a snap shot at any point in time of current and historical data
- The above shall also be available with Mapping view with separate status monitoring and color/indication for the following:
 - Lights On Or lights Off
 - Device Disconnected
 - Power failure based one vent from Light
 - Efficiency Below pre defined threshold
 - The system shall be capable of having an interface with any existing or new department GIS
- The real time system snap shot shall also be sent via SMS/Mobile App to predefined users via SMS/Mobile App instantaneously.
- **Overall Efficiency–Running Hours Based Efficiency%**
- This shall provide the broad every minute (or any other defined interval) average defficiency for entire running hour duration for a specific day or a month.
- **Comprehensive Summary Report**


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- This should provide a snap shot of previous day summary with following key items:
 - Running Hour based Efficiency% summary
 - List of disconnected lights throughout the whole operational duration
 - List of Individual street lights with Power fail durations
 - List of Individual street light with Low and High Voltage
- List of Individual street light
- List of or group of lights(configurable)–belong to following categories
 - CAT-I (More than 20 luminaries found not working continuouslyformorethan1 hrs.)
 - CAT-II (Less than 20 luminaries found not working continuouslyformorethan10hrs.)
 - CAT III If the fittings are found functional continuously for more than 1 hrs during day time.
- The above reports should be available for any date range on the Web Based PROPOSED TECHNOLOGY system.
- The above reports should be sent automatically be Emailed to users at predefined time in the evening as well as in the morning or instantaneously through Mobile App for registered users.
- The system should have an option of entering remarks regarding reasons of disconnection like– Theft/Maintenance etc. This should reflect as desired in the overall system reports and web based PROPOSED TECHNOLOGY software.

II. On/Off Operations:

- Schedules:
 - Software should have capability to apply schedules for On/Off timings on individual street lights/ group of lights
 - Software should support multiple schedules on any I SMS device e.g. for normal day schedule, off-day schedule, holiday or festival specific schedule etc
 - Software should be able to resolve the case of schedule conflict i.e.in case of multiple schedules; it should not allow creating such schedules which are doing exactly opposite to any existing schedule on same time interval, and on the same street light/lights
 - Application Software should be able to apply the available schedules based on Sun rise and Sunset time automatically from selected weather report sites
 - Software should provide an interface wherein any particular schedule can be applied to a single individual street or to a group of street lights
 - Software should also support import of On/Off schedules scheme from external source-xml/excel.

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- Software should have feature by which user can view history of Schedule creation/ Schedule execution/Schedule edits/Schedule reset
- Software shall maintain and display the current status of schedule. Status can be Executed, Running etc
- Software should provide ability to search the active schedule running on any FIU
- Connectivity should not impact the On/Off operations of lights once schedules have been download to the FIUs
- Instant On/Off - The system should be capable of switching ON and OFF contactors in the individual street lights at any given point in time other than the schedules (with second level of password security)
- Software should provide an interface via which remote operation can be applied on a single street light or on a group of street lights.

III. Reporting Module:

- Energy Parameters - Web based system should have Instantaneous, Cumulative, Power Quality (Current, Voltage Imbalances and Average Power Factor etc), Meter Data Report for single view of all the energy parameters for any specific individual street light.
- Sensor Parameters -Web based system should have the capability to monitor sensor reports
- Reports should be aggregated and available at Predefined minute(s), Hourly, Daily, Weekly, Monthly, Yearly etc.
- The Web Based Application Software and Services should provide tabular as well as graphical reports
- There should be provision to-Export Reports in Excel /CSV format, Define group of equipment/Sensor/Meter, Define the reports on Group Basis like Cumulative kWh, Rating and Running Hours, etc., Define Groups based on Section/Division/Area/Zone/Agency etc.
- The system should be flexible for any future report customization

IV. Alarms and Alerts:

- The Web Based Application Software and services should capture alerts and generate alarms for the conditions of individual street light such as:
 - Electrical supply failure to light
 - Light not functioning
 - High/Low Voltages
 - High/Low Current
 - Upper and lower threshold crossing for user defined parameters

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- Web based Application Software should raise e-mail/SMS alerts automatically to specified list of users for selected alarms as defined in the Web Based Application Software.
- Configuration of users and respective contact number or email address for SMS/ Emails should be through Central Server (CS) and user shall be able to receive SMS directly from Lights. Exceptional reporting of a failure via a SMS can also be a SMS gateway or through Mobile App for many service provider integrated with the system.
- Device Diagnostics: There should be following device diagnostics that are communicated to the web based PROPOSED TECHNOLOGY system:
 - Device disconnection
 - Power Analyzer failure

V. Admin Interface for System Configuration

- User Management
- Software should provide a log in interface to the administrator to interact with user management module. Administrator shall be able to:
 - Add Users
 - Delete Users
 - Define roles of User
 - Edit User information/role/report access
 - It should have feature to define the privileges of user to access the limited information based on User role. It should have feature to define the privileges to control a set of lights or zones/areas.
- Efficiency%- Master Data Entry Forms
 - Individual street light wise/Lamp Wise/Wattage wise System Configuration
 - Voltage compensation logic where in lamp wise wattage usage at different voltages should be entered
 - For efficiency calculation, both the above threshold values should be used

VI. Rule Engine Intelligence:

- Web based application software should have a Rule Engine module user shall be able to Create Rule/Edit Rule/Delete Rules/Activate/deactivate rules.
- Rule engine shall allow creation of a rule with any threshold crossing of any Energy or Sensor parameter and decide on action Email, SMS or control with desired messaging through the web.
- Rule engine should continuously monitor the incoming stream of packets coming from FIUs & should report

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any violation of threshold values defined by the user. User should be able to configure the threshold on runtime.

- Rules shall have options like -IF-THEN Rules, OR-AND rules with Less than, Greater than or Equal to options.

VII. **Effective Management & Maintenance Systems with Exception Reporting:** The system should provide access to all the concerned people/departments along with exception reporting for the following:

- **Instantaneous alert to relevant maintenance staff**

Preventive Maintenance by Maintenance Agencies

- Surveillance Compliance by Maintenance Agencies
- Periodic PROPOSED TECHNOLOGY Calibration Compliance by Maintenance Agencies
- Login History with Duration for various departments wise users
- Exception Reports for Cat1 Faults
- These should be emailed automatically by the system at predefined frequency
- **Future Enhancement Ready System**

The system shall have flexibility to adapt to new upcoming technologies and if the streetlights are adapted to change with CFL / LED lights, it should work on the same. The system shall also be able to accept any sensor inputs like motion sense, presence sense, luminous sensor etc, so that effective steps can be taken to Switch ON/Off or intensity reduction etc.

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