

**REQUEST FOR PROPOSAL  
CITY OF CARLYLE - ILLINOIS  
FOR THE CARLYLE MUNICIPAL ELECTRIC & WATER DEPARTMENTS**

**EQUIPMENT FOR AUTOMATIC METER READING  
SYSTEM AND HOSTING SERVICES**

The City of Carlyle, Clinton County, Illinois will receive proposals for "MATERIAL FOR AUTOMATIC METER READING SYSTEM AND HOSTING SERVICES" for the Municipal Electric System until 11:30 O'Clock A.M. Local time the 12th day of January 2017.

Direct Proposals to the Carlyle City Hall, 850 Franklin Street, Carlyle, Illinois 62231, and label on the outside of the proposal: Proposal for "AMR System".

Proposal shall be valid for sixty (60) days after the scheduled time of closing.

The RFP consists of: determination and supplying material for the infrastructure to support the system, interfacing with billing software, testing of the infrastructure, metering equipment for installation by others, hosting of the system, and software to use the system locally.

The City of Carlyle, Illinois reserves the right to reject any or all proposals and to waive any informalities in bidding.

The RFP consists of 23 pages including this page, Form of Proposal, Non-Collusion Affidavit, Detailed Specification and Utility Map.

CITY OF CARLYLE, ILLINOIS

JoAnn Hollenkamp, City Administrator

DATE: November 29, 2016



**AUTOMATIC METER READING SYSTEM  
FORM OF PROPOSAL**

From: \_\_\_\_\_

TO THE CITY COUNCIL CITY OF CARLYLE, ILLINOIS

**“EQUIPMENT FOR AUTOMATIC METER READING SYSTEM AND HOSTING SERVICES”** for the MUNICIPAL ELECTRIC and WATER UTILITY.

The undersigned, having familiarized themselves with the local conditions affecting the cost of work and with the Contract Documents, and with the plans and specifications and addenda thereto on file in the office of the Clerk of said Municipality, hereby proposes to perform everything required to be performed and to provide and furnish all of materials, necessary tools, expendable equipment, and transportation services necessary required in furnishing material, accessories, and services as required for an “Automatic Meter Reading System” for the electric and water system which shall become part of the municipal electric and water system, all in accordance with the plans and specifications therefore as prepared by Rothermel Engineering, consulting engineer, including Addenda Nos. \_\_\_\_, \_\_\_\_, and \_\_\_\_, issued thereto, for the following price or prices:

**PROPOSAL #1 - INFRASTRUCTURE SERVICES AND MATERIAL:**

For services including furnishing and delivery of material as stated in the RFP including determination of and furnishing with delivery the necessary material for a data collection system to collect the metering information, transmit the information to a server and/or local host or remote host, and interfacing with the billing software for:

- A. Lump Sum for service and material: \$ \_\_\_\_\_
  
- B. Number of points requiring Internet Connection: \_\_\_\_\_  
Indicate type of Internet Connection and speed required.  
\_\_\_\_\_
  
- C. Estimated number of collectors (meter to 1st collector) \_\_\_\_\_  
Price for each additional collector / router \$ \_\_\_\_\_
  
- D. Estimated number of 2nd stage collectors: \_\_\_\_\_  
Price for each additional collector / router \$ \_\_\_\_\_

**AUTOMATIC METER READING SYSTEM  
FORM OF PROPOSAL**

E. Price for each additional device necessary to collect and/or forward data:  
\$ \_\_\_\_\_

Name of the device(s): \_\_\_\_\_

F. Delivery of information indicating location of collectors / routers and Internet Connection points after order placed \_\_\_\_\_ days.

G. Number of days of training "on-site" or explain by attachment \_\_\_\_\_ days  
Addressed attachment: \_\_\_ yes / \_\_\_ no

H. Attach any information deemed necessary to evaluate the proposal.  
Additional information attached: Yes \_\_\_\_\_ No \_\_\_\_\_

**PROPOSAL #2 - LOCALLY HOSTED SYSTEM:**

Fee for Locally Hosted System and Software as indicated in the RFP:

A. Initial Fee: \$ \_\_\_\_\_

B. If applicable Annual Fee after first year of service for software upgrade:  
\$ \_\_\_\_\_

C. Length of time upgrade fee will not increase: \_\_\_\_\_.

D. Attach description of system and indicate floor space requirement.

**PROPOSAL #3 - REMOTELY HOSTED SYSTEM:**

Fee for Remotely Hosted System and Software as indicated in the RFP:

A. Initial Fee: \$ \_\_\_\_\_

B. Annual Fee after first year of service for software upgrades:  
\$ \_\_\_\_\_

C. Length of time Annual Fee will not increase: \_\_\_\_\_.

D. Type of connection and connection requirement the remote network:  
\_\_\_\_\_

**AUTOMATIC METER READING SYSTEM  
FORM OF PROPOSAL**

**PROPOSAL #4 - SINGLE PHASE ELECTRIC METERS:**

For the furnishing and delivery of electric meters as indicated in the RFP and as indicated below in accordance with the accompanying specification with unit pricing as indicated below:

Single Phase Meter - 120/240 volts Class 200 Form 2S:

A. 200A 120/240 Volt Class 200 Form 2S Meter \$ \_\_\_\_\_ each.  
Manufacture and Model # \_\_\_\_\_

B. Same as A with Remote Disconnect \$ \_\_\_\_\_ each.  
Manufacture and Model # \_\_\_\_\_

D. Same as B with load limiter \$ \_\_\_\_\_ each.  
Manufacture and Model # \_\_\_\_\_

E. 320A 120/240 Volt Class 320 Form 2S Meter \$ \_\_\_\_\_ each.  
Manufacture and Model # \_\_\_\_\_

F. 100A 120 Volt Class 100 Form 1S Meter \$ \_\_\_\_\_ each.  
Manufacture and Model # \_\_\_\_\_

G. 60A 120 Volt Class 20 Form 1S Meter \$ \_\_\_\_\_ each.  
Manufacture and Model # \_\_\_\_\_

H. 20A 120 Volt Class 20 Form 3S Meter \$ \_\_\_\_\_ each.  
Manufacture and Model # \_\_\_\_\_

I. 20 A 120/240 Volt Class 20 Form 4S Meter \$ \_\_\_\_\_ each.  
Manufacture and Model # \_\_\_\_\_

J. Project is anticipated to take 2 years, indicate time frame pricing will be firm and maximum percentage increase after that time frame for 24 months after the first order is placed.

1) Metering Pricing Firm until: \_\_\_\_\_

2) Maximum Percentage increase during the next 24 months: \_\_\_\_\_ %

K. Delivery of Equipment after each order placed: \_\_\_\_\_ calendar days.

**AUTOMATIC METER READING SYSTEM  
FORM OF PROPOSAL**

**PROPOSAL #5 - THREE PHASE ELECTRIC METERS:**

For the furnishing and delivery of electric meters as indicated in the RFP and as indicated below in accordance with the accompanying specification with unit pricing as indicated below:

Three Phase Meters - Nominal Voltage Range 120-277 - With Load Profile

A. 20A Three Phase Meter - Transformer Rated Class 20 Form 9S for 4 Wire Wye or Delta:  
\$ \_\_\_\_\_ each.

Manufacture and Model # \_\_\_\_\_

B. 200A Three Phase Self Contained Meter - Class 200 Form 16S for 4 Wire Wye or Delta  
\$ \_\_\_\_\_ each.

Manufacture and Model # \_\_\_\_\_

C. 200A Three Phase Self Contained Meter - Class 200 Form 12S for 3 Wire Delta  
\$ \_\_\_\_\_ each.

Manufacture and Model # \_\_\_\_\_

E. 20A Three Phase Meter - Transformer Rated Class 20 Form 9S for 4 Wire Wye or Delta:  
\$ \_\_\_\_\_ each.

Manufacture and Model # \_\_\_\_\_

D. 20A Three Phase Meter - Transformer Rated Class 20 Form 5S for 3 Wire Delta:  
\$ \_\_\_\_\_ each.

Manufacture and Model # \_\_\_\_\_

E. Project is anticipated to take 2 years, indicate time frame pricing will be firm and maximum percentage increase after that time frame for 24 months after the first order is placed.

1) Metering Pricing Firm until: \_\_\_\_\_

2) Maximum Percentage increase during the next 24 months: \_\_\_\_\_ %

F. Delivery of Equipment after each order placed: \_\_\_\_\_ calendar days.

**AUTOMATIC METER READING SYSTEM  
FORM OF PROPOSAL**

**PROPOSAL #6 - WATER METERS:**

For the furnishing and delivery of water meters and accessories as indicated in the RFP and as indicated below in accordance with the accompanying specification for the sum of as indicated below in accordance with the accompanying specification for the sum of:

- A. 3/4" Water Meter \$ \_\_\_\_\_ each.  
Manufacture and Model # \_\_\_\_\_
  
- B. 1" Water Meter \$ \_\_\_\_\_ each.  
Manufacture and Model # \_\_\_\_\_
  
- C. 1½" Water Meter \$ \_\_\_\_\_ each.  
Manufacture and Model # \_\_\_\_\_
  
- D. 2" Water Meter \$ \_\_\_\_\_ each.  
Manufacture and Model # \_\_\_\_\_
  
- E. 3" Water Meter \$ \_\_\_\_\_ each.  
Manufacture and Model # \_\_\_\_\_
  
- F. 4" Water Meter \$ \_\_\_\_\_ each.  
Manufacture and Model # \_\_\_\_\_
  
- G. Project is anticipated to take two to four years, indicate time frame pricing will be firm and maximum percentage increase after that time frame for 24 months after the first order is placed.
  - 1) Metering Pricing Firm until: \_\_\_\_\_
  - 2) Maximum Percentage increase during the next 24 months: \_\_\_\_\_ %
  
- H. Delivery of Equipment after each order placed: \_\_\_\_\_ calendar days.

**AUTOMATIC METER READING SYSTEM  
FORM OF PROPOSAL**

**PROPOSAL #7 - INSTALLATION OF ELECTRIC METERS (PROPOSAL 4 & 5):**

Unit pricing for installation of electric meters as described in Proposal 4 and 5 in accordance with this inspection for:

- A. Charge per Single Phase Meter Installation: \$ \_\_\_\_\_
- B. Charge per Three Phase Meter Installation: \$ \_\_\_\_\_
- C. Minimum number of meters for unit pricing to apply: \_\_\_\_\_
- D. Preferred number of meters to be scheduled per installation cycle \_\_\_\_\_
- E. Estimated number single phase meters to be installed per day \_\_\_\_\_
- F. Estimated number of three phase meters installed each day \_\_\_\_\_
- G. Attached additional details - Yes \_\_\_\_\_ No \_\_\_\_\_

It is hereby understood and agreed that the Engineer will make recommendation, and the City Council will award a contract.

It is understood and agreed by the undersigned that the Municipality reserves the unrestricted privilege to reject any or all of the foregoing proposals indicated above which the Municipality may consider excessive or unreasonable; to accept any or all of such proposals which it may consider fair and reasonable.

For establishing the amount of the performance bond it shall be the total of Proposal #1, Proposal #2 or #3 (whichever applies) and 1500 single phase electric meters (Proposal #4 A) and 1500 water meters (Proposal #6A).

If awarded a contract, the undersigned agrees to commence work on this contract within ten (10) days after formal notification of award and to complete the deliveries within the time limit as indicated.

The above delivery dates and times are to be filled in by the bidder before submitting their proposal.

Accompanying this proposal is a certified check, bid bond, government bonds, or cash, in the amount of: five thousand dollars (\$5,000) payable to the order of the City of Carlyle, Illinois, which it is agreed will be forfeited to said Municipality, if the undersigned fails to execute a contract and furnish a performance bond within ten (10) days after notification of the award of the contract to the undersigned. In submitting this bid, it is understood that the right is reserved by the Municipality to reject any and all bids and to waive any informalities in the bidding.

**AUTOMATIC METER READING SYSTEM  
FORM OF PROPOSAL**

It is agreed that this bid may not be withdrawn for a period of sixty (60) days from the date of opening thereof.

Date \_\_\_\_\_, 2017.

Official Address:

Firm Name: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

By \_\_\_\_\_

\_\_\_\_\_

Title \_\_\_\_\_

**(Note: Any conditions or qualifying statements to this bid may cause the bid to be declared irregular and not responsive to the Invitation for Bids. - Any exceptions shall be clearly listed indicating what exception is being taken and why.)**

**AUTOMATIC METER READING SYSTEM  
FORM OF PROPOSAL**

The Municipality reserves the right, before any award of contract is made, to require any bidder to whom it may make an award of the Principal Contract, a non-collusion affidavit in the form designated below:

NON-COLLUSION AFFIDAVIT

STATE OF \_\_\_\_\_ )

COUNTY OF \_\_\_\_\_ )

\_\_\_\_\_, being first, duly sworn, deposes and saying that they are the \_\_\_\_\_\* (sole owner, partner, president, secretary, etc.) of \_\_\_\_\_, the party making the foregoing bid; that such bid is not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization or corporation; that such bid is genuine and not collusive or sham; that said bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that said bidder has not in any manner, directly or indirectly, sought by agreement, communication or conference with anyone to fix the bid price of said bidder or of any bidder or to fix any overhead, profit or cost element of such bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract or anyone interested in the proposed contract; that all statements contained in such bid are true; and, further, that said bidder has not, directly or indirectly, submitted his bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid and will not pay any fee in connection therewith to any corporation, partnership, company, association, organization, bid depository, or any member or agent thereof, or to any other individual except to such person or persons as have a partnership or other financial interest with said bidder in his general business.

Signed: \_\_\_\_\_

\_\_\_\_\_  
Title

Subscribed and sworn to before me this \_\_\_ day of \_\_\_\_\_, 2017.

Seal of Notary

Notary Public

\*-In making out this form the title that is not applicable should be struck out. For example, if the Contractor is a corporation and this form is to be executed by it's president, the words "Sole Owner, a partner, secretary, etc." should be struck out.



FORM of CONTRACT

IS CONTRACT, Made the \_\_\_\_ day of \_\_\_\_\_, A.D. 2017, by and between

hereinafter called the "Contractor", and the City of Carlyle, County of Clinton, State of ILLINOIS, hereinafter called the "Municipality",

WITNESSETH, That the Contractor and the Municipality for the consideration stated herein agree as follows:

ARTICLE I. SCOPE OF WORK

The Contractor shall perform everything required to be performed and shall provide and furnish all of the materials and transportation services required to perform and deliver in a workmanlike manner all the equipment and services required and specified for the project known as "AUTOMATIC METER READING SYSTEM" in strict accordance with the plans and specifications, including any and all addenda prepared by Rothermel Engineering, consulting engineer acting for the Municipality and in these Contract Documents referred to as the "Engineer", which plans and specifications are made a part of this contract; and in strict compliance with the Contractor's proposal and the other Contract Documents herein mentioned which are a part of this contract; and the Contractor shall do everything required by this contract and the other documents constituting a part thereof.

ARTICLE II. CONTRACT PRICE

The Municipality shall pay to the Contractor for the performance of the contract, subject to any additions or deductions provided therein, in current funds, the contract price of:

\_\_\_\_\_ \$ \_\_\_\_\_  
(In Writing) (In Figures)

ARTICLE III. PAYMENTS

Payments are to be made to the Contractor in accordance with the subject to the provisions embodied in the documents made a part of this contract.

ARTICLE IV. COMPONENT PARTS OF THIS CONTRACT

This contract consists of the following component parts, all of which are fully a part of this contract as if herein set out verbatim or, if not attached, as if hereto attached.

1. Advertisement for Bids
2. Detailed Specifications, including all Addenda (Nos. \_\_\_\_, \_\_\_\_, \_\_\_\_, and \_\_\_\_)
3. Contractor's Proposal

FORM of CONTRACT

- 4. This Instrument
- 5. Contractor's Performance Bond
- 6. Shop and Working Drawings submitted by the Contractor,  
when approved by the Municipality or the Engineer.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed in four original counterparts the day and year first above written.

(SEAL)

\_\_\_\_\_  
Contractor  
By \_\_\_\_\_

ATTEST:

\_\_\_\_\_  
Title

\_\_\_\_\_  
\_\_\_\_\_

CITY OF CARLYLE - ILLINOIS  
Municipality

ATTEST:

\_\_\_\_\_ By \_\_\_\_\_

## AUTOMATIC METER READING SYSTEM DETAILED SPECIFICATION

### SCOPE:

Securing for the City of Carlyle an Automatic Meter Reading System to obtain metering information from electric and water customers served by the City of Carlyle. The system is to interface with the existing utility billing software and provide monitoring of the system for meter tampering, power outages, and water leaks. The Carlyle service area is approximately 3.4 miles by 3. miles.

To the extent practical the metering data shall be collected by a unlicensed wireless network and transmitted to a central server or host via a unlicensed or licensed radio or the Internet by wired or cellular system.

The Carlyle Electric System serves approximately 1,814 customers and the Water System approximately the same (April 2016 - 1,794).

Not all water customers are electric customers and some water customer are approximately ½ mile outside of the area served by the electric department.

The intention is to install the system in stages with the system being fully operational within approximately two years after the installation begins. As possible it is intended to use the owners work force to install new electric meters and as possible the same for water meter installations and/or modifications of existing meters. The City of Carlyle reserves the right to have some or all of the installations performed by a separate agreement. The successful supplier shall provide on-site training as well as guidance as may be required with the installation of the data collection system and the metering equipment to either the owners work force and/or an installing contractor.

The vendor shall determine the number and location of general collection points and the location and/or number and location of central locations points for forwarding the data collected to a central collection / server or the host.

**The vendor is to advise if any metering points are unlikely to be able to be read by the automatic system and will either require drive-by or be manually read.**

Carlyle has two electric substations that are connected via a fiber network and has spare fiber pairs. Charter Communications is the local provider of wired Internet Service and the area is served by several cell phone providers including AT&T and Verizon. The City of Carlyle also has one water tower located near the First Street Substation.

The first stage being to install the minimum infrastructure to collect and forward information to the central collection point (server /host) and then install several meters to test the communications network including transfer of metering information to the billing system. Once this stage is successful the project will proceed with installing additional meters and collection points and make adjustments as necessary.

## **AUTOMATIC METER READING SYSTEM DETAILED SPECIFICATION**

The City of Carlyle receives natural gas from Ameren Illinois. The natural gas system collects metering data using a wireless collection system using twelve collection points to upload the information to their server/host for customers served in the Carlyle area.

### **PROPOSAL #1 - INFRASTRUCTURE SERVICES AND MATERIAL:**

#### **1.00 System Architecture:**

- A. To the extent possible the system shall collect metering data using unlicensed radio system to obtain metering data. The system shall be a self connecting and healing mesh network with each meter determining a path to a collection point and as necessary piggyback on to another meter to connect to a collection point.
- B. Depending upon the system the collection point may transfer the information directly to a server or host or forward the information to a second collection point where the information will be transmitted to a local server/host or to a remote server/host.
- C. The collectors shall be designed for easy mounting on utility poles and/or street lights.
- D. Transmission of information shall be bi-directional and transmit firmware and other meter modifications as may be required. Each collection point shall include a battery back-up system.
- C. A handheld probe or similar system shall be provided to manually obtain meter information and program the meter, including firmware and software upgrades. The handheld shall also be used to test the system and obtain metering information for point automatic reading is not possible.

#### **1.01 Software:**

- A. The system shall poll the entire system at least once a day and more frequently if requested. It shall be possible to request a poll of any individual meter at any time.
- B. Alarms, including power failure, meter tampering, hardware failure, system errors shall be programmable by event type and reported as a unsolicited event.
- C. Meter readings and events shall be time stamped and the time stamp shall be within one minute of real time (base being National Institute of Standards and Technology).

The system shall provide load profile information:

For Electric Customers:

15 minute consumption and kVA, and capable of indicating power factor and kVar requirement..

## AUTOMATIC METER READING SYSTEM DETAILED SPECIFICATION

Report low/high voltage. (limit set by user).

Report consumption if location designated as being unoccupied.

For Water Customers:

Report possible leak if consumption over 24 hour appears to be excessive (user set limit).

Report consumption if location designated as being unoccupied

- D. Screen(s) to indicate system status:
- 1) Meter status - summary of all meters not responding
  - 2) Meters that connection has been established.
  - 3) Consumption at unoccupied locations.
  - 4) Status of all hardware - collectors, etc.
  - 5) Alarms: Tampering, Outage, possible water leak,
- E. Extract metering information in all of the following formats: spreadsheet CVS, Excel, and Adobe PDF format.
- F. Customizable reports.
- G. Outage and Restoration Detection: Report electric meter outages within 30 seconds or less. Display outage on an area map. Report restoration with ten minutes of power being restored.
- H. Provide capability to provide alert via pager, e-mail, text message, or any IP based device. User shall be able to set notification thresholds.
- I. Remote Disconnect/Reconnect - for meters equipped with an internal disconnect switch. The meter shall provide verification of the device's status after operation - disconnect or reconnect. Reconnection shall be blocked if voltage detected on the load side.
- 1) Meters equipped with an internal disconnect shall also limit the load as set by the user to limit consumption and/or be programmed to cycle power on/off for preset intervals. If the level of consumption is exceeded power will be interrupted for a programmed period of time. The level of consumption allowed before interruption and duration of interruption shall be user programmable and well as the on/off cycles.
- J. The system shall allow support of remote distribution automation functions such as capacitor bank and recloser control.
- K. Operate using Microsoft Windows based server or approved system. The system shall support seven users at the same time.
- L. System Training Requirements: The respondent shall identify standard training procedures for all office staff and installers. Provide by attachment training costs,

## **AUTOMATIC METER READING SYSTEM DETAILED SPECIFICATION**

number of days required for on-site training and complete list of training topics and personnel required to attend. The City of Carlyle desires that training be performed in Carlyle, preference will be given to systems that will provide the necessary training in Carlyle.

### **1.04 Polling:**

- A. Daily metering polling success rate shall be at least 99%.
- B. Provide daily report of meters that fail to respond.
- C. On demand poll of a meter shall not take more then 120 seconds.
- D. Success rate of polling for the billing cycle shall be 99%.

### **1.05 Data Security:**

- A. All data transmitted by the system shall be encrypted. At the meter level encryption shall be at least 256 bit, beyond the meter encryption shall be at least 128 bit. Comply with Smart Grid security standards and guidelines such as NERC CIP and NISTIR 7628.
- B. The supplier shall have ongoing perform testing of the communications system using third party security experts to determine any weakness with the system and take action as need be to reduce security risk. The results of such testing shall be provided on request.

### **1.06 Access Security:**

- A. Access to information and limiting actions that can be taken shall be restricted depending upon the access level granted to each individual by the system administrator. The user ID and Password shall determine what action is allowed.
  - 1. View Only - meter data and transformer loading data
  - 2. Obtain metering information
  - 3. Transfer metering information to billing software
  - 4. Modify Meter programming
  - 5. Full access - allow firmware modifications, add or remove users.

### **1.07 Billing Software:**

The Automatic Meter Reading System shall interface with the existing billing software by Caselle Civic System (Madison, WI - [www.civicsystems.com](http://www.civicsystems.com)). Billing information shall be provided once a month, except for accounts being closed. The system requires a flat fixed column length file, each line shall contain the following:

- A) Service Code - rate classification - two or three digit code
- B) Meter ID
- C) Customer Number / ID
- D) Reading date
- E) Reading data - current reading for consumption

**AUTOMATIC METER READING SYSTEM  
DETAILED SPECIFICATION**

F) Reading data - demand for billing period (for demand customers)

**1.08 Warranty:**

The Respondent shall provide detailed warranty information with its proposal, including warranties for all hardware, software, etc. A complete description of all warranty coverage shall be included in the proposal. The warranty information shall encompass the following.

The warranty shall not be less than twelve months after placing in service or eighteen months after delivery.

**1.09 Proposal Information:**

- A) Determine the number of initial collection points required and the number of secondary collection points required, indicate quantity of such on the proposal form along with the price for each additional unit.
  - 1) If it is determined that additional collectors from the meter to the first type of collector is required the City of Carlyle will purchase up to two additional units and the respondent will provide any additional units necessary at no additional charge.
  - 2) If it is determined that additional collectors from the first collection level to the second level collection is required the City of Carlyle will purchase up to two additional units and the respondent will provide any additional units necessary at no additional charge.
  - 3) Provide information on each type of collector to be used.
- B) Provide type of communication and communications requirement to the local server/host and/or the host.
- C) Provide warranty information if it exceeds the minimum required.
- D) Provide any additional information desired the evaluation proposed system and additional fee for any proposed accessory or feature.

**2.00 PROPOSAL #2 - LOCALLY HOSTED SYSTEM:**

- A) It is not necessary to respond to both Proposal 2 and 3..
- B) For a locally hosted Automatic Metering Reading System. System shall be self contained and not necessary for any connection to another network or system for operation, it shall only require connection to the data gathering system and the local network. Internet or

**AUTOMATIC METER READING SYSTEM  
DETAILED SPECIFICATION**

similar connection will not be necessary for collection of data or use of the system except to share information with another user or for software updates.

- C) The local host/server shall be provided with all the necessary accessories to connect to the data gathering system along with a Ethernet port or ports.
- D) The system shall support the use by seven users at the same time. The seven users can be connected via the local network or the Internet or combination of both.
- E) Provide information on the proposed equipment and space required.
- F) The City of Carlyle shall own the hosting software and shall be provided with upgrades for one year after the system is installed and accepted as functional at no charge.

**3.00 PROPOSAL #3 - REMOTELY HOSTED SYSTEM:**

- A) It is not necessary to respond to both Proposal 2 and 3..
- B) For a remotely hosted Automatic Metering Reading System. System requires connection to a remote system for to obtain metering information and information on system status.
- C) The hosted system shall allow at least seven users to be connected simultaneously.
- E) Provide information on communication requirement to the host
  - 1) Acceptable Web Browser(s)
  - 2) Preferred speed and acceptable speed range of the Internet connection.
- F) If at any time the vendor elects to stop/terminate hosting the vendor at no cost to the City of Carlyle shall provide to the City of Carlyle the necessary software and advise as to the necessary hard to become a self hosted system. If hosting by the vendor is to be terminated notice shall be given to the City of Carlyle with sufficient time to become a self hosted system, but shall not be less then 120 days.

**4.00 PROPOSAL #4 - SINGLE PHASE ELECTRIC METERS:**

- A) Single phase Form 2S 120/240 volt meters shall include Class 200 (200 ampere) and Class 320 (320 ampere) meters for both residential and commercial customers.
- B) The meter manufacturer shall test each meter to certify the accuracy and proper operation of the meter. A file with meter attribute information and test results shall be electronically provided prior to every shipment from the manufacturer.

**AUTOMATIC METER READING SYSTEM  
DETAILED SPECIFICATION**

- C) The meter shall meet or exceed the following:
1. Operating Temperature from -40 Degrees Celsius to +85 Degrees Celsius.
  2. Nominal Voltage 120 VAC or 240 VAC, Operating Voltage 80% to 115% of Nominal.
  3. Frequency 57 Hz to 63 Hz, Relative Humidity of 5% to 95% non-condensing.
  4. Burden less than or equal to 1.9 Watts.
- D) Meters shall include the following features:
1. Support tilt detection.
  2. Not require the use of a battery.
  3. Time Of Use and Demand.
  4. Firmware remotely programmable over the AMI network.
  5. Meet applicable ANSI Standards including C12.1, C12.10, C12.18, C12.19, C12.20 (0.2 and 0.5 Accuracy Classes).
  6. Capable of providing the following information:
    - a. Daily kWh reading with time stamp
    - b. Daily maximum kW demand (15, 30, or 60 minute rolling or block demand) with time stamp
    - c. Time-of-use billing data
    - d. Load profile data with or without the use of a load-profile-enabled meter
    - e. Tamper detection.
    - f. Reverse energy flow detection
    - g. Diagnostics
    - h. The number of momentary outages and events
    - i. Duration of sustained outages in minutes
    - J. Indication of low and high voltage
    - k. Describe additional information available.
- E) Meters shall be certified to comply with FCC Part 15 rules.
- F) Meters shall be preprogrammed and require no programming prior to installation.
- G) Meters shall allow interrogation and reprogramming over the AMI system without interruption of the service connection.
- H) Meters shall synchronize to a single host system time source and shall not exceed a one-minute time drift over thirty days.
- I) Data displayed on the meter must match the reading provided by the AMI system.
- J) Meters shall have a programmable outage and restoration notification time; this shall be re-programmable from the host system.

**AUTOMATIC METER READING SYSTEM  
DETAILED SPECIFICATION**

- K) Meters shall have data storage capability to store over 30 days of 15 minute load profile data; this data shall not be lost during power outages.
- L) Remote Disconnect/Reconnect:
  - 1. The remote disconnect/reconnect device shall be an internal switch under the meter cover.
  - 2. The device must be capable of operating continuously at 200 amps and must be rated for a minimum of 10,000 operations.
  - 3. The system shall provide verification of the device's status after operation.
  - 4. The system shall provide an option to operate the internal switch as a service limiter based on a programmable load threshold or cycle power on/off. It is preferred that the load limiter cycle power on/off for period as programmed such as 15 minutes on followed by 15 minutes off. Describe how this feature will be implemented.
  - 5. The device shall fit standard residential meters with no modifications or connections.
  - 6. The remote disconnect/reconnect device shall have provisions to prohibit reconnection of service if load-side voltage is detected. The voltage threshold must be programmable from the central server.

**5.00 PROPOSAL #5 - THREE PHASE ELECTRIC METERS:**

- A) Three phase meters shall conform to the Class and Form as indicated in the Form of Proposal.
- B) The meter manufacturer shall test each meter to certify the accuracy and proper operation of the meter. A file with meter attribute information and test results shall be electronically provided prior to every shipment from the manufacturer.
- C) Meters shall meet or exceed the following:
  - 1. Operating Temperature from -40 Degrees Celsius to +85 Degrees Celsius.
  - 2. Nominal Voltage 120 VAC to 480 VAC Auto Ranging Power Supply. Operating Voltage 60% to 115% of Nominal.
  - 3. Frequency 57 Hz to 63 Hz, Relative Humidity of 5% to 95% non-condensing.
  - 4. Burden less than or equal to 2.5 Watts.
- D) Meters shall be cable of providing 15 channels of load profile data.
- E) Meters shall include an optical port for programming.

**AUTOMATIC METER READING SYSTEM  
DETAILED SPECIFICATION**

- F) Three optical connecting devices along with suitable programming software for a Windows based computer shall be included.
- G) All requirements in Section 4.00 paragraph D through K apply.

**6.00 PROPOSAL #6 - WATER METERS:**

- A) Water meters indicated in Proposal 5 shall include a module to interface with the AMI System with the features indicated in the paragraphs that follow in this section.
- B) The AMI module shall be housed in a single package design, designed for rugged, harsh environments and capable of complete submersion in water without damage.
- C) The AMI Module shall be designed and built for installation in outdoor water meter boxes as well as above ground mounted discretely on a wall.
- D) The AMI module must be able to operate in extreme temperatures (-20°F to 120°F).
- E) The AMI modules shall be designed to operate in the above conditions and have a battery life of 20 years.
- F) Battery life data shall be transmitted to the Host System alerting of low battery levels for preemptive maintenance.
- G) The AMI Module in conjunction with the software shall provide the following alerts.
  - 1. Leak Detected
  - 2. No water flow detected - Specific period of time settable in the host software
  - 3. Reverse Flow / Backflow
  - 4. Tamper/Cut Wire
  - 5. Detect low battery conditions
  - 6. Detect imminent battery failure
- H) The system shall provide, on request, any available AMI Module data (consumption, interval data, meter/system status, etc.) of an individual meter, or batch of meters. The requests and responses shall be time stamped.
- I) On-demand water communications status verification requests shall automatically time-out after a configurable duration. For failed response to on-demand requests, the system shall log and confirm that the host system did in fact initiate a successful on-demand request to the network, thereby eliminating this initial step as a potential source of failure.
- J) The system shall provide at least 99.5% of all billing data for at least 99.5% of all meters by 8:00 AM on the billing read day.

**AUTOMATIC METER READING SYSTEM  
DETAILED SPECIFICATION**

- K) If it intended for the “Water AMI” module to communicate with an electric meter to connect to please describe the behavior that water meters will exhibit in case of an electric outage (for example, water meter can detect the inability to transmit data due to an outage, how long will it be able to store the data, and when will they resume sending the data, etc. after power is restored).
- L) Provide any additional information desired to aid in evaluating the proposal.

**7.00 PROPOSAL #7 - INSTALLATION OF ELECTRIC METERS:**

- A) The City of Carlyle may elect to have some or all of the electric meters installed as part of this agreement. The contractor may subcontract meter installation.
- B) On November 10, 2018, the City of Carlyle Electric System consisted of 1826 installed Electric Meters with 111 being three phase meters.
- C) The City of Carlyle and the installer(s) will agree to a schedule for meter replacement. The City of Carlyle will provide advance notice that meters are to be replaced and during replacement there will be a brief interruption in service. It is anticipated the interruption will last less then five minutes.
- D) When installation is to occur except for customers listed as having a special concern / need the installer shall attempt to notify the customer and proceed with or without response from the customer. For customers indicated as having a special concern / need unless waived they must be present before service interruption and confirm that all is normal after service is restored.
- E) Meter installation shall not start before 8:30 AM and shall be completed by 4:30 PM, with no interruption scheduled to occur between Noon and 1 PM, Monday through Friday, excluding holiday’s observed by the State of Illinois.
- F) The installer shall record the following and provide such as each meter is replaced.
  - 1) Address of installation.
  - 2) Date and approximate time the meter is replaced.
  - 3) Meter reading of the meter being replaced, consumption and demand (for demand meters)
  - 4) ID of meter being replaced
  - 5) ID of replacement meter.
  - 6) Meter reading of the replacement meter
  - 7) GPS location of the meter location (to within 1 meter)
- G) The proposal being for each meter installation.

**AUTOMATIC METER READING SYSTEM  
DETAILED SPECIFICATION**

- H) Indicate the minimum number of meters to be installed for the per meter pricing.
- I) Indicate the number of meters preferred to be scheduled to be installed per day and per installation cycle.
- J) Provide any additional details / restrictions as an attachment to the proposal.
- K) The installing contractor shall employ workers trained for this type of work and shall comply with the requirements of the NEC 70 and 70E and provide the necessary safety training and equipment.
- L) The contractor shall provide all the necessary insurance related to this type of work including but not limited: workers compensation, automobile, liability, and bonding.
- M) State of Illinois prevailing wage for Clinton County apply.

**8.00 PAYMENT:**

- A) Material and General Service - Proposal 1 thru 6:

Suppliers may submit a pay request upon satisfactory delivery of equipment, application for payment will be accepted once during a calendar month and for payment during the same month the application must be received by noon on the Thursday preceding the first council meeting of the month. The City council meets on the second and fourth Monday of the month.

- B) Installation - Proposal 7:

A pay request upon satisfactory installation providing the required information for all meters installed has been provided. Application for payment will be accepted once during a calendar month and for payment during the same month the application must be received by noon on the Thursday preceding the first council meeting of the month. The City council meets on the second and fourth Monday of the month.

**END OF DETAILED SPECIFICATION**