CITY OF WILSON
WILSON, NORTH CAROLINA

SPECIFICATIONS AND BID DOCUMENTS FOR THE SUBSTATION SYSTEM BESS PROJECT

ISSUED FOR BIDS

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Digitally signed by Michael J Winkler
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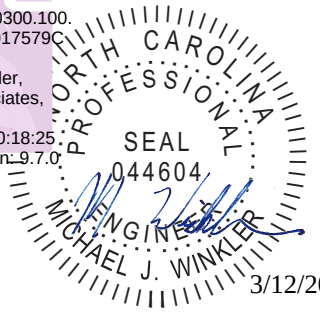

3/12/2021

Booth & Associates, LLC
5811 Glenwood Avenue
Raleigh, North Carolina 27612

CITY OF WILSON
WILSON, NORTH CAROLINA

SPECIFICATIONS AND BID DOCUMENTS FOR FOR THE SUBSTATION SYSTEM BESS PROJECT

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REQUEST FOR PROPOSAL

NOTICE TO PROSPECTIVE BIDDERS

Sealed Proposals will be received by the City of Wilson's Consulting Engineers, Booth & Associates, LLC, in their office until **2:00 p.m., local time, Thursday, April 29, 2021**, for the furnishing and delivery of all materials, equipment, and services (except materials and equipment specified to be furnished by the City) complete and conforming to the Specifications herein, all as set forth in the Bid Schedules. Any Proposal received subsequent to that time will be promptly returned to the Bidder unopened.

Specifications and Proposal Forms may be secured from the office of Booth & Associates, LLC, 5811 Glenwood Avenue, Raleigh, North Carolina 27612. Additional copies may be obtained for a non-refundable charge of fifty dollars ($50.00) or may be examined at the offices of the City of Wilson.

Proposals must be enclosed in a sealed envelope and are to be marked **"PROPOSAL FOR THE SUBSTATION SYSTEM BESS PROJECT, NOT TO BE OPENED UNTIL 2:00 P.M., THURSDAY, APRIL 29, 2021".** Bidders are to mail or deliver their Proposals as follows: Booth & Associates, LLC, 5811 Glenwood Avenue, Raleigh, North Carolina 27612, Attention: Michael Winkler, PE.

Each Proposal shall be accompanied by cash, cashier's check, or certified check drawn on a bank insured by the Federal Deposit Insurance Corporation or Savings Association Insurance Fund. Checks shall be payable to the City of Wilson, North Carolina, in an amount not less than five percent (5%) of the total bid as a guarantee that a Purchase Order, if awarded, will be accepted. In lieu thereof, a Bid Bond, which conforms to the provisions of G.S.143-129 as amended by Chapter 1104 of the Public Laws of 1951, may be submitted by the Bidder.

The right is reserved to reject any or all bids and to waive all formalities concerning bid, or award bid to the lowest responsible Bidder or Bidders taking into consideration quality, performance, and the time specified in the Proposals for the performance of the Purchase Order.

CITY OF WILSON
WILSON, NORTH CAROLINA

By Ricky Wilson Date: March 12, 2021
Purchasing Manager

DEFINITIONS

Whenever the following terms or pronoun in place of them are used in these "Instructions to Bidders", "Form of Proposal", "Technical Specifications", "Contract", bond, etc., the intent and meaning shall be interpreted as follows:

Owner	City of Wilson Wilson, North Carolina
City Manager	Grant Goings; or his authorized assistant.
Director of Wilson Energy	Richard H. Worsinger, PE; or his authorized assistant.
Purchasing Manager	Ricky Wilson; or his authorized assistant.
Engineer	Booth & Associates, LLC
Observer	An authorized representative of the Owner assigned to make any or all necessary observations of work performed and equipment and/or apparatus furnished by the Bidder.
Bidder	Any individual, firm, or corporation submitting a Proposal for the work contemplated, acting directly or through a duly authorized representative; or party of the second part of the Purchase Order, acting directly or through a duly authorized representative.
Subcontractor	An individual, firm, or corporation who contracts with the Bidder to perform part of the latter's work.
Surety	The body, corporate or individual, approved by the Owner, which is bound with and for the Bidder who is primarily liable, and which engages to be responsible for his acceptable performance of the work for which he has contracted.
Form of Proposal, Proposal	The approved, prepared form on which the Bidder is to submit or has submitted his Proposal for the work contemplated.
Bid Security	To all bids there shall be attached cash, cashier's check, or certified check from the Bidder upon a bank or trust company insured by the Federal Deposit Insurance Corporation or the Savings Associates Insurance Fund, or in lieu thereof, a Bid Bond.
Plans, Drawings	All Drawings or reproductions of Drawings pertaining to the construction under the Purchase Order.
Technical Specifications	The directions, provisions, and requirements contained herein pertaining to the method and manner of performing the work or to the quantities and qualities of materials to be furnished under the Purchase Order.

Purchase Order	The agreement covering the furnishing of equipment and/or apparatus and the performance of the work. The Purchase Order shall include the "Instructions to Bidders", "General Conditions", "Form of Proposal", "Plans", "Technical Specifications", and “Acknowledgments”.
Performance Bond	The approved form of security to be approved by the Owner furnished by the Bidder and his Surety as a guarantee of good faith on the part of the Bidder to accept the work in accordance with the terms of the Specifications and Purchase Order.
Payment Bond	The approved form of security to be approved by the Owner furnished by the Bidder and his Surety as a guarantee for payment of all Subcontractors on the part of the Bidder in acceptance of the work in accordance with the terms of the Specifications and Purchase Order.
Supply Bond	The approved form of security to be approved by the Owner furnished by the Bidder and his Surety as a guarantee of good faith on the part of the Bidder to accept the delivery of the material in accordance with the terms of the Specifications and Purchase Order.
Warranty Bond	The approved form of security to be approved by the Owner furnished by the Bidder and his Surety as a guarantee of good faith on the part of the Bidder to accept the terms of the Specification throughout the required warranty bond period.
Work	The performance of the project covered by the Specifications or the furnishing of labor, machinery, equipment, tools, or any other article or item being purchased by the Owner.
Emergency	A temporary unforeseen occurrence or combination of circumstances which endangers life and property and calls for immediate action or remedy.
Work at Site of Project	Work to be performed, including work normally done on the location of the project.
Bid Documents	Include all sections of the “Request for Bids”, “Form of Proposal”, “Technical Specifications and Appendices”, “Addendum/Clarifications/Bulletins”, and “Drawings”.

The subheadings in these Specifications are intended for convenience or reference only and shall not be considered as having any bearing on the interpretations thereof.

INSTRUCTIONS TO BIDDERS

1. Proposals

1.1 To warrant consideration, Proposals must comply with these instructions.

1.2 Proposals must be made on the Bidder's Proposal provided herein and must not be altered, erased, or interlined in any manner. The Bidder shall follow the Bidder's Proposal as detailed in the instructions. The Bidder may retain one (1) copy, but the original, fully executed, must be inserted or be attached to the Specification Documents. In addition, one (1) extra copy of all executed forms and supporting information shall be supplied.

1.3 The Bidder shall furnish certain information, as required by the Specifications, regarding the equipment on which he is bidding. Two (2) copies of the information, together with the Manufacturer's literature setting forth the guarantees and describing the equipment on which he is bidding, shall be included as part of the Bidder's Proposal. If one Manufacturer is bidding through two (2) or more agents or representatives, then descriptive literature, guarantees, etc., may be submitted in duplicate in one sealed envelope, said envelope to be considered and treated as though it contained a sealed bid, in which shall be listed the names of Bidders to whom the information applies. Each sealed bid without this information shall state the Manufacturer who is furnishing the information. Additional sets of these Specifications may be obtained by approved Bidders from the Engineer upon request and receipt of a non-refundable deposit of fifty dollars ($50.00).

1.4 The Owner is soliciting options to purchase the equipment along with offers for the equipment to be provided for a monthly fee as a Tolling Agreement. The same equipment shall be provided under the Tolling Agreement option as that which would be provided for purchase. The Owner reserves the right to dispatch at their discretion per the specifications using their controls equipment. To be considered a responsive Tolling Agreement bid, the bidder must also include a bid for purchase as well.

1.7 Proposals shall include a Form of Exceptions utilizing forms provided which shall itemize each and every exception from the Specifications. The Form of Exceptions shall state the section, subsection, and paragraph designations from the part of the Specifications to which exception is taken and explain in detail the nature of the exception. A copy of the Form of Exceptions is included in the Bidder's Proposal section. Exceptions will not necessarily eliminate a Bidder from consideration, even if bids without exceptions are received from others. The treatment of exceptions will be based entirely on the overall best interests of the City. Failure to state exceptions, assumes complete compliance with Specifications.

1.7 Bids may be modified by the Bidder's removal of his original bid and the submittal of a completely revised bid package in full compliance with the Plans and Specifications and bid documents all prior to the time of opening bids. No oral or telephonic Proposals will be considered.

1.8 Should the Bidder find discrepancies in the documents or should he be in doubt as to their meaning, he shall at once notify the Engineer who will send written instructions to all Bidders. Neither the City nor the Engineer will be responsible for any oral instructions.

1.9 The Bidder shall be the Manufacturer of the equipment, or the Bidder shall submit with the Proposal a notarized statement that the Bidder is authorized by the Manufacturer to tender the Proposal as submitted and that the Manufacturer will guarantee the suitability and adequacy of the equipment proposed, and will be bound by the Specifications, as though the Manufacturer had submitted the Proposal.

2. Payment

Payment by the City to the successful Bidder shall be made in a lump sum for each item after delivery and it has been verified that the equipment meets the Specifications. Compliance to Specifications shall be verified within ninety (90) days of the date of delivery.

Invoices shall be submitted in triplicate to the City's Engineer for review and approval. The address for submittal of all invoices is: Booth & Associates, LLC, 5811 Glenwood Avenue, Raleigh, North Carolina 27612, Attention: Mr. Michael Winkler, PE.

There shall be a ten percent (10%) retainage on invoices until all equipment, with proper instruction books per Specifications and certified test reports have been approved and accepted by the City and the Engineer. The City reserves the right to hold this retainage for a period of up to ninety (90) days without penalty to verify completeness of delivery. Deviation from the foregoing payment provisions will be considered less responsive.

3. Bid Security

3.1 Each Proposal shall be accompanied by cash, cashier's check, or a certified check drawn on a bank or trust company insured by the Federal Deposit Insurance Corporation or the Savings Association Insurance Fund, or a Bid Bond in an amount equal to not less than five percent (5%) of the Proposal. Said deposit is to be retained by the City as Liquidated Damages in the event of failure of the successful Bidder to accept the Purchase Order within ten (10) days after the award.

3.2 Bid Bond shall be conditioned that the Surety will upon demand forthwith make payment to the Obligee upon said Bond if the Bidder fails to accept the Purchase Order in accordance with the Bid Bond, and upon failure to forthwith make payment, the Surety shall pay to the Obligee an amount equal to double the amount of said Bond.

3.3 Only one (1) Bid Surety is required, the amount of which shall be based on the total amount of the bid.

4. Bulletins and Addenda

Any bulletins issued during the time of bidding or addenda to Specifications are to be considered covered in the Bidder's Proposal, and in closing a Purchase Order they will become a part thereof. Receipt of addenda shall be acknowledged by the Bidder on the Bidder's Proposal Form.

5. Delivery of Equipment

The prices quoted shall include delivery of the equipment Freight on Board (FOB) to the point of delivery in Wilson, North Carolina. The Bidder's Proposal shall be quoted including delivery to the City of Wilson sites as defined in Exhibit 4 and as outlined in the Specifications. Offloading of equipment is to be performed by the Bidder. Final address of the delivery sites will be provided after award has been made.

Delivery of all items of equipment shall be made at such time as to permit unloading between the hours of 9:00 a.m. and 3:00 p.m., Monday through Friday, holidays excluded. The Bidder shall give forty-eight (48) hours' notice of all deliveries.

The Bidder shall be responsible for securing permits required for unloading and transportation of the equipment.

Receipt of "Approval Drawings" by the Bidder constitutes authorization for manufacture only, predicated upon the Drawings and corrections found thereon. Tentative release for shipment is to be granted by either the City or the City's Engineer, based upon the following:

a) Furnishing of the requested number of copies of the Final Drawings as called for in the Specifications.

b) Coordination of manufacturing and delivery with City's construction schedule as may be noted in these Specifications.

c) Thirty (30) days notification of tentative shipping schedule and forty-eight (48) hours notification prior to delivery.

6. Award of Purchase Order

6.1 The award of the Purchase Order will be made to the lowest acceptable Bidder as soon as practicable, provided that in the selection of materials and equipment, a Purchase Order

may be awarded to a responsible Bidder other than the lowest in the interest of standardization or ultimate economy if the advantage of such standardization or ultimate economy is clearly evident.

Bidder's Proposal will be evaluated on a cost-of-ownership basis, which includes initial purchase price, financing, and cost of losses. The City reserves the right to reject any and all bids.

6.2 The City reserves the right to waive minor irregularities or minor errors in any Proposal if it appears to the City that such irregularities or errors were made through inadvertence. Any such irregularities or errors so waived must be corrected on the Proposal prior to its acceptance by the City.

6.3 The City will consider, in addition to the prices quoted in the Proposal, the following factors in estimating the lowest cost to the City:

a) Cost of ownership, including financing for the BESS

b) Delivery date of equipment

c) Adherence to the Plans and Specifications

d) Suitability of materials and equipment

e) Firm prices

f) Additional extended warranty

g) Accessibility of service facilities and personnel

j) History of prior equipment performance

When evaluating competing bids, the lost opportunity cost will be added to each bid to properly incorporate the value of varying delivery times. The lost opportunity will be considered for each full month between the bid opening and the proposed In-Service date. Each day in lost opportunity will be valued at 76.73 cents ($0.7673) per kW for the proposed system. Ex: A 10 MW system will be compared to the other Bidders by adding the Base Price to the lost opportunity cost, which in this case will be seven thousand six hundred seventy-three dollars ($7,673.00) multiplied by the number of days between the bid opening and the proposed In-Service date.

6.4 A form is provided as part of the Bidder's Proposal in which the Bidder shall indicate the Delivery Schedule for his materials, equipment, and services. Strict adherence is expected to these quoted deliveries.

6.5 In the event the Bidder proposes any change or deviation from the Engineer's Plans and Specifications, such proposed changes or deviations must be submitted at the time bids are opened. The City reserves the right to reject any proposed changes or deviations. All exceptions must be stated on the Form of Exceptions. Failure to provide a Form of Exceptions with the Proposal shall imply strict adherence to all details of the Plans and Specifications.

6.6 The City reserves the right to issue multiple Purchase Orders and may require the Bidder to invoice for each Purchase Order separately.

6.7 The City reserves the right to award or reject any Schedule(s) individually or collectively from the Bid Schedules.

7. Performance Bond/Payment Bond

7.1 The Successful Bidder shall be required to furnish separate Performance and Payment Bonds in amounts at least equal to one hundred percent (100%) of the total construction cost which is identified as Field Services Support on the proposal documentation as security for the faithful performance of this Contract and as security for the payment of all

persons performing labor and furnishing materials and equipment in connection with this Contract.

7.2 Performance and Payment Bonds shall be with a Surety company authorized and licensed to do business in the State of North Carolina and shall be for the full construction (Field Services Support) sum.

7.3 In all Performance and Payment Bonds, there shall be a provision that no suit, action, or proceeding by reason of default shall be brought on this Bond after a period of 24 months. The face value of the Bond shall be one hundred percent (100%) of the construction cost for a period 24 months following final acceptance of the project.

7.4 If the Tolling Agreement option is selected, the Performance Bond will be based on the equipment purchase price bid as defined above, and the Payment Bond will be waived.

8. Supply Bond

8.1 The Successful Bidder shall be required to furnish Supply Bonds in amounts at least equal to one hundred percent (100%) of the total Battery Energy Storage System (BESS) equipment prices as identified on the proposal sheets as security for the faithful performance of this Contract and as security for furnishing materials and equipment in connection with this Contract.

8.2 Supply Bonds shall be with a Surety company authorized and licensed to do business in the State of North Carolina and shall be for the full BESS sum.

8.3 In all Supply Bonds, there shall be a provision that no suit, action, or proceeding by reason of default shall be brought on this Bond after a period of 24 months. The face value of the Bond shall be one hundred percent (100%) of the BESS cost for a period 24 months following final acceptance of the project.

8.4 If the Tolling Agreement option is selected, the Supply Bond will be based on the equipment purchase price bid as defined above.

9. Warranty Bond

9.1 The Successful Bidder shall be required to furnish Warranty Bonds in amounts at least equal to twenty percent (20%) of the total Contract price as security for the faithful performance of this Contract and as security for the warranties and guarantees in connection with this Contract which shall include any liquidated damages incurred as defined in the specifications related to the performance of the accepted systems.

9.2 Warranty Bonds shall be with a Surety company authorized and licensed to do business in the State of North Carolina and shall be for 20% of the full Contract sum.

9.3 In all Warranty Bonds, there shall be a provision that no suit, action, or proceeding by reason of default shall be brought on this Bond after a period of 60 months. The face value of the Bond shall be twenty percent (20%) of the total Contract price for a period 60 months following final acceptance of the project.

9.4 If the Tolling Agreement option is selected, the Warranty Bond will be waived.

10. Examination of Conditions

Prior to the submission of the Proposal, the Bidder shall make and shall be deemed to have made a careful examination of the Plans and Specifications on file with the City and with the Engineer, and all other matters that may affect the cost or time of completion of the work.

11. Completion

The time of completion of the project shall be as specified in the Bidder's Proposal.

12. Bids to be Retained

No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of **one hundred twenty (120) days** pending the acceptance of a Purchase Order by the successful Bidder. Should the successful Bidder default and not accept a Purchase Order, then the Purchase Order may be offered to the next lowest responsible Bidder whose Proposal is evaluated as acceptable.

13. Qualification of Bidders

Bids will be accepted only from Bidders deemed by the Engineer to be qualified to provide the materials, equipment, and services described by these Specifications. The experience of Bidders in providing the same or similar materials, equipment, and services will be a major factor in determining qualification.

14. Bidder's Proposal Form

Bids not received on Booth & Associates, LLC Bidder's Proposal Forms contained herein will be considered unresponsive. The forms shall be filled out complete; any omissions may cause the entire Proposal to be rejected.

15. Contractor's License

In accordance with the State of North Carolina Chapter 87, General Statues 87-15, Contractors performing work of this caliber in the State must be licensed to do so. A current copy of the Contractor's State of North Carolina Board for General Contractors License must be submitted with this Proposal and attached to page CL-1. Additionally, a valid license must be maintained during the course of the work.

GENERAL CONDITIONS

1. Drawings and Specifications

The Drawings and Specifications are complementary, one to the other. That which is shown on the Drawings or called for in the Specifications shall be as binding as if it were both called for and shown. The intention of the Drawings and Specifications is to include all labor, materials, transportation, equipment, and any and all other things necessary to do a complete job. In case of discrepancy or disagreement in the Purchase Order documents, the order of precedence shall be: Purchase Order, Technical Specifications, Large-Scale Detail Drawings, and Small-Scale Drawings.

2. Clarifications and Detail Drawings

In cases where the nature of the work requires clarification by the Engineer, such clarification shall be furnished by the Engineer with reasonable promptness by means of written instructions or detail Drawings or both. Clarifications and Drawings shall be consistent with the intent of Purchase Order documents and shall become a part thereof.

3. Copies of Drawings and Specifications

The Engineer will furnish free of charge to the Bidder one (1) copy of Plans and Specifications. Additional copies may be obtained from the Engineer for a fifty-dollar ($50.00) non-refundable payment.

4. Ownership of Drawings and Specifications

All Drawings and Specifications are instruments of service and remain the property of the Engineer whose name appears thereon. The use of these instruments on work other than this Purchase Order without permission is prohibited. All copies of Drawings and Specifications other than Purchase Order copies shall be returned to the Engineer upon request after completion of the work.

5. Royalties, Licenses, and Patents

It is the intention of the City that the work covered in these Purchase Order documents will not constitute in any way an infringement on any patent whatsoever. The Bidder shall protect and save harmless the City against suit on account of alleged or actual infringement. The Bidder shall pay all royalties and/or license fees required on account of patented articles or processes, whether or not the patent rights are evidenced hereinafter.

6. Uncorrected Faulty Work

Should the correction of faulty or damaged work be considered inadvisable or inexpedient by the City or the Engineer, the City shall be reimbursed by the Bidder for the same by a deduction in the Purchase Order price. This deduction shall be arrived at by a fair estimate of the probable cost of correction, approved by the Engineer.

7. Liquidated Damages

The Bidder shall commence manufacturing upon issuance of a Contract from the Owner and shall fully complete delivery as per the Delivery Schedule in the Form of Proposal. For each day in excess of the proposed dates, the Bidder shall be made payable to the Owner the sum of three hundred eighty-six dollars ($386.00) per MW of the delayed Bid Schedule as Liquidated Damages (and not as a penalty), reasonably estimated in advance to cover the losses to be incurred by the Owner by reason of failure of said Bidder to complete delivery within the time specified, such time being in the essence of this Contract and material consideration thereof. Liquidated Damages shall be considered separately for each Bid Schedule. Ex: the Liquidated Damages for a 10 MW site will be considered three thousand eight hundred sixty dollars ($3,860.00) per day.

8. Delays and Extension of Time

8.1 The time to be allowed for delivery shall be stated on the Bidder's Proposal bound with these Specifications. The Bidder, upon notice of Award of Purchase Order, shall prepare a construction schedule based on the allowed time and submit such schedule to the Engineer for approval.

8.2 If Bidder is delayed at any time in the progress of the work by any act of negligence by the City or the Engineer or by any separate Bidder employed by the City or by changes ordered in the work, the time of completion shall be extended for such reasonable time as the Engineer may decide.

8.3 No extension of time for completion will be made for ordinary delays and accidents. Extensions may be granted for delays ordered by the Engineer if the request has been made in writing within forty-eight (48) hours after the order to cease work has been given.

9. Guarantee

The Bidder shall guarantee his materials and workmanship against defect due to faulty materials or faulty workmanship or negligence for, at minimum, a period of one hundred-twenty (120) months after energization, or one hundred twenty-six (126) months after shipment, whichever is applicable. The Bidder shall make good any defective materials or workmanship and any damage resulting therefrom without cost to the City.

The Bidder shall also state in the Proposal additional cost (if any) to extend his guarantee to a period of fifteen (15) years from the date of initial energization.

10. PCB Dielectrics

All oil-filled materials and equipment shall be certified in writing and by permanently affixed nameplates to have a non-detectable level of Polychlorinated Biphenyl (PCB) dielectrics, i.e., less than two (2) parts per million (ppm), in compliance with Federal Register 44FR31514 (May 31, 1979).

11. Assignments

The Bidder shall not assign any portion of this Purchase Order nor subcontract in its entirety except as fully explained in the Bidder's Proposal and accepted by the City. No funds or sums of money due or to become due the Bidder under this Purchase Order may be assigned.

12. Change in Plans and/or Specifications

The City, or the Engineer on behalf of the City, may make changes to Plans and/or Specifications after award of the Purchase Order or while construction is in progress. The compensation for such changes shall be agreed upon in writing between the Bidder and the City prior to commencement of work involving the change. No payment shall be made to the Bidder for correcting work not in compliance with Specifications.

13. Inspection at Bidder's Site

The City of Wilson reserves the right to inspect, at a reasonable time, the equipment/item, plant, or other facilities of a prospective Bidder prior to Contract award and during the Contract term as necessary for the City of Wilson's determination that such equipment/item, plant, or other facilities conform with the Specifications/requirements and are adequate and suitable for the proper and effective performance of the Contract.

14. Equal Employment Opportunity

During the performance of this Purchase Order, the Bidder agrees as follows:

14.1 The Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, political affiliation or belief, age, or physical handicap. The Bidder will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to race, color, religion, sex, national origin, political affiliation or belief, age, or physical handicap. Such

action shall include but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training including apprenticeship. The Bidder agrees to post in conspicuous places available to employees and applicants for employment notices setting forth the provisions of the nondiscrimination clause.

14.2 The Bidder will, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, political affiliation or belief, age, or physical handicap.

14.3 The Bidder will send to each labor union or representative of workers with which he has a collective bargaining agreement, other Purchase Order, or other understanding, a notice advising the labor union or workers' representative of the Bidder's commitments under the Equal Employment Opportunity Section of this Contract and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

14.4 In the event of the Bidder's noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations, or orders, this Purchase Order may be canceled, terminated, or suspended in whole or in part and the Bidder may be declared ineligible for further City Purchase Orders.

14.5 The Bidder will include the provisions of this section in every subcontract unless exempted by rules, regulations, or orders of the City of Wilson, Wilson, North Carolina, so that such provisions will be binding upon each Subcontractor.

1.0 Default and Performance Bond

In case of default by the Contractor, the City of Wilson may procure the articles or services from other sources and hold the Contractor responsible for any excess cost occasioned thereby. The City of Wilson reserves the right to require Performance Bond or other acceptable alternative guarantees from successful Bidder without expense to the City of Wilson.

2.0 Governmental Restrictions

In the event any Governmental restrictions are imposed which necessitate alternation of the material, quality, workmanship, or performance of the items prior to delivery, it shall be the responsibility of the Contractor to notify, in writing, the issuing purchasing office at once, indicating the specific regulation, which required such alternations. The City of Wilson reserves the right to accept any such alternations, including any price adjustments occasioned thereby, or to cancel the Contract.

3.0 Availability of Funds

Any and all payments to the Contractor are dependent upon and subject to the availability of funds to the City for the purpose set forth in this agreement. This agreement has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.

4.0 Taxes

Any applicable taxes shall be invoiced as a separate item. The City is not exempt from local or North Carolina sales tax.

5.0 Situs

The place of this Contract, its situs and forum, shall be North Carolina, where all matters, whether sounding in Contract or tort, relating to its validity, construction, interpretation, and enforcement shall be determined.

6.0 Governing Laws

This Contract is made under and shall be governed and construed in accordance with the laws of the State of North Carolina.

7.0 Inspection at Contractor's Site

The City of Wilson reserves the right to inspect, at a reasonable time, the equipment/item, plant, or other facilities of a prospective Contractor prior to Contract award and during the Contract term as necessary for the City of Wilson's determination that such equipment/item, plant, or other facilities conform with the Specifications/requirements and are adequate and suitable for the proper and effective performance of the Contract. Contractor will cover the cost of a visit and a witness test, if necessary, of a City representative at the Contractor's manufacturing facility.

8.0 Payment Terms

Payment terms are Net 30 after receipt of correct invoice or acceptance of goods, whichever is later.

9.0 Affirmative Action

The Contractor will take affirmative action in complying with all Federal and State requirements concerning fair employment and employment of the handicapped and concerning the treatment of all employees without regard to discrimination by reason of race, color, religion, sex, national origin, or physical handicap.

10.0 Condition and Packaging

Unless otherwise provided by special terms and conditions or Specifications, it is understood and agreed that any item offered or shipped has not been sold or used for any purpose and shall be in first class condition. All containers/packaging shall be suitable for handling, storage, or shipment.

11.0 Standards

All manufactured items and/or fabricated assemblies subject to operation under pressure, operation by connection to an electric source, or operation involving a connection to a manufactured natural, or LP gas source shall be constructed and approved in a manner acceptable to the appropriate state inspector which customarily requires the label or reexamination listing or identification marking of the appropriated safety standard organization; such as the American Society of Mechanical Engineers for pressure vessels; the Underwriter's Laboratories and/or National Electrical Manufacturers' Association of electrically operated assemblies; or the American Gas Association for gas operated assemblies, where such approvals of listings have been established for the type of device offered and furnished. Further, all items furnished shall meet all requirements of Occupational Safety and Health Act (OSHA), state, and federal requirements relating to clean air and water pollution.

12.0 Patent

The Contractor shall hold and save the City of Wilson, its officers, agents, and employees harmless from liability of any kind, including costs and expenses, on account of any copyrighted material, patented or unpatented invention, articles, device, or appliance manufactured or used in the performance of this Contract, including use by the government.

13.0 Advertising

Contractor agrees not to use the existence of this Contract or the name of the City of Wilson as part of any commercial advertisement.

14.0 Access to Persons and Records

An independent auditor shall have access to persons and records as a result of all Contracts or grants entered into by the City of Wilson in accordance with General Statute 147-64.7.

15.0 Assignment

No assignment of the Contractor's obligations or the Contractor's right to receive payment hereunder shall be permitted. However, upon written request approved by the issuing purchasing authority and solely as a convenience to the Contractor, the City of Wilson may:

a. Forward the Contractor's payment check directly to any person or entity designated by the Contractor, and

b. Include any person or entity designated by Contractor as a joint payee on the Contractor's payment check.

In no event shall such approval and action obligate the City of Wilson to anyone other than the Contractor and the Contractor shall remain responsible for fulfillment of all Contract obligations.

16.0 Insurance Coverage

During the term of the Contract, the Contractor at its sole cost and expense shall provide commercial insurance of such type and with such terms and limits as may be reasonably associated with the Contract.

As a minimum, the Contractor shall provide and maintain the following coverage and limits:

a. Worker's Compensation: The Contractor shall provide and maintain Worker's Compensation Insurance, as required by the laws of North Carolina, as well as employer's liability coverage with minimum limits of one hundred fifty thousand dollars ($150,000.00), covering all of Contractor's employees who are engaged in any work under the Contract. If any work is sublet, the Contractor shall require the Subcontractor to provide the same coverage for any for any of his employees engaged in any work under the Contract.

b. Commercial General Liability: General Liability Coverage on a Comprehensive Broad Form on an occurrence basis in the minimum amount of five hundred thousand dollars ($500,000.00) Combined Single Limit. (Defense cost shall be in excess of the limit of the liability.)

c. Automobile: Automobile Liability Insurance, to include liability coverage, covering all owned, hired, and non-owned vehicles, used in connection with the Contract. The minimum combined single limit shall be one hundred fifty thousand dollars ($150,000.00) uninsured/under insured motorist; and one thousand dollars ($1,000.00) medical payment.

Requirements: Providing and maintaining adequate insurance coverage is a material obligation of the Contractor and is of the essence of this Contract. All such insurance shall meet all laws of the State of North Carolina. Such insurance coverage shall be obtained from companies that are authorized to provide such coverage and that are authorized by the Commissioner of Insurance to do business in North Carolina. The Contractor shall at all times comply with terms of such insurance policies, and all requirements of the insurer under any such insurance policies, except as they may conflict with existing North Carolina laws or this Contract. The limits of coverage under each insurance policy maintained by the Contractor shall not be interpreted as limiting the Contractor's liability and obligations under the Contract.

17.0 Cancellation (Term Contracts Only)

All Contract obligations shall prevail for at least one hundred eighty (180) days after the effective date of the Contract. After that period, in addition to the provisions of the paragraph entitled Price Adjustments, for the protection of both parties, this Contract may be canceled in whole or in part by either party giving thirty (30) days prior notice in writing to the other party. Such notice of cancellation, as required herein, shall be transmitted via U.S. MAIL, certified, and Return Receipt Requested. The thirty (30) days' notice for cancellation shall begin on the day the return receipt is signed and dated.

18.0 Quantities (Term Contract Only)

The award of a term Contract neither implies nor guarantees any minimum or maximum purchases thereunder.

19.0 Price Adjustments (Term Contract Only)

Any price changes, downward or upward, which might be permitted during the Contract period, must be general, either by reason of market change or on the part of the Contractor to other customers.

a. Notification: Notification must be given to the Purchasing Department, in writing, concerning any proposed price adjustments. Such notification shall be accompanied by copy of Manufacturer's official notice or other acceptable evidence that the change is general in nature.

b. Decreases: The City of Wilson shall receive full proportionate benefit immediately at any time during the Contract period.

c. Increases: All prices shall be firm against increase for one hundred eighty (180) days from the effective date of the Contract. After this period, a request for increase may be submitted with

the City of Wilson reserving the right to reject the increase or cancel the Contract. Such action by the City of Wilson shall occur no later than fifteen (15) days after the receipt by the City of Wilson of a properly documented request for price increase. Any increases accepted shall become effective not later than thirty (30) days after the expiration of the initial fifteen (15) days reserved to evaluate the request for increase.

d. Invoices: It is understood and agreed that orders will be shipped at the established Contract prices in effect on dates orders are placed. Invoicing at variance with this provision will subject the Contract to cancellation. Applicable North Carolina sales tax shall be invoiced as a separate item.

20.0 E-Verify

Contractor understands that E-Verify is the federal E-Verify program operated by the United States Department of Homeland Security and other federal agencies, or any successor or equivalent program used to verify the work of authorization of newly hired employees pursuant to federal law in accordance with NCGS 64-25 et seq. Contractor is aware of and in compliance with the requirements of E-Verify and Article 2 of Chapter 64 of the North Carolina General Statutes. To the best of Contractor's knowledge, any Subcontractors employed by it as a part of this Contract are incompliance with the requirements of E-Verify and Article 2 of Chapter 64 of the North Carolina General Statue.

21.0 Iran Divestment Act Certification

Contractor certifies that, as of the date listed (2017), it is not on the Final Divestment List as created by the State Treasurer pursuant to N.C.G.S. Chapter 147 Article 6E. In compliance with the requirements of the Iran Divestment Act and N.C.G.S. Chapter 147 Article 6E, Contractor shall not utilize in the performance of the Contract any Subcontractor that is identified on the Final Divestment List.

22.0 Evaluation of Bid

All qualified Proposals/bids will be evaluated, and award made to the firm(s) whose Proposal/bid is deemed to be in the best interest of the City of Wilson, all factors considered. The City of Wilson reserves the right to reject any and all offers if determined in its best interest.

23.0 Bid/Proposal Public Record

All Proposals/bids received become the property of the City of Wilson and information included therein or attached thereto shall become public record upon their delivery to the City. Submission of a bid/Proposal in response to a request constitutes acceptance of all terms and conditions and requirements contained in the request.

24.0 Recommendation of Award

The recommendation of award by City council represents a preliminary determination and not a legally binding acceptance of the bid or Proposal until the City has executed a written agreement in a form agreeable by an authorized City official.

25.0 Vendor Registration

All vendors (new, current, or potential) must register with our Vendor Registration system through Vendor Registry at the following link. https://vrapp.vendorregistry.com/Vendor/Register/Index/city-of-wilson-nc-vendor-registration

26.0 Indemnification

To the fullest extent permitted by law, vendor shall indemnify, defend, and hold harmless the City and the City' officials, employees, and agents from and against any claims, losses, damages, fines, penalties, royalties, obligations, liabilities, and expenses including but not limited to reasonable attorneys' fees to the extent they arise or are alleged.

BIDDER'S PROPOSAL

Bidder's Proposal
Bid Schedule
Form of Exceptions
North Carolina Bid Bond

CITY OF WILSON
WILSON, NORTH CAROLINA

SUBSTATION SYSTEM BESS PROJECT

BIDDER'S PROPOSAL

TO: City of Wilson
Wilson, North Carolina

(hereinafter called the "City")

The undersigned (hereinafter called the "Bidder") hereby proposes to sell and deliver to the City, upon the terms and conditions herein stated, the materials and equipment (hereinafter called the "Material") specified in the following schedule or schedules attached hereto and by this reference made a part hereof (hereinafter called the "Schedules") in accordance with the Bid Schedule and:

1. Specifications for a Battery Energy Storage System (BESS).
2. Instructions to Bidders.
3. Manufacturer's Specifications both as set forth herein and in Manufacturer's literature (two (2) sets) attached hereto or furnished separately as provided for in the "Instructions to Bidders."
4. Legal negotiations, with low Bidder only, after bids are opened, for budgetary compliance.

The prices quoted herein:

1. Are firm unless otherwise stated.
2. Are FOB at the individual sites defined in Exhibit 4 in Wilson, North Carolina, as outlined in the "Instructions to Bidders", and unloading onto a permanent concrete pad (supplied by the Owner). The Bidder is responsible for all highway permits and associated fees from point of origin to the site. Refer to the approximate locations in Exhibit 4. Finalized addresses will be provided to the successful bidder.
3. Do not include any tax from which a municipality in North Carolina is exempt (Federal Excise Tax only).
4. North Carolina sales tax is not included in the bid amount.
5. Include the services of the Manufacturer's Field Service Engineer(s) as noted in the Bid Schedules.

The Bidder further declares that he has examined the site of the work and informed himself fully regarding all conditions pertaining to the location where the work is to be done; that he has examined the Specifications for the work and the Purchase Order documents relative thereto and has read all special provisions furnished prior to the opening of the bids; and that he has satisfied himself relative to the work to be performed.

The Bidder proposes and agrees that if the following schedule(s) of this Proposal is accepted, to Contract with the City of Wilson in the form of Contract specified, to furnish all necessary materials and equipment, except materials and equipment specified to be furnished by others, complete and in accordance with the Plans, Specifications, and Purchase Order documents, to the full and entire satisfaction of the City, with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions and Purchase Order documents, and as filed on Change Order Forms.

BID SCHEDULES
SUBSTATION SYSTEM BESS PROJECT

BID SCHEDULE NO. 1 – Base Bid – 14 MW / 28-56 MWh BESS

Description	Quantity	Unit Price		
		28 MWh	42 MWh	56 MWh
Battery Energy Storage System (BESS), minimum 14 MW, 10 year (minimum) Product & Performance Warranty, includes inverters, batteries and enclosures/skid, and all battery thermal management, all as per Specifications.	1	$_____	$_____	$_____
Delivery Charge	1	$_____	$_____	$_____
Sales Tax (if applicable)	1	$_____	$_____	$_____
Field Service Support – Construction / Installation, Startup, Commission & Training (Labor + Expenses / Lump Sum)	1	$_____	$_____	$_____
BASE BID:		**$_____**	**$_____**	**$_____**
Adder, 15 Year Warranty	1	$_____	$_____	$_____
BASE BID + Extended 15 Year Warranty:		**$_____**	**$_____**	**$_____**
Tolling Agreement (monthly Fee):		**$_____**	**$_____**	**$_____**
Annual Maintenance Contract:		**$_____**	**$_____**	**$_____**

Battery Cell Manufacturer _____ Type (Origin) _____

Inverter Manufacturer _____ Type (Origin) _____

Packager (Container) _____ Type (Origin) _____

System Requirements	Project References - Recent Units of Similar Design:
Enclosure/Skid dimensions:	
Station Power Req's:	
Other Req's:	

Number of proposed Enclosures/Skids:

BID SCHEDULE NO. 2 – Base Bid – 5 MW / 10-20 MWh BESS

Description	Quantity	Unit Price		
		10 MWh	15 MWh	20 MWh
Battery Energy Storage System (BESS), minimum 5 MW, 10 year (minimum) Product & Performance Warranty, includes inverters, batteries and enclosures/skid, and all battery thermal management, all as per Specifications.	1	$_____	$_____	$_____
Delivery Charge	1	$_____	$_____	$_____
Sales Tax (if applicable)	1	$_____	$_____	$_____
Field Service Support – Construction / Installation, Startup, Commission & Training (Labor + Expenses / Lump Sum)	1	$_____	$_____	$_____
BASE BID:		**$_____**	**$_____**	**$_____**
Adder, 15 Year Warranty	1	$_____	$_____	$_____
BASE BID + Extended 15 Year Warranty:		**$_____**	**$_____**	**$_____**
Tolling Agreement (monthly Fee):		**$_____**	**$_____**	**$_____**
Annual Maintenance Contract:		**$_____**	**$_____**	**$_____**

Battery Cell Manufacturer _____ Type (Origin) _____

Inverter Manufacturer _____ Type (Origin) _____

Packager (Container) _____ Type (Origin) _____

System Requirements	Project References - Recent Units of Similar Design:
Enclosure/Skid dimensions:	
Station Power Req's:	
Other Req's:	

Number of proposed Enclosures/Skids:

BID SCHEDULE NO. 3 – Base Bid – 12 MW / 24-48 MWh BESS

Description	Quantity	Unit Price		
		24 MWh	36 MWh	48 MWh
Battery Energy Storage System (BESS), minimum 12 MW, 10 year (minimum) Product & Performance Warranty, includes inverters, batteries and enclosures/skid, and all battery thermal management, all as per Specifications.	1	$_____	$_____	$_____
Delivery Charge	1	$_____	$_____	$_____
Sales Tax (if applicable)	1	$_____	$_____	$_____
Field Service Support – Construction / Installation, Startup, Commission & Training (Labor + Expenses / Lump Sum)	1	$_____	$_____	$_____
BASE BID:		**$_____**	**$_____**	**$_____**
Adder, 15 Year Warranty	1	$_____	$_____	$_____
BASE BID + Extended 15 Year Warranty:		**$_____**	**$_____**	**$_____**
Tolling Agreement (monthly Fee):		**$_____**	**$_____**	**$_____**
Annual Maintenance Contract:		**$_____**	**$_____**	**$_____**

Battery Cell Manufacturer _____ Type (Origin) _____

Inverter Manufacturer _____ Type (Origin) _____

Packager (Container) _____ Type (Origin) _____

System Requirements	Project References - Recent Units of Similar Design:
Enclosure/Skid dimensions:	
Station Power Req's:	
Other Req's:	

Number of proposed Enclosures/Skids:

BID SCHEDULE NO. 4 – Base Bid – 3 MW / 6-12 MWh BESS

Description	Quantity	Unit Price		
		6 MWh	9 MWh	12 MWh
Battery Energy Storage System (BESS), minimum 3 MW, 10 year (minimum) Product & Performance Warranty, includes inverters, batteries and enclosures/skid, and all battery thermal management, all as per Specifications.	1	$_____	$_____	$_____
Delivery Charge	1	$_____	$_____	$_____
Sales Tax (if applicable)	1	$_____	$_____	$_____
Field Service Support – Construction / Installation, Startup, Commission & Training (Labor + Expenses / Lump Sum)	1	$_____	$_____	$_____
BASE BID:		**$_____**	**$_____**	**$_____**
Adder, 15 Year Warranty	1	$_____	$_____	$_____
BASE BID + Extended 15 Year Warranty:		**$_____**	**$_____**	**$_____**
Tolling Agreement (monthly Fee):		**$_____**	**$_____**	**$_____**
Annual Maintenance Contract:		**$_____**	**$_____**	**$_____**

Battery Cell Manufacturer _____ Type (Origin) _____

Inverter Manufacturer _____ Type (Origin) _____

Packager (Container) _____ Type (Origin) _____

System Requirements	Project References - Recent Units of Similar Design:
Enclosure/Skid dimensions:	
Station Power Req's:	
Other Req's:	

Number of proposed Enclosures/Skids:

BID SCHEDULE NO. 5 – Base Bid – 8 MW / 16-32 MWh BESS

Description	Quantity	Unit Price		
		16 MWh	24 MWh	32 MWh
Battery Energy Storage System (BESS), minimum 8 MW, 10 year (minimum) Product & Performance Warranty, includes inverters, batteries and enclosures/skid, and all battery thermal management, all as per Specifications.	1	$_____	$_____	$_____
Delivery Charge	1	$_____	$_____	$_____
Sales Tax (if applicable)	1	$_____	$_____	$_____
Field Service Support – Construction / Installation, Startup, Commission & Training (Labor + Expenses / Lump Sum)	1	$_____	$_____	$_____
BASE BID:		**$_____**	**$_____**	**$_____**
Adder, 15 Year Warranty	1	$_____	$_____	$_____
BASE BID + Extended 15 Year Warranty:		**$_____**	**$_____**	**$_____**
Tolling Agreement (monthly Fee):		**$_____**	**$_____**	**$_____**
Annual Maintenance Contract:		**$_____**	**$_____**	**$_____**

Battery Cell Manufacturer _____ Type (Origin) _____

Inverter Manufacturer _____ Type (Origin) _____

Packager (Container) _____ Type (Origin) _____

System Requirements	Project References - Recent Units of Similar Design:
Enclosure/Skid dimensions:	
Station Power Req's:	
Other Req's:	

Number of proposed Enclosures/Skids:

BID SCHEDULE NO. 6 – Base Bid – 16 MW / 32-64 MWh BESS

Description	Quantity	Unit Price		
		32 MWh	48 MWh	64 MWh
Battery Energy Storage System (BESS), minimum 16 MW, 10 year (minimum) Product & Performance Warranty, includes inverters, batteries and enclosures/skid, and all battery thermal management, all as per Specifications.	1	$_____	$_____	$_____
Delivery Charge	1	$_____	$_____	$_____
Sales Tax (if applicable)	1	$_____	$_____	$_____
Field Service Support – Construction / Installation, Startup, Commission & Training (Labor + Expenses / Lump Sum)	1	$_____	$_____	$_____
BASE BID:		**$_____**	**$_____**	**$_____**
Adder, 15 Year Warranty	1	$_____	$_____	$_____
BASE BID + Extended 15 Year Warranty:		**$_____**	**$_____**	**$_____**
Tolling Agreement (monthly Fee):		**$_____**	**$_____**	**$_____**
Annual Maintenance Contract:		**$_____**	**$_____**	**$_____**

Battery Cell Manufacturer _____ Type (Origin) _____

Inverter Manufacturer _____ Type (Origin) _____

Packager (Container) _____ Type (Origin) _____

System Requirements	Project References - Recent Units of Similar Design:
Enclosure/Skid dimensions:	
Station Power Req's:	
Other Req's:	

Number of proposed Enclosures/Skids:

BID SCHEDULE NO. 7 – Base Bid – 11 MW / 22-44 MWh BESS

Description	Quantity	Unit Price		
		22 MWh	33 MWh	44 MWh
Battery Energy Storage System (BESS), minimum 11 MW, 10 year (minimum) Product & Performance Warranty, includes inverters, batteries and enclosures/skid, and all battery thermal management, all as per Specifications.	1	$_____	$_____	$_____
Delivery Charge	1	$_____	$_____	$_____
Sales Tax (if applicable)	1	$_____	$_____	$_____
Field Service Support – Construction / Installation, Startup, Commission & Training (Labor + Expenses / Lump Sum)	1	$_____	$_____	$_____
BASE BID:		**$_____**	**$_____**	**$_____**
Adder, 15 Year Warranty	1	$_____	$_____	$_____
BASE BID + Extended 15 Year Warranty:		**$_____**	**$_____**	**$_____**
Tolling Agreement (monthly Fee):		**$_____**	**$_____**	**$_____**
Annual Maintenance Contract:		**$_____**	**$_____**	**$_____**

Battery Cell Manufacturer _____ Type (Origin) _____

Inverter Manufacturer _____ Type (Origin) _____

Packager (Container) _____ Type (Origin) _____

System Requirements	Project References - Recent Units of Similar Design:
Enclosure/Skid dimensions:	
Station Power Req's:	
Other Req's:	

Number of proposed Enclosures/Skids:

BID SCHEDULE NO. 8 – Base Bid – 3 MW / 6-12 MWh BESS

Description	Quantity	Unit Price		
		6 MWh	9 MWh	12 MWh
Battery Energy Storage System (BESS), minimum 3 MW, 10 year (minimum) Product & Performance Warranty, includes inverters, batteries and enclosures/skid, and all battery thermal management, all as per Specifications.	1	$_____	$_____	$_____
Delivery Charge	1	$_____	$_____	$_____
Sales Tax (if applicable)	1	$_____	$_____	$_____
Field Service Support – Construction / Installation, Startup, Commission & Training (Labor + Expenses / Lump Sum)	1	$_____	$_____	$_____
BASE BID:		**$_____**	**$_____**	**$_____**
Adder, 15 Year Warranty	1	$_____	$_____	$_____
BASE BID + Extended 15 Year Warranty:		**$_____**	**$_____**	**$_____**
Tolling Agreement (monthly Fee):		**$_____**	**$_____**	**$_____**
Annual Maintenance Contract:		**$_____**	**$_____**	**$_____**

Battery Cell Manufacturer _____ Type (Origin) _____

Inverter Manufacturer _____ Type (Origin) _____

Packager (Container) _____ Type (Origin) _____

System Requirements	Project References - Recent Units of Similar Design:
Enclosure/Skid dimensions:	
Station Power Req's:	
Other Req's:	

Number of proposed Enclosures/Skids:

BID SCHEDULE NO. 9 – Base Bid – 5 MW / 10-20 MWh BESS

Description	Quantity	Unit Price		
		10 MWh	15 MWh	20 MWh
Battery Energy Storage System (BESS), minimum 5 MW, 10 year (minimum) Product & Performance Warranty, includes inverters, batteries and enclosures/skid, and all battery thermal management, all as per Specifications.	1	$_____	$_____	$_____
Delivery Charge	1	$_____	$_____	$_____
Sales Tax (if applicable)	1	$_____	$_____	$_____
Field Service Support – Construction / Installation, Startup, Commission & Training (Labor + Expenses / Lump Sum)	1	$_____	$_____	$_____
BASE BID:		**$_____**	**$_____**	**$_____**
Adder, 15 Year Warranty	1	$_____	$_____	$_____
BASE BID + Extended 15 Year Warranty:		**$_____**	**$_____**	**$_____**
Tolling Agreement (monthly Fee):		**$_____**	**$_____**	**$_____**
Annual Maintenance Contract:		**$_____**	**$_____**	**$_____**

Battery Cell Manufacturer _____ Type (Origin) _____

Inverter Manufacturer _____ Type (Origin) _____

Packager (Container) _____ Type (Origin) _____

System Requirements	Project References - Recent Units of Similar Design:
Enclosure/Skid dimensions:	
Station Power Req's:	
Other Req's:	

Number of proposed Enclosures/Skids:

BID SCHEDULE NO. 10 – Base Bid – 5 MW / 10-20 MWh BESS

Description	Quantity	Unit Price		
		10 MWh	15 MWh	20 MWh
Battery Energy Storage System (BESS), minimum 5 MW, 10 year (minimum) Product & Performance Warranty, includes inverters, batteries and enclosures/skid, and all battery thermal management, all as per Specifications.	1	$_____	$_____	$_____
Delivery Charge	1	$_____	$_____	$_____
Sales Tax (if applicable)	1	$_____	$_____	$_____
Field Service Support – Construction / Installation, Startup, Commission & Training (Labor + Expenses / Lump Sum)	1	$_____	$_____	$_____
BASE BID:		**$_____**	**$_____**	**$_____**
Adder, 15 Year Warranty	1	$_____	$_____	$_____
BASE BID + Extended 15 Year Warranty:		**$_____**	**$_____**	**$_____**
Tolling Agreement (monthly Fee):		**$_____**	**$_____**	**$_____**
Annual Maintenance Contract:		**$_____**	**$_____**	**$_____**

Battery Cell Manufacturer _____ Type (Origin) _____

Inverter Manufacturer _____ Type (Origin) _____

Packager (Container) _____ Type (Origin) _____

System Requirements	Project References - Recent Units of Similar Design:
Enclosure/Skid dimensions:	
Station Power Req's:	
Other Req's:	

Number of proposed Enclosures/Skids:

BID SCHEDULE NO. 11 – Base Bid – 5 MW / 10-20 MWh BESS

Description	Quantity	Unit Price		
		10 MWh	15 MWh	20 MWh
Battery Energy Storage System (BESS), minimum 5 MW, 10 year (minimum) Product & Performance Warranty, includes inverters, batteries and enclosures/skid, and all battery thermal management, all as per Specifications.	1	$_____	$_____	$_____
Delivery Charge	1	$_____	$_____	$_____
Sales Tax (if applicable)	1	$_____	$_____	$_____
Field Service Support – Construction / Installation, Startup, Commission & Training (Labor + Expenses / Lump Sum)	1	$_____	$_____	$_____
BASE BID:		**$_____**	**$_____**	**$_____**
Adder, 15 Year Warranty	1	$_____	$_____	$_____
BASE BID + Extended 15 Year Warranty:		**$_____**	**$_____**	**$_____**
Tolling Agreement (monthly Fee):		**$_____**	**$_____**	**$_____**
Annual Maintenance Contract:		**$_____**	**$_____**	**$_____**

Battery Cell Manufacturer _____ Type (Origin) _____

Inverter Manufacturer _____ Type (Origin) _____

Packager (Container) _____ Type (Origin) _____

System Requirements	Project References - Recent Units of Similar Design:
Enclosure/Skid dimensions:	
Station Power Req's:	
Other Req's:	

Number of proposed Enclosures/Skids:

BID SCHEDULE NO. 12 – Base Bid – 13 MW / 26-52 MWh BESS

Description	Quantity	Unit Price		
		26 MWh	39 MWh	52 MWh
Battery Energy Storage System (BESS), minimum 13 MW, 10 year (minimum) Product & Performance Warranty, includes inverters, batteries and enclosures/skid, and all battery thermal management, all as per Specifications.	1	$_____	$_____	$_____
Delivery Charge	1	$_____	$_____	$_____
Sales Tax (if applicable)	1	$_____	$_____	$_____
Field Service Support – Construction / Installation, Startup, Commission & Training (Labor + Expenses / Lump Sum)	1	$_____	$_____	$_____
BASE BID:		**$_____**	**$_____**	**$_____**
Adder, 15 Year Warranty	1	$_____	$_____	$_____
BASE BID + Extended 15 Year Warranty:		**$_____**	**$_____**	**$_____**
Tolling Agreement (monthly Fee):		**$_____**	**$_____**	**$_____**
Annual Maintenance Contract:		**$_____**	**$_____**	**$_____**

Battery Cell Manufacturer _____ Type (Origin) _____

Inverter Manufacturer _____ Type (Origin) _____

Packager (Container) _____ Type (Origin) _____

System Requirements	Project References - Recent Units of Similar Design:
Enclosure/Skid dimensions:	
Station Power Req's:	
Other Req's:	

Number of proposed Enclosures/Skids:

BID SCHEDULE NO. 13 – Base Bid – 1 MW / 2-4 MWh BESS

Description	Quantity	Unit Price		
		2 MWh	3 MWh	4 MWh
Battery Energy Storage System (BESS), minimum 1 MW, 10 year (minimum) Product & Performance Warranty, includes inverters, batteries and enclosures/skid, and all battery thermal management, all as per Specifications.	1	$_____	$_____	$_____
Delivery Charge	1	$_____	$_____	$_____
Sales Tax (if applicable)	1	$_____	$_____	$_____
Field Service Support – Construction / Installation, Startup, Commission & Training (Labor + Expenses / Lump Sum)	1	$_____	$_____	$_____
BASE BID:		**$_____**	**$_____**	**$_____**
Adder, 15 Year Warranty	1	$_____	$_____	$_____
BASE BID + Extended 15 Year Warranty:		**$_____**	**$_____**	**$_____**
Tolling Agreement (monthly Fee):		**$_____**	**$_____**	**$_____**
Annual Maintenance Contract:		**$_____**	**$_____**	**$_____**

Battery Cell Manufacturer _____ Type (Origin) _____

Inverter Manufacturer _____ Type (Origin) _____

Packager (Container) _____ Type (Origin) _____

System Requirements	Project References - Recent Units of Similar Design:
Enclosure/Skid dimensions:	
Station Power Req's:	
Other Req's:	

Number of proposed Enclosures/Skids:

BID SCHEDULE NO. 14 – Base Bid – 3 MW / 6-12 MWh BESS

Description	Quantity	Unit Price		
		6 MWh	9 MWh	12 MWh
Battery Energy Storage System (BESS), minimum 3 MW, 10 year (minimum) Product & Performance Warranty, includes inverters, batteries and enclosures/skid, and all battery thermal management, all as per Specifications.	1	$_____	$_____	$_____
Delivery Charge	1	$_____	$_____	$_____
Sales Tax (if applicable)	1	$_____	$_____	$_____
Field Service Support – Construction / Installation, Startup, Commission & Training (Labor + Expenses / Lump Sum)	1	$_____	$_____	$_____
BASE BID:		**$_____**	**$_____**	**$_____**
Adder, 15 Year Warranty	1	$_____	$_____	$_____
BASE BID + Extended 15 Year Warranty:		**$_____**	**$_____**	**$_____**
Tolling Agreement (monthly Fee):		**$_____**	**$_____**	**$_____**
Annual Maintenance Contract:		**$_____**	**$_____**	**$_____**

Battery Cell Manufacturer _____ Type (Origin) _____

Inverter Manufacturer _____ Type (Origin) _____

Packager (Container) _____ Type (Origin) _____

System Requirements	Project References - Recent Units of Similar Design:
Enclosure/Skid dimensions:	
Station Power Req's:	
Other Req's:	

Number of proposed Enclosures/Skids:

BID SCHEDULE NO. 15 – Delivery Schedule
Instructions to Bidders, 5. Delivery of Equipment

The prices of the materials and equipment set forth herein shall include the cost of delivery to the site at the Bidder's risk. The date of delivery shall be in compliance with section 6 of the technical Specifications.

Schedule		In Service Date		In Service Date		In Service Date
Sched #1: 14 MW	28 MWh	_____	42 MWh	_____	56 MWh	_____
Sched #2: 5 MW	10 MWh	_____	15 MWh	_____	20 MWh	_____
Sched #3: 12 MW	24 MWh	_____	36 MWh	_____	48 MWh	_____
Sched #4: 3 MW	6 MWh	_____	9 MWh	_____	12 MWh	_____
Sched #5: 8 MW	16 MWh	_____	24 MWh	_____	32 MWh	_____
Sched #6: 16 MW	32 MWh	_____	48 MWh	_____	64 MWh	_____
Sched #7: 11 MW	22 MWh	_____	33 MWh	_____	44 MWh	_____
Sched #8: 3 MW	6 MWh	_____	9 MWh	_____	12 MWh	_____
Sched #9: 5 MW	10 MWh	_____	15 MWh	_____	20 MWh	_____
Sched #10: 5 MW	10 MWh	_____	15 MWh	_____	20 MWh	_____
Sched #11: 5 MW	10 MWh	_____	15 MWh	_____	20 MWh	_____
Sched #12: 13 MW	26 MWh	_____	39 MWh	_____	52 MWh	_____
Sched #13: 1 MW	2 MWh	_____	3 MWh	_____	4 MWh	_____
Sched #14: 3 MW	6 MWh	_____	9 MWh	_____	12 MWh	_____

	Delivery (Months)*		Duration (Days)***
Approval Drawings	_____	Construction / Install	_____
Final Drawings**	_____	Start Up / Commission	_____

* Number of Months prior to Material delivery dates provided above.
** Allow two (2) weeks for receipt and return of Approval Drawings.
*** Estimate per site, a range may be provided

The City will evaluate the schedules on an individual basis. A vendor may be awarded any combination of schedules based on each schedule evaluation. If delivery dates need to be adjusted depending on the number of schedules awarded, please attach an explanation for that adjustment or the proposed dates above will be considered firm. Also attach price adjustments if there will be discounts associated with the award of multiple schedules.

BID SCHEDULE NO. 16 – Field Service Engineering / O&M

Per Day Rate (including expenses) for
field service engineering for additional days $_____/Day

Per Year Rate (including expenses) for
field Operation and Maintenance (O&M) Services $_____/Year

1. The prices of Materials set forth herein do not include any sums which are or may be payable by the Bidder on account of North Carolina sales tax upon the sale, purchase, or use of the Materials hereunder. The amount thereof shall be added to the purchase price and paid by the City after the Bidder has ascertained the actual sales tax to be included.

2. The Materials will conform to the "Specifications for Battery Energy Storage System" attached hereto and made a part hereof.

3. The City may accept any Schedule or portion thereof.

4. Price Policy: The prices quoted in the Proposal shall be firm unless otherwise stated.

5. The prices quoted shall include delivery of the materials and equipment by open-top truck FOB to the point of delivery in Wilson, North Carolina, assuming unloading by the City.

   The time for delivery shall be extended for the period of any reasonable delay due exclusively to causes beyond the control and without fault of the Bidder, including acts of God, fires, floods, strikes, and delays in transportation.

   Delivery of all items of equipment to the City's designated delivery point shall be made to permit unloading between the hours of 9:00 a.m. and 3:00 p.m., Monday through Friday, holidays excluded.

6. Receipt of Approval Drawings by the Bidder constitutes authorization for manufacture predicated upon the Drawings and corrections found thereon. After the return of Approval Drawings, release for shipment is to be granted by either the City or its Engineer based upon the Manufacturer's compliance with the following:

   (1) Notification of tests so the City may have a representative present to witness the tests.

   (2) Furnishing of the requested number of copies of the Final Drawings as called for in the Specifications.

   (3) Coordination of manufacturing and delivery with the City's construction schedule as may be noted in these Specifications.

   (4) Thirty (30) days notification of tentative shipping schedule and forty-eight (48) hours notification prior to all deliveries.

7. Title to the materials and equipment shall pass to the City upon delivery to the point specified herein.

8. This Proposal is made pursuant to the provisions of the Notice and Instructions to Bidders and the Specifications, and the Bidder agrees to the terms and conditions thereof.

9. The Bidder warrants the accuracy of all statements contained in the Bidder's qualifications, if any shall be submitted, and agrees that the City shall rely upon such accuracy as a condition of the Purchase Order in the event that this Proposal is accepted.

10. The Bidder warrants that the Materials will conform to the performance data and guarantees which are attached hereto and by this reference made a part hereof.

11. A Form of Exceptions to the Specifications, prepared in accordance with the Instructions to Bidders, is attached hereto.

12. Non-Collusive Bidding Certification: By the submission of this bid, the Bidder certifies that:

    (a) The bid has been arrived at by the Bidder independently and has been submitted without collusion with any other Bidder of materials, supplies, or equipment of the type described in the Notice to Prospective Bidders or the Specifications.

    (b) The contents of the bid have not been communicated by the Bidder or, to his best knowledge and belief, by any of his employees or agents to any person not an employee or agent of the Bidder or his Surety on any Bond furnished herewith and will not be communicated to any person prior to the official opening of the bid.

13. The undersigned further agrees that in case of failure on his part to accept said Purchase Order within ten (10) consecutive calendar days after written notice has been given of the award of the Purchase Order, the check, cash, or Bid Bond accompanying this bid and the monies payable thereon, shall be paid into the funds of the City account set aside for this project as Liquidated Damages for such failure; otherwise, the check, cash, or Bid Bond accompanying the Proposal shall be returned to the Undersigned.

14. If annual O&M is required to maintain the system warranty it should be explicitly stated in the bid. The price of which will be included in the cost for the purposes of comparing the bids.

15. If, in submitting this Proposal, the Bidder has made any change in the Bidder's Proposal, the Bidder understands that the City may evaluate the effect of such change as it sees fit or may exclude the Proposal from consideration in determining the award of the Purchase Order.

Respectfully submitted this ____day of _____, 2021.

_____
Name of Firm

By: _____

_____
Title

Address of Bidder: _____

_____

_____

_____

FORM OF EXCEPTIONS

BIDDER: _____

OWNER: CITY OF WILSON, NORTH CAROLINA

PROJECT DESCRIPTION SUBSTATION SYSTEM BESS PROJECT

Project: _____

INSTRUCTIONS: The following is a list of exceptions to the bidding documents and/or Technical Specifications pertaining to the furnishing of the subject materials. Bidders shall identify each exception by Specification page and paragraph number on this form. The omission of exception implies complete compliance with Plans and Specifications.

BID DOCUMENT/ SPECIFICATION PAGE NO. AND PARAGRAPH	**EXCEPTION/VARIATION**

NORTH CAROLINA BID BOND

KNOW ALL MEN BY THESE PRESENT, THAT WE _____

_____

as Principal, and _____

as Surety, who is duly licensed to act as Surety in North Carolina, are held and firmly bound unto the City of Wilson, Wilson, North Carolina, as Obligee, in the penal sum of _____

_____ DOLLARS

($_____) (5% Bid Bond), lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these present.

SIGNED, Sealed and dated this ___day of _____, 2021.

WHEREAS, the said Principal is herewith submitting Proposals for

SUBSTATION SYSTEM BESS PROJECT

and the Principal desires to file this Bid Bond in lieu of making the cash deposit as required by GS 143-129 amended in Chapter 1104 of the Public Laws of 1951.

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION is such that if the Principal shall be awarded the Purchase Order for which the bid is submitted and shall accept the Purchase Order within ten (10) days after the award of same to the Principal, then this obligation shall be null and void; but if the Principal fails to so accept such Purchase Order as required by GS 143-129, as amended by Chapter 1104 of the Public Laws of 1951, the Surety shall, upon demand, forthwith pay to the Obligee the amount set forth in the first paragraph hereof, and upon failure to forthwith make such payment, the Surety shall pay the Obligee an amount equal to double the amount of this Bid Bond as set forth in the first paragraph herein. Power of Attorney from the Surety to its Attorney-in-Fact is attached hereto.

_____

Principal

By _____(SEAL)

_____

Corporate Surety

By _____(SEAL)

TECHNICAL SPECIFICATIONS

CITY OF WILSON
WILSON, NORTH CAROLINA

BATTERY ENERGY STORAGE SYSTEM (BESS)

TECHNICAL SPECIFICATIONS

1.0 Scope

The City of Wilson, North Carolina seeks firm quotations for the purchase and installation of twelve (12) Battery Energy Storage System (BESS). These Specifications cover the design, manufacture, delivery, and installation, in good order, for a skid-mounted or containerized energy storage system including battery(ies), controller, inverter, transformer, cooling, thermal management (BMS), fire protection, SCADA interface, and all other associated hardware and equipment for a complete and fully operable system. **The Bidder shall furnish all other material not listed in section 2.5 of these Specifications (Page S-2) that is required to complete the project limited to the modularized equipment and step-up transformer. The site preparation will be completed by the Owner. The Bidders must confirm the site areas defined in Exhibit 4 are an appropriate size and dimension for the installation of the equipment as defined by the bid schedules. While the bidders will not be responsible for site preparation, the layout and design will be mutually determined. By submitting a bid the bidders confirm the site dimensions meet their typical standards for access and maintenance.**

Bids will be received as follows:

Bid Schedule No. 1: Purchase of one (1) 14 MW / 28-56 MWh energy storage system. The BESS includes inverters, batteries, and enclosures, coordinating site controls, and all battery thermal management. Firm quotations should be based upon placement of an order within sixty (60) days from the bid date. The Owner may elect to increase the overall site capability and capacity by purchasing and incorporating options from Bid Schedule No. 13 and/or Bid Schedule No. 14. The potential site increase if selected would increase the system for Bid Schedule No. 1 to 16 MW.

Bid Schedule No. 2: Purchase of one (1) 5 MW / 10-20 MWh energy storage system. The BESS includes inverters, batteries, and enclosures, coordinating site controls, and all battery thermal management. Firm quotations should be based upon placement of an order within sixty (60) days from the bid date. The Owner may elect to increase the overall site capability and capacity by purchasing and incorporating options from Bid Schedule No. 13 and/or Bid Schedule No. 14. The potential site increase if selected would increase the system for Bid Schedule No. 2 to 10 MW.

Bid Schedule No. 3: Purchase of one (1) 12 MW / 24-48 MWh energy storage system. The BESS includes inverters, batteries, and enclosures, coordinating site controls, and all battery thermal management. Firm quotations should be based upon placement of an order within sixty (60) days from the bid date.

Bid Schedule No. 4: Purchase of one (1) 3 MW / 6-12 MWh energy storage system. The BESS includes inverters, batteries, and enclosures, coordinating site controls, and all battery thermal management. Firm quotations should be based upon placement of an order within sixty (60) days from the bid date. The Owner may elect to increase the overall site capability and capacity by purchasing and incorporating options from Bid Schedule No. 13 and/or Bid Schedule No. 14. The potential site increase if selected would increase the system for Bid Schedule No. 4 to 6 MW.

Bid Schedule No. 5: Purchase of one (1) 8 MW / 16-32 MWh energy storage system. The BESS includes inverters, batteries, and enclosures, coordinating site controls, and all battery thermal management. Firm quotations should be based upon placement of an order within sixty (60) days from the bid date. The Owner may elect to increase the overall site

capability and capacity by purchasing and incorporating options from Bid Schedule No. 13 and/or Bid Schedule No. 14. The potential site increase if selected would increase the system for Bid Schedule No. 5 to 11 MW.

Bid Schedule No. 6: Purchase of one (1) 16 MW / 32-64 MWh energy storage system. The BESS includes inverters, batteries, and enclosures, coordinating site controls, and all battery thermal management. Firm quotations should be based upon placement of an order within sixty (60) days from the bid date.

Bid Schedule No. 7: Purchase of one (1) 11 MW / 22-44 MWh energy storage system. The BESS includes inverters, batteries, and enclosures, coordinating site controls, and all battery thermal management. Firm quotations should be based upon placement of an order within sixty (60) days from the bid date.

Bid Schedule No. 8: Purchase of one (1) 3 MW / 6-12 MWh energy storage system. The BESS includes inverters, batteries, and enclosures, coordinating site controls, and all battery thermal management. Firm quotations should be based upon placement of an order within sixty (60) days from the bid date. The Owner may elect to increase the overall site capability and capacity by purchasing and incorporating options from Bid Schedule No. 13 and/or Bid Schedule No. 14. The potential site increase if selected would increase the system for Bid Schedule No. 8 to 7 MW.

Bid Schedule No. 9: Purchase of one (1) 5 MW / 10-20 MWh energy storage system. The BESS includes inverters, batteries, and enclosures, coordinating site controls, and all battery thermal management. Firm quotations should be based upon placement of an order within sixty (60) days from the bid date. The Owner may elect to increase the overall site capability and capacity by purchasing and incorporating options from Bid Schedule No. 13 and/or Bid Schedule No. 14. The potential site increase if selected would increase the system for Bid Schedule No. 9 to 9 MW.

Bid Schedule No. 10: Purchase of one (1) 5 MW / 10-20 MWh energy storage system. The BESS includes inverters, batteries, and enclosures, coordinating site controls, and all battery thermal management. Firm quotations should be based upon placement of an order within sixty (60) days from the bid date.

Bid Schedule No. 11: Purchase of one (1) 5 MW / 10-20 MWh energy storage system. The BESS includes inverters, batteries, and enclosures, coordinating site controls, and all battery thermal management. Firm quotations should be based upon placement of an order within sixty (60) days from the bid date.

Bid Schedule No. 12: Purchase of one (1) 13 MW / 26-52 MWh energy storage system. The BESS includes inverters, batteries, and enclosures, coordinating site controls, and all battery thermal management. Firm quotations should be based upon placement of an order within sixty (60) days from the bid date.

Bid Schedule No. 13: Purchase of one (1) 1 MW / 2-4 MWh energy storage system for any of the sites listed in Schedules 1-12. This schedule may be purchased in a quantity of up to ten (10). The BESS includes inverters, batteries, and enclosures, coordinating site controls, and all battery thermal management. Firm quotations should be based upon placement of an order within sixty (60) days from the bid date.

Bid Schedule No. 14: Purchase of one (1) 3 MW / 6-12 MWh energy storage system for any of the sites listed in Schedules 1-12. This schedule may be purchased in a quantity of up to ten (10). The BESS includes inverters, batteries, and enclosures, coordinating site controls, and all battery thermal management. Firm quotations should be based upon placement of an order within sixty (60) days from the bid date.

The Owner has the right to select or reject any or all schedules, adders, or deducts (or combination thereof) listed in the Proposal. Each Schedule has an option for a Base Purchase Price, a monthly fee (Tolling Agreement) price, and a Base Price with an extended

warranty. The Owner intends to select one of the three (3) options per schedule if not rejecting that schedule. Base quotations for each BESS shall include the Bidder's risk of delivery to the project sites defined in Exhibit 4 in Wilson, North Carolina, as described in the Instructions to Bidders, paragraph 5.0. The Owner will provide reasonable roadworthy access to the site.

2.0 General Conditions

2.1 All materials and equipment shall be new. Manufacturer origin of all components shall be provided with bid.

2.2 These Specifications describe the type, size, and characteristics of the various materials and equipment required to be furnished.

2.3 Strict adherence to these general Specifications and Drawings is requested to facilitate checking and consideration of the Proposal.

2.4 The City is soliciting optional prices for the BESS equipment to be provided as a part of a Tolling Agreement. The term of which shall be at a minimum of ten (10) years with contractual terms provided in the Proposal. The minimum acceptable terms shall include a guaranteed output as described in the Specifications. In the event of a system failure not resulting from fault by the City, the monthly fee shall be reduced proportionally to the reduced output of the system and up to half the monthly fee.

2.5 At the end of the Tolling Agreement the City may elect to negotiate an additional contract term. If no agreement is made to extend the contract or a new contract cannot be negotiated the bidder will be responsible for removing and properly disposing of the equipment provided by the bidder in regards to this contract.

2.6 If the City elects to purchase the equipment, the bidder shall provide a decommissioning plan for the BESS which complies with NFPA 855.

2.7 Proposals shall include the following:

2.7.1 Catalog numbers, Manufacturer, ratings, characteristics, types, sizes, etc., of all major equipment (inverters, batteries, controllers, and switchgear) included. A simple statement that all necessary materials and equipment will be provided is not satisfactory.

2.7.2 Performance data for the several items as set forth in the detailed Specifications.

2.7.3 A user's list currently employing units of equal design and manufacture in a power utility service environment. The list shall include the City’s business name, address, telephone number, and contact personnel who can provide service history for the product.

2.7.4 Prices shall include the cost of delivery to the City’s sites as defined in Exhibit 4. Offloading shall be the responsibility of the Bidder. **Shipment shall be via open-top truck or open trailer.**

2.8 It is the intent of these Specifications that the BESS shall be skid-mounted or containerized, to include the battery(ies), controller, inverter, transformer, cooling, thermal management (BMS), fire protection, SCADA interface, and all other associated hardware and equipment for a complete and fully operable system. Any details not mentioned in the Specifications but required for satisfactory operation shall be furnished and installed by the Bidder.

2.8.1 The Bidder shall be responsible for designing, supplying, installing, and commissioning (“turn-key”) the BESS system up to the 12.47 kV

transformer. The secondary voltage shall be 1000 VAC or less. The Owner shall install the secondary voltage cables per Bidder's Specification as well as the primary system from the primary cable elbows into the utility interconnection.

Additionally, the Bidder shall provide all Specifications and requirements needed to properly design the foundation/pad and conduit system (by Owner).

2.8.2 The Owner shall be responsible for all necessary site civil preparations, supplying and installing the foundations for BESS, and interconnection from inverter secondary VAC terminals to 12.47/7.2 kV transformer terminals. The Owner will be responsible for the utility connection beyond the transformer.

2.9 Station power available at the City's substations will be 120/240 volts, 60 Hz, single-phase. Control DC voltage at the substation will be 48 volts. The equipment on the BESS shall coordinate with these voltages as appropriate.

3.0 Special Conditions

3.1 Defective Materials, Equipment, and Workmanship

3.1.1 All materials and equipment furnished hereunder shall be subject to the inspection, tests, and approval of the City; and the Bidder shall furnish all information required concerning the nature or source of any materials and equipment and provide adequate facilities for testing and inspecting the materials and equipment at the plant of the Bidder.

3.1.2 The materials and equipment furnished hereunder shall become the property of the City when delivered at the point to which shipment is to be made; provided, however, that the City may reject any such materials and equipment which does not comply with the Specifications for materials and equipment and/or warranties of the Bidder and Manufacturers. Recognition and subsequent rejection of any defective materials and equipment may occur either before or after incorporation of such materials and equipment into the facilities, provided such rejection is made within one (1) year of date of delivery of the materials and equipment. Upon any such rejection, the Bidder shall replace the rejected materials and equipment with materials and equipment complying with the Specifications for materials, equipment, and warranties FOB truck at suitable destination. The City shall return the rejected materials FOB truck at the same destination. In the event of the failure of the Bidder to so replace rejected materials and equipment, the City may make such replacement; and the cost and expense thereof shall be paid by and recoverable from the Bidder.

3.1.3 Product and Performance Warranty

The BESS to be provided herein shall include a full product and performance warranty on the complete energy storage system together with all parts. This warranty shall extend for ten (10) years from the date of energization (or one hundred twenty-six (126) months from delivery). The warranty shall cover all repair or replacement in case of defects in material or workmanship or in case of diminished system performance/output prior to system end-of-warranty period. The Warranty shall include terms that if the BESS provided is unable to output its full rating during a period of load management, due to a failure of the BESS equipment, by no fault of the owner or force majeure, which results in a financial loss to the Owner. Liquidated Damages shall apply in an amount

of one-half (1/2) the financial loss incurred by the Owner. The current rate of financial loss is twenty-three dollars and thirty-four cents ($23.34) per kW. Although not expected, this number may increase; for the purposes of this Contract, it shall not exceed thirty dollars ($30.00).

The Bidder shall also state in the Proposal additional cost (if any) to provide an extended warranty of fifteen (15) years from the date of initial energization and up to one hundred eighty-six (186) months from date of delivery.

Any base bid not including at least a ten (10) year full warranty shall be considered less responsive. Likewise, any bid not including a cost proposal for an extended fifteen (15) year full warranty shall be considered less responsive.

3.2 Miscellaneous

The Bidder shall hold harmless and indemnify the City, its agents, and employees from any and all claims, suits, and proceedings for infringement of any patent or patents covering materials and equipment purchased hereunder. The Bidder shall defend any suit or proceeding brought against the City, its agents, or employees based upon a claim that the materials and equipment or any part thereof constitute an infringement of any patent; or if the Bidder shall fail to defend such suit or proceeding, the City may do so, and the Bidder shall make reimbursement for the expense of such litigation. If the materials and equipment, or any part thereof, are held to constitute infringement and the use thereof is enjoined, the Bidder shall, at its own expense, either procure for the City the right to continue to use the materials and equipment, or such part thereof, or shall replace the materials and equipment, or such part thereof, with non-infringing materials and equipment.

4.0 Standards

All equipment and materials covered by these Specifications and all test applied thereto shall, unless otherwise stated herein, be in accordance with the applicable provisions of the latest editions of the Standards of the ASTM, ANSI, AEIC, NEMA, NESC, NFPA, IEEE, and OSHA. Where the term “Standards” is used in the Specifications, it shall be understood to refer to the above Standards.

5.0 Drawings

5.1 Preliminary

Before proceeding with fabrication, the Manufacturer shall submit for approval to the Owner sufficient Drawings to demonstrate that all parts conform to the requirements and intent of these Specifications. The Drawings shall include outline, nameplate, battery and inverter connection diagrams, AC and DC control elementary, and control wiring. Drawings are to be submitted electronically in AutoCAD to Michael Winkler at m.winkler@Booth-Assoc.com. If you choose to submit Drawings on paper, then you must supply five (5) sets of “D” size (24”x36”) prints directly to the City’s Engineer, Booth & Associates, LLC, at 5811 Glenwood Avenue in Raleigh, North Carolina 27612. Submittal of Drawings smaller than “D” size will be immediately returned stamped “not approved” and proper size Drawings will have to be submitted. All Drawings shall be dimensioned in feet and inches; metric measurements alone will not be acceptable. However, dual dimensioning in feet, inches, and centimeters will be acceptable.

The Outline Drawing shall show dimensions of equipment, including base anchor dimensions, conduit entrance panel location, and all other important external features. These Drawings shall show weights, vertical and horizontal dimensions, battery and inverter catalog numbers and ampere ratings, transformer catalog

number and rating, description of inverter terminals, and arrangement of all external accessory devices.

Approval of Drawings shall not be held to relieve the Manufacturer of obligations to meet all requirements to the Specifications, of responsibility for correctness of the Drawings, or of responsibility to meet original shipping promise on the basis of the City being allowed two (2) weeks for approval after receipt of Drawings.

The City's Engineer, Booth & Associates, LLC may require a second submittal of Shop Drawings if, in the opinion of the City's Engineer, such is required due to the extent of changes required on the first submittal. If an extension of time is required due to a protracted Drawing approval process, the price will remain as quoted for the quoted delivery.

Receipt of Approval Drawings by the Bidder constitutes authorization for manufacture only, based upon the corrections found thereon.

5.2 Final Drawings

Contingent upon Approval Drawing review and product manufacture, the Bidder shall issue final documentation as follows:

5.2.1 Two (2) complete set of all Drawings, revised to "as-built" status, released on CD-R's in .pdf format and AutoCAD format.

5.2.2 Two (2) copies of applicable instruction books, including one (1) print each of all Drawings representing physical and electric details as furnished per paragraph 5.1.

5.2.3 Two (2) copies of certified test reports corresponding to functional performance measurements after final assembly.

5.2.4 All Drawings are to be certified correct and supplied within a reasonable length of time prior to shipment of the equipment. Each set of Drawings and documentation shall include the following information:

- Outline and Assembly Drawings showing size and location of major components and all principal dimensions.
- Control and relay/breaker panel front view.
- Details of battery, inverter and associated terminal connectors.

5.2.5 Diagram of current transformers, connection, number of turns, polarity marking, ratios, and bushing orientation.

5.2.6 Current transformer performance characteristic curves.

5.2.7 Details of BESS skid/container/control housing.

5.2.8 Panel connection diagram showing exact connection for all components furnished.

5.2.9 AC and DC elementary circuit diagrams for all relay, breaker and control equipment furnished.

5.2.10 Wiring control and schematic diagrams.

5.2.11 Renewal parts catalog.

All Drawings and documentation shall be submitted directly to the City's Engineer, Booth & Associates, LLC, 5811 Glenwood Avenue; Raleigh, North Carolina 27612, Attention: Michael Winkler, PE.

6.0 Shipping of BESS

6.1 Equipment shall be shipped to the City site as outlined in the "Instructions to Bidders". **The Bidder shall ship via open-top truck or open trailer for ease of**

unloading by City's personnel. Offloading will be the responsibility of the Bidder.

6.2 Before shipment, the individual components of the BESS shall be assembled. Parts removed for shipment shall be marked so as to permit easy identification when reassembling.

6.3 Method of packing and loading shall be such as to protect all parts from dampness, corrosion, breakage, or vibration injury that might reasonably be encountered in transportation, storage, and handling.

6.4 Release for shipment is to be granted by the City's Engineer based upon the Manufacturer's compliance with the following:

6.4.1 Providing fourteen (14) consecutive days prior notification of tests so that the City may have a representative present for witness of the tests.

6.4.2 Furnishing of the requisite number of copies of the Final Drawings as called for in the Specifications.

6.4.3 Coordination of manufacturing and delivery with City's construction schedule as may be noted in these Specifications.

6.4.4 Thirty (30) days notification of tentative shipping schedule and forty-eight (48) hours notification prior to all deliveries.

6.4.5 **Under no circumstances** will the City accept deliveries arriving on Saturdays, Sundays, or nationally observed holidays. The Bidder shall take precautions as necessary to avoid scheduling such deliveries. Deliveries will be received between 9:00 a.m. and 3:00 p.m., Monday through Friday only.

7.0 Manufacturer's Field Representative (Engineering / O&M)

The Manufacturer shall provide the services of Field Service Labor and Engineer(s) to assist the City with pre-service inspection and assembly of the BESS. Suitable effort for construction, initial inspection, assembly, start-up, and commissioning shall be included in the Base Price. Additionally, the Manufacturer shall conduct an on-site training for the Owner on proper system interface and maintenance. The Bidder shall also conduct an on-site training for the local Fire Authorities on proper emergency response procedures.

Services provided by the Field Service Engineer shall include all pre-service inspection procedures outlined in the Manufacturer's literature. The Field Service Engineer may also be required by the City to perform a series of system tests to satisfy Manufacturers' recommendations and warranty requirements.

Annual Maintenance Option

The Bidder is also asked to furnish annual maintenance rates for consideration. The Bidder shall provide specifics as to type and frequency of recommended maintenance services offered to maintain BESS performance and reliability. The basic services shall include an annual inspection of general condition:

- Electrical connections
- Paint and damage
- Labels and markings
- Component inspections
- Cooling system
- Perform software upgrades
- LV equipment inspection including any breakers

8.0 BESS Components / Ratings

8.1 General

Each Bid Schedule specifies a particular overall system kW rating to be located at a specific site. The interconnection of each site to the utility grid from the primary voltage underground cables to the distribution system will be the responsibility of the owner.
The accumulation of BESS units will be referred to as a Block throughout this specification. Each Block will be interconnected with the Utility distribution system by its own individual distribution class recloser provided by the owner. An individual BESS Bloch shall not exceed 10 MW. If a site specifies a BESS system larger than 10 MW it will interconnect at multiple points. For example, a 15 MW system will be split up and operate as two (2) separate systems not to exceed 10 MW each, such as a 7 MW block and an 8 MW block. The balance of load between the two (2) blocks will be negotiated between the bidder and owner after the award, but each block must be equipped with its own master controller for the SCADA interface and for the load signal to prevent back feeding. See sections 10.1, 11.4, and Exhibit 3 for a generic layout for a BESS block.

The following are general BESS parameters.

8.1.1 Battery Type

Unspecified, Owner will consider all viable technologies. Equal consideration will be given to up front Capital Expenditures as well as on-going or future Operational Expenditures of BESS.

8.1.2 Inverter

Bi-directional, Output 1000 VAC or less, 60 Hz.

8.2 Capacity Rating / Project Life / Tolerance:

8.2.1 Schedule No. 1 - 14

Battery Energy Storage System (BESS), skid-mount or containerized, to include the battery(ies), controller, inverter, transformer, cooling, thermal management (BMS), fire protection, SCADA interface, associated components, and furnished with specified accessories. It is anticipated that the substation will have adequate load at all times to absorb the energy dispatched by the BESS.

Schedule No.	Begin-of-Life Power Capacity	Begin-of-Life Energy Capacity Option 1	Begin-of-Life Energy Capacity Option 2	Begin-of-Life Energy Capacity Option 3	End-of-Term Power Capacity[1]	End-of-Term Energy Capacity[1]	Tolerance
1	14 MW	28 MWh	42 MWh	56 MWh	14 MW	Same as BoL	±10%
2	5 MW	10 MWh	15 MWh	20 MWh	5 MW	Same as BoL	±10%
3	12 MW	24 MWh	36 MWh	48 MWh	12 MW	Same as BoL	±10%
4	3 MW	6 MWh	9 MWh	12 MWh	3 MW	Same as BoL	±10%
5	8 MW	16 MWh	24 MWh	32 MWh	8 MW	Same as BoL	±10%
6	16 MW	32 MWh	48 MWh	64 MWh	16 MW	Same as BoL	±10%
7	11 MW	22 MWh	33 MWh	44 MWh	11 MW	Same as BoL	±10%

8	3 MW	6 MWh	9 MWh	12 MWh	3 MW	Same as BoL	±10%
9	5 MW	10 MWh	15 MWh	20 MWh	5 MW	Same as BoL	±10%
10	5 MW	10 MWh	15 MWh	20 MWh	5 MW	Same as BoL	±10%
11	5 MW	10 MWh	15 MWh	20 MWh	5 MW	Same as BoL	±10%
12	13 MW	26 MWh	39 MWh	52 MWh	13 MW	Same as BoL	±10%
13	1 MW	2 MWh	3 MWh	4 MWh	1 MW	Same as BoL	±10%
14	3 MW	6 MWh	9 MWh	12 MWh	3 MW	Same as BoL	±10%

1: See product and performance warranty section 3.1.3. Bidder shall provide **a base bid with a minimum ten (10) year performance period guarantee, and an adder for an extended fifteen (15) year performance period guarantee.**

8.3 BESS Use Cases

8.3.1 Peaking Shaving (one-hundred (100) full power discharge cycles per year)

A full discharge cycle may be either a complete discharge of the rated stored energy at maximum power output or a complete discharge of stored energy at a lesser power but longer duration.

The City will utilize the BESS for Load Management (Peak Shaving) only during the approximate times below:

Summer Peak: 3pm – 6pm
Winter Peaking: 5am – 8am

The BESS shall be able operate in parallel with the connected utility at any time, with and without the City's other 88 MW of system-wide distributed generation online. Back-feed beyond the City's system shall not be permitted/possible.

The Bidder shall provide specifics as to the BESS's rate of charging/discharging capabilities and limitations (such as required charge duration, efficiency, high/low-capacity limits). **The City prefers no more than eighteen (18) hours charge duration from BESS low-limit capacity to high-limit capacity.**

The City is not interested in micro-grid capabilities or other use cases for this project.

8.3.2 ~~**Emergency Power Capacity –**~~ **N/A**[1]

~~The BESS shall be capable of dispatching up to 1.5 WM for duration of 30 minutes in cases of emergency.~~

8.4 Seismic Criterion

The BESS shall be designed to withstand seismic events for the applicable seismic zone according to the Uniform Building Code to the extent that a force applied in the direction of least resistance to that loading will not cause any portion of the BESS to be overstressed.

1 The requirements indicated by a strikethrough shall not be considered applicable to this project and shall not be required.

8.5 Ambient Temperature and Humidity

The BESS shall be suitable for operation at an ambient temperature of -30°C (-22°F). Maximum ambient temperature rating shall be 50°C (122°F). Humidity rating shall be up to one hundred percent (100%).

8.6 Altitude

The BESS will be installed at an altitude below three thousand three hundred (3,300) feet.

8.7 Wind and Ice Loading

The BESS shall be designed to withstand wind and ice loading for the NESC heavy loading district and using the extreme wind with no ice loading criteria, utilizing the governing loading case.

8.8 Assembly

The proposed equipment components shall be completely assembled, wired, adjusted, and tested at the factory before shipment. equipment interconnection in the field is acceptable.

9.0 Battery Inverter Capability

9.1 Inverter Power Rating

The battery inverter is required to have a nameplate capacity as listed in the table listed above in section 8.2.1, and rated for continuous operation at one hundred percent (100%) loading.

In addition to the continuous operation, the battery inverter must be able to operate at following overload levels, based on a preload level of seventy-five percent (75%). These are assessed based on the current provided from the inverters, compared to the current provided at the nameplate capacity under 1.0 pu voltage (one hundred twenty percent (110%) of nameplate for at least ten (10) seconds).

This overload functionality is required when the battery system is disconnected from the utility grid and is required to provide fault current under certain fault conditions. If an exception is taken to providing overload functionality, then an acceptable proposal to detect and interrupt faults under all conditions must be provided. The effectiveness of which will be evaluated by the owner's engineer.

9.2 Inverter Functionality

The battery inverter system must be capable of operating both in parallel with the main utility grid as well as with Diesel Generators. ***Islanding-mode capability is not desired.*** The system must accept frequency and voltage set points in order to bias the frequency and voltage droop characteristics.

When grid connected Diesel Generators are online, the battery inverter system must be able to operate and load share with the online Diesel Generators.

In addition, the following functions are required by the battery inverter:

~~1) Frequency droop control~~
~~2) Voltage droop control~~
~~3) Voltage and Frequency Reference~~
~~4) Virtual generator inertia~~
~~5) Real power vs. reactive power limiting~~[2]
6) Utility Supporting Mode

2 The requirements indicated by a strikethrough shall not be considered applicable to this project and shall not be required.

9.3 Frequency Droop (Not Required)

The inverter system is required to be able to operate in frequency droop mode, whereby the active power output/input is adjusted as a result of the power system frequency. The battery is required to monitor the system frequency and apply a "droop curve" to its initial power output based on the measured frequency. The further away from the nominal set-point the system frequency becomes, the larger the initial reaction from the battery inverter is required. If the frequency rises, the battery inverter must begin to import power from the grid to compensate. If the frequency drops, the battery inverter must begin to export power to the grid.

This droop characteristic must be configurable, with a "droop percentage" parameter to relate the drop in frequency to the power output of the battery inverter, which indicates the percentage of frequency reduction that will be experienced at one hundred percent (100%) power output. This droop operates around the "Frequency Set-point" which is to be adjusted by an external control system.

9.4 Voltage Droop (Not Required)

The inverter system is required to be able to operate in voltage droop mode, whereby the reactive power output/input is adjusted as a result of the measured AC voltage. The battery is required to monitor the system voltage and apply a "droop curve" to its initial reactive power output based on the measured voltage. The further away from the nominal set-point the system voltage becomes, the larger the initial reaction from the battery inverter is required. If the voltage rises, the battery inverter must begin to absorb reactive power from the grid to compensate. If the voltage drops, the battery inverter must begin to inject reactive power to the grid.

This droop characteristic must be configurable, with a "droop percentage" parameter to relate the drop in voltage to the reactive power output of the battery inverter, which indicates the percentage of voltage reduction that will be experienced at one hundred percent (100%) power output. This droop operates around the "Voltage Set-point" which is to be adjusted by an external control system.

9.5 Voltage and Frequency Reference (Not Required)

The battery inverter will not be required to regulate the system voltage and frequency when no other generation is online, as well as in parallel with Diesel Generators. ***Islanding-mode capability is not desired.***

The battery inverter must be able to seamlessly transition between operational states without disrupting system loads.

The inverter must be capable of receiving frequency and voltage set points to bias the power output of the inverter, so that the external control system can control the charge and discharge of the battery system.

9.6 Virtual Generator Inertia (Not Required)

The battery inverter is required to include a virtual inertia function, which increases/decreases the active power output of the battery inverter based on the rate of change of frequency on the network. This function must be able to be tuned such that any large disturbance is damped.

9.7 Real Power vs. Reactive Power Limits (Not Required)

The battery inverter is required to be configured such that if a certain combination of real and reactive power set-points exceeds the kVA rating of the inverter, the reactive set-point will automatically be decreased internally to meet the kVA rating.

The BESS shall be capable of maintaining a composite power delivery at continuous rated power output at the Point of Interconnection at a power factor within the range of 0.95 leading to 0.95 lagging.

9.8 Utility Supporting Mode

The battery inverter is required to be configured such that it can operate in parallel with the energized utility offset load. The System shall be capable of synchronizing voltage and frequency with the utility as reference. The transition of operating the BESS must not interfere with the power quality provided by the utility.

The BESS must meet IEEE 1547 specifications for Frequency and Voltage Ride through for a Category II system.

10.0 BESS Interface, Controls, and Connections

10.1 External Control Interface

Each BESS block shall be supplied with a fully functioning controller with meter to connect to the City's SCADA interface along with a separate Web Interface through a BMS system. Bidder shall supply SCADA interface and control details and available parameters with their bid for evaluation. Bidder shall also supply local interface and control details and available parameters with their bid for evaluation. **The SCADA interface shall include DNP 3 or Modbus communication. The system should provide a means of using the above protocols to communicate the system power output, status, and system alarms to SCADA. The Owner will provide the RTU and communication path back to the SCADA master. Mounting provisions must be made for the Owners equipment. Interconnection between the RTU and BESS equipment will be coordinated with the Owner and the recommended provisions specified in the bid. SCADA interface shall be capable of recharging the battery, setting the energy storage amount for the recharge, adjusting the power output, and dispatching this facility. The Master Controller must be capable of adding additional units such as those described in Schedule 13 or 14 through Modbus or DNP 3 controls.**

10.2 Local Manual Controls / Interface

At minimum, the following manual operating controls/interface shall be provided.

10.2.1 System Disabled / Enabled

Allows user to safely disable or enable the system locally. Provide function as a key interlock or with provisions to install a padlock for lock-out-tag-out compliance.

10.2.2 Local / Remote

Allows user to switch operating control from SCADA to Local (ie. HMI) and vice versa.

10.2.3 Manual Reset

Allows user to clear alarm(s) and set unit to ready state.

10.2.4 Emergency Stop

Allows for system shutdown/stop running for servicing or emergency response purposes.

10.2.5 Human Machine Interface (HMI)

Industrial computer screen interface to control and monitor the BESS. The HMI platform and software shall be accessible locally and through a network access. At minimum, the HMI shall be capable of two (2) levels

of access credentials (programmable usernames and passwords) – one (1) for the user to observe the system's functions only (no control access), and one (1) giving the user access to control the system.

10.3 AC Connections

The following addresses the respective transformation and distribution equipment for the battery system interconnection.

10.3.1 Main AC Connection

The main AC connection point will be connected by underground cable to the transformer.

The main AC connection voltage shall be 12.47/7.2 kV and shall be run at 60 Hz.

The system should be designed in modules on skids or in enclosures so that piers can be provided by the Owner for the equipment placement. The transformer pads and cables to the inverters will be provided by the Owner based on the Bidder's Specifications. The transformer provided shall have a secondary connection of 1000 VAC or less and be of dead-front construction. The Bidder shall specify the transformer ratings and general equipment configuration.

The Owner shall install fuses at the tie point between the distribution and the underground cable to each transformer and a recloser between the fuses and the remaining distribution system. See Exhibit 3 for typical interconnection of multiple inverters.

10.3.2 Step-Down Step-Up Transformers

The transformers shall be dead front style and require a solidly earthed electrostatic shield between the LV and HV windings to prevent common-mode noise from the inverter switching being transferred to the MV circuit. The transformers shall be grounded-Y on the high voltage side. The expected magnitude of the potential difference between earth and phase is at least peak phase-neutral voltage + peak battery voltage, or:

$$VAC_{Peak} + VDC_{Peak}$$

10.3.3 AC Auxiliary Supply

The BESS will be provided a split phase 120 VAC / 240 VAC auxiliary power connection, which is intended to run the unit controls and building HVAC systems, if equipped. The BESS must be able to maintain the building/enclosure temperature to a nominal level and power the primary system controls using this auxiliary supply alone when the main AC connection point is disconnected.

11.0 BESS Operation

The following section lists the operations that the battery inverter is required to run in and the functionality that this will provide.

11.1 Connection Batteries

Normally the batteries are to remain connected to the battery inverter. If required for maintenance, the batteries can be disconnected from the battery inverter, isolating the two (2) systems.

11.2 AC Bus Failure

In the event of a "dead bus," where the load is unable to be sustained by the battery inverters or the command to stop has been issued, the battery inverters shall remain in a stopped state until commanded to start.

11.3 Grid Disconnection

If the circuit breakers leading from the BESS to the main bus are opened, the Battery will enter an "inhibit" mode – this will stop the Battery switching and will wait for the circuit breakers to be reclosed before automatically restarting conversion.

11.4 Start Operation

If the battery inverter is requested to start when the bus is live, the control system will close the AC Grid circuit breaker and synchronize to the existing bus voltage and phase. At this point the inverter is on-line and can import or export real or reactive power as determined by the external control system and the internal control loops. Each BESS Block should have a Master controller for SCADA to interface, which can operate all the equipment within that Block as a single entity. The battery controller for the site should be capable of following a load signal provided by the Owner such that the power output does not exceed the load signal for a period longer than two (2) seconds. Protection will be put in place by the utility to ensure the power output does not exceed these parameters and will disconnect the system if these Specifications are not met. Power quality issues introduced onto the utility grid will be prohibited and protected against by the Utility by opening the protective recloser. Either events shall be warranted against, and as such trigger Liquidated Damages as described in section 1.5 and 3.1.3.

11.5 Stop Operation

If the battery inverter is requested to stop, the following procedures must occur:

11.5.1 The battery inverter will reduce the power (real and reactive) output to zero according to a ramp function.

11.5.2 The AC grid circuit breaker will be opened.

12.0 BESS System Protection

The following methods of protection are required with the battery inverter:

1. System External Inverter Protection
   a. Insulation monitoring (Earth fault)
   b. Emergency Stop
   c. Fire alarm
2. Intrinsic Inverter Protection
   a. Inverter over-temperature
3. AC Intrinsic Inverter Protection
   a. Anti-islanding (via digital input only)
   b. Over-current
   c. Over-voltage
   d. Under-voltage
   e. Over-frequency
   f. Under-frequency

4. AC External Inverter Protection
    a. Over-current
5. DC Intrinsic Inverter Protection
    a. DC over-current
    b. DC over-voltage
6. DC Intrinsic Battery Protection
    a. Cell over-temperature/temperature imbalance
    b. Cell over-voltage/under-voltage
    c. Cell voltage imbalance
    d. Rack over-charge
    e. Rack under-charge
    f. Rack over-current
7. DC External Protection
    a. DC over-current

12.1 System External Inverter Protection

The following protections must be provided by equipment external to the battery inverter.

12.1.1 Insulation Monitoring (Earth Fault)

If the AC or DC busses of the BESS are ungrounded, an insulation monitoring system is required to be integrated into the battery grid AC connections and battery DC connections. This relay must directly monitor the insulation on all three (3) main AC phases down to Earth via the injection of intermittent high-frequency pulses. This module must also detect insulation failures on the DC side when the inverter is switching.

Detection of insulation breakdown must trigger a shunt trip of the BESS AC main circuit breaker and the battery DC circuit breakers.

12.1.2 Emergency Stop

An Emergency Stop button is to be provided on the front door of the control cabinet on each supplied battery inverter. An external input (via volt-free contact) is also required for remote emergency stop purposes (including fire detection shut-down).

Triggering the Emergency Stop will shunt trip the battery grid AC main circuit breaker and the DC battery circuit breakers.

12.1.3 Fire Alarm

An independent fire alarm/detection should be wired into the Emergency Stop circuit and should result in a shunt trip the battery grid AC main circuit breaker and the DC battery circuit breakers, and also shut down all HVAC systems.

12.2 Intrinsic Inverter Protection

The following protection features are required to be built-in to the battery inverter.

12.2.1 Inverter Over-Temperature

The inverter requires built-in temperature monitoring that allows the inverter to be automatically shut down in the event of an over-temperature condition. There should be no user-accessible parameters for this feature.

12.3 AC Intrinsic Inverter Protection

The following AC protection features are required to be built into the inverter.

It is required that if the grid AC CB or externally communicated grid breakers are opened, then the inverter will not fault but will enter an "inhibited" state that will automatically be recovered from once the circuit breakers are re-closed.

12.3.1 AC Over-Current

There are two (2) required levels of over-current protection intrinsic to the inverters:

1. Fuses for each of the phases are required. This is to protect the inverter in case of a fault in the inverter bus.
2. Current limiting is required for any situation where the demand is effectively above two hundred percent (200%) of rated current. Temperature sensing of the inverter and an internal timer that "hard" limits the amount of time that the inverter attempts to provide two hundred percent (200%) of rated current before shutting down is required.

12.3.2 AC Over-Voltage

In the event of over-voltage, the inverter must apply a two (2) stage protection scheme, as described below:

1. Shut down and stop switching. This leaves the inverter switches connected to the grid but not switching.
2. Open the internal contactor. An internal contactor that can be opened in extreme over-voltage cases that disconnects the inverters from the grid.

12.3.3 AC Under-Voltage

In the event of under-voltage, the inverter will stop switching and raise a fault. This fault will require the operators to manually reset the inverter prior to re-starting operation.

12.3.4 AC Over-frequency

In the event of over-frequency, the inverter will stop switching and raise a fault. This fault will require the operators to manually reset the inverter prior to re-starting operation.

12.3.5 AC Under-frequency

In the event of under-frequency, the inverter will stop switching and raise a fault. This fault will require the operators to manually reset the inverter prior to re-starting operation.

12.4 AC External Inverter Protection

The following events are protected by external equipment in the grid AC cabinet.

12.4.1 AC Over-Current

The grid AC CB must have configurable over-current protection. The trip unit must be configured for three levels of over-current tripping, and the current trip points must be able to be adjusted by as little as 200A steps.

1. Instantaneous
2. Short term
3. Long term

12.5 DC Intrinsic Inverter Protection

The following protection must be provided intrinsically by the inverter:

12.5.1 DC Over-Current

The inverter must have DC bus current monitoring and three levels of DC bus over-current protection.

1. Power limiting takes place inside the inverter to attempt to limit the amount of DC current being fed onto or from the DC bus.
2. If the DC over-current threshold is exceeded the inverter will disconnect from the external DC bus via a contactor.
3. A pair of fuses installed on the inverter are required to blow to protect the inverter if the over-current is too fast for the software disconnection.

12.5.2 DC Over-Voltage

The inverter must have DC bus voltage monitoring and two levels of DC bus over-voltage protection.

1. Power limiting takes place inside the inverter to attempt to limit the amount of DC voltage being fed onto the DC bus.
2. If the DC over-voltage threshold is exceeded the inverter will stop switching with a fault code.

12.6 DC Intrinsic Battery Protection

The Battery Management System (BMS) must provide comprehensive protection of the battery strings and be able to operate independently of the inverter controls.

12.6.1 Cell Over-Temperature

The BMS must detect an over-temperature condition and disconnect any battery string that is above the specified thermal limits.

12.6.2 Cell Over-Voltage/Under-Voltage

The BMS must detect cell over and under-voltages and disconnect any battery string that is above the specified thermal limits.

12.6.3 Cell Voltage Imbalance

The BMS must detect a voltage imbalance between battery cells and disconnect the battery string if this voltage difference is beyond the specific limits.

12.6.4 Rack Over-Charge

The BMS must detect an over-charge condition for the rack and disconnect the rack in order to prevent damage to the batteries.

12.6.5 Rack Under-Charge

The BMS must detect an under-charge condition for the rack and disconnect the rack in order to prevent damage to the batteries.

12.6.6 Rack Over-Current

The BMS should monitor the current for each rack and disconnect the rack if it exceeds the specified current limits. The rack should also have individual fuses to protect against DC wiring faults, or as backup protection to the BMS protection functions.

12.7 External Protection

Circuit breakers must be provided on the DC connection between the batteries and inverters to allow the systems to be isolated from each other. If DC cables are required to run outside of the provided enclosure/buildings, protection must be provided at both the Battery enclosure and the inverter enclosure, using either fuses or circuit breakers.

In the event of a short circuit in any of the DC wiring, the DC circuit breakers should trip.

In the event of an insulation failure to earth of the DC wiring, the insulation monitoring relay must trip the main AC circuit breaker and the DC circuit breakers, isolating all possible points of insulation failure.

The DC circuit breakers must feature thermal/magnetic trip units.

13.0 Other Equipment Details

13.1 Applicable Codes and Standards

In addition to the requirements set forth herein, each BESS component and auxiliary and accessory equipment furnished shall be designed, manufactured, and tested in accordance with the current issue of relevant standards such as, not limited to, ANSI, ASME, NEMA, NFPA, and IEEE. As new and inaugural BESS standards are currently under development, the Bidder shall submit for evaluation a list of standards of which their system is compliant which shall include the newly released.

13.1.1 All surfaces of steel parts (framework, tank, etc.) shall be cleaned in accordance with the Bidder's standards to remove dirt, scale, and grease prior to painting. This shall be immediately followed by an application of priming of rust-inhibitive paint and the necessary base coat. All steel surfaces shall have a minimum of three (3) millimeters of paint. Paint finish shall be suitable to withstand site environmental conditions. The enclosures shall be designed to NEMA 3R Specifications.

The exterior surfaces of all bolts, nuts, and washers shall be primed and painted as above, or such parts shall be stainless steel or galvanized. No exposed cadmium-plated parts or zinc chromate-plated parts will be allowed.

13.1.2 Color Specification shall be ANSI #70 light gray, or other as approved by Owner, shall be suitable to withstand site environmental conditions.

13.1.3 The individual components of the BESS shall be assembled, wired, adjusted, and tested at the factory before shipment.

13.2 Wiring

13.2.1 All power wiring shall be made with #10 AWG tinned copper wire or larger sized wire. The primary insulation jacket of all wiring shall be 600 volt; 90°C; and water, oil, and flame resistant. Control wiring shall be 45 or 65-stranded cable, Type SIS, and not smaller in size than #14 AWG tinned copper wire, with the exception that wiring to alarm auxiliary relays and indicating lights may be smaller in size. All current transformer leads are to be #10 AWG tinned copper or larger in size.

a. Power wiring shall be sized as required in accordance with the National Electrical Code.

b. All connections for wiring shall be made using silicon bronze, split-type lock washers, screws, and nuts.

b. All wires shall be identified at each end with legible permanent labels depicting termination location at opposite end.

c. Wiring connections between fixed and hinged sections shall be minimum 41-strand, flexible wire.

d. Seven-stranded control wire is not acceptable.

e. All terminal connections for conductor sizes #10 AWG and smaller shall be made with pre-insulated, full ring tongue, crimp-type lugs. Spade-type terminals or slip-on connectors are not acceptable.

f. All terminal connections for conductor sizes larger than #2 AWG shall be made with two-hole, long-barrel, double-indent crimp-type lugs; (Single-hole lugs may be used only where necessary.)

g. High-temperature insulated wire shall be used for connections to heaters.

13.2.2 Grommets shall be provided for all openings in metal barriers used for wiring.

13.2.3 Uninsulated exposed conductor or terminal lug shall not extend beyond the sides of the terminal block or its insulating barriers.

13.2.4 All leads for multi-ratio current transformers shall be wired to shorting-type terminal blocks in the control cabinet. If junction boxes are required in wiring between current transformer and control cabinet, terminal blocks or splicing sleeves shall be used for wiring connections. In-line type disconnecting terminals such as American Petroleum Institute (API) No. 32448 or Burndy No. YZ10 will not be acceptable.

13.2.5 If accidental short circuiting of certain wires can result in malfunction of equipment such as closing or tripping of the breaker, these wires shall not be terminated on adjacent terminal block points.

13.2.6 All wiring shall be neat and orderly.

13.2.7 No more than two (2) wires per terminal point are permissible.

13.2.8 All termination and grounding points to be landed during onsite installation shall be reasonably accessible without requiring excessive of damaging cable/wire bend radiuses or routing.

13.3 Current Transformers

13.3.1 Current transformers shall be considered part of the breaker and shall be coordinated with the breaker to meet all currents, voltages, and mechanical requirements of the breaker for steady state, surge, and fault conditions.

13.4 Nameplates

13.4.1 Nameplates and their mounting screws shall be of noncorrosive metal and mounted in positions where they can be safely and easily read with the equipment in service.

13.4.2 All relays, switches, contactors, starters, and other devices shall be identified by nameplates.

13.5 Piping and Conduit

Furnish all necessary individual storage tanks, piping, valves, and conduit for the complete assembly of the BESS. Storage tanks required shall be manufactured to the

requirements of the ASME Code Section VIII Division 1 and so stamped and registered with the National Board of Registration. Any safety and/or safety relief valves approved for service on these tanks shall also be constructed in compliance with the latest requirements of the ASME Boiler and Pressure Vessel Code. These valves shall also be stamped and registered with the National Board of Registration.

13.6 Special Tools and Lifting Devices

13.6.1 Furnish two (2) sets of all special tools and hardware required for removal and maintenance of the battery energy storage system assembly/components.

13.6.2 Furnish any special lifting devices required for installation and or maintenance of the system and/or accessories.

13.6.3 Furnish lifting eyes and lugs for vertically lifting the battery energy storage system assembly/components.

13.7 Spare Parts

The Bidder shall furnish with the Proposal a recommended spare parts list and spare parts price list, applicable to each BESS described in the Proposal.

The above requirements are for spare parts and prices in the Proposal, but it is not the intention of this Specification that these parts be furnished as part of the Purchase Order.

13.8 Alarms

The BESS shall be able to self-diagnose and alarm under abnormal conditions. Bidder shall supply comprehensive details of available alarm functions and parameters with their bid for evaluation. Alarms may be categorized as

13.8.1 The following typical alarms are to be identified:

a. Information Status Alarms

b. Warning Alarms

c. Critical/Inhibit Alarms

d. Trip Alarms

14.0 Start-up and Commissioning

14.1 If the BESS or any of the auxiliaries or accessories fails to perform as intended during start-up and commissioning efforts, the Bidder shall be responsible of troubleshooting, diagnosing, and successfully resolving the issue within reasonable time at no additional cost to the Owner. After rework or repair of the failure, the specified start-up and commissioning shall be repeated to ensure that the repaired BESS, auxiliary, or accessories will meet the Specification in all respects.

14.2 Rework or repair and retesting shall be done at Bidder's expense.

14.3 Bidder shall keep a record of all failures detected during start up and commissioning, of rework or repair required, and of data taken after rework or repairs have been completed.

14.4 Rework or repairs shall be made in accordance with an approved procedure signed by that party responsible to give in-process disposition of such rework or repairs.

14.5 The Field Service Engineer shall perform a series of tests after the BESS is installed to assure that it is functioning properly and that all components and wiring are properly connected. The Field Service Engineer shall give approval for energizing the equipment and shall remain to observe the entire energization process. **The Field Service Engineer shall also provide training to the Owner's maintenance personnel during checkout of the BESS. The Bidder shall also conduct an on-site training for the local Fire Authorities on proper emergency response procedures.**

EXHIBITS

1 – Bid & Construction Schedule

2 – Vendor Product Data Form

3 – Conceptual Single-Line

4 – Site Perimeter Map

1

Bid and Construction Schedule

CITY OF WILSON
WILSON, NORTH CAROLINA

SUBSTATION SYSTEM BESS PROJECT

BID AND CONSTRUCTION SCHEDULE

DATE	ITEM
March 11, 2021	Public Advertisement
April 15, 2021	Deadline for Questions (5pm EST; Submit to Booth & Associates, LLC)
April 23, 2021	Deadline for Addendum and Question Responses
April 29, 2021	Bid Opening/Bid Deadline (2pm EST)
TBD	Award of Contract by City Council
January 1, 2023	Expected In-Service date (Bids accepted with a later date, refer to the bid evaluation section for In-Service date priority)

2

Vendor Product Data Form

VENDOR PRODUCT DATA FORM

Battery

Chemistry Type _____

Manufacturer _____

Model No. _____

Nominal Power Capacity NPC = _____ MW

Nominal Energy Capacity NEC = _____ MWh

State-of-Charge (%) SOC High Limit = _____ SOC Low Limit = _____

Percentage limits of capacity charged/discharged expressed as a percentage of maximum capacity.

Usable Energy Capacity UEC = _____ MWh

(SOC High Limit / 100)(NEC)*

Round-trip Efficiency (%) RTE = _____

The amount of energy that comes out of storage relative to the amount put into storage.

Charge Rate CR = _____ Hrs.

The rate at which storage can be charged from SOC Low Limit to SOC High Limit.

Response Time (sec., minutes) RT = _____

The amount of time required to go from no discharge to full discharge.

Expected Useful Life (Years / Cycles) EUL = _____

Assuming specified Use Case, before replacement or rehabilitation required.

Battery Management System

Manufacturer _____

Model No. _____

Inverter

Manufacturer _____

Model No. _____

Station Power Requirements _____

Standard Warranty Period _____

Expected Annual Maintenance Cost _____

BESS Footprint / Space Requirements _____

Applicable Compliance Standards _____

Vendor shall supply all equipment specifications, cut-sheets, and drawings necessary to demonstrate that all parts conform to the requirements and intent of these Specifications.

3

Conceptual Single-Line

THE COMMUNICATIONS SCHEMATIC IS NOT DEMONSTRATED ON THIS SINGLE LINE.
EACH BESS BLOCK WILL BE EXPECTED TO HAVE A MASTER BESS CONTROLLER PROVIDED BY THE BIDDER WHICH WILL BE BE THE PRIMARY INTERFACE FOR THE INDIVIDUAL BESS SYSTEMS WITHIN THE BLOCK. THE OWNER INTERFACE WILL INTERACT THROUGH SCADA WITH THE MASTER CONTROLLER TO PERFORM FUNCTIONS OF THE BLOCK AS IF IT IS A SINGLE UNIT.

Booth & Associates
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5811 Glenwood Avenue
Raleigh, NC 27612

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NO.	REVISIONS	ENG.	DATE
0		MW	1/21/2021

CITY OF WILSON
WILSON, NORTH CAROLINA

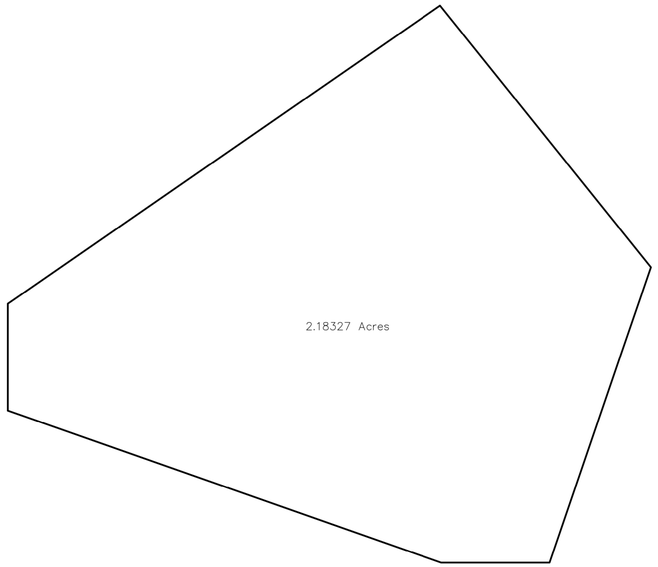
DRAWING TITLE:
EXHIBIT 3
GENERIC BESS BLOCK
SINGLE LINE DIAGRAM

DRAWN BY:	JRT
CHECKED BY:	MW
APPROVED BY:	MW
DATE:	1/15/21
SCALE:	NONE
FILE NUMBER:	141

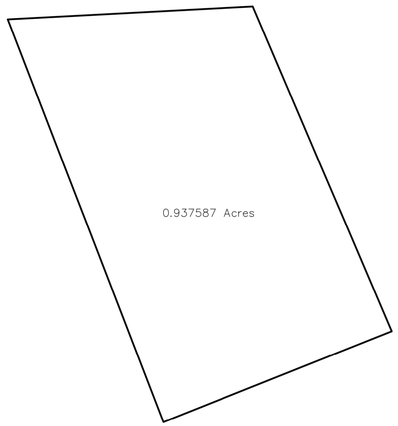
SHEET:
EX3

4

Site Perimeter Maps



BID SCHEDULE No.1
Zip Code: 27893



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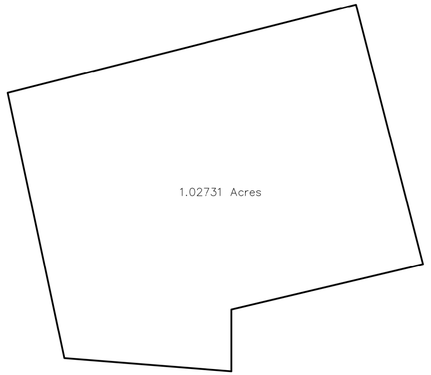
Zip Code: 27893



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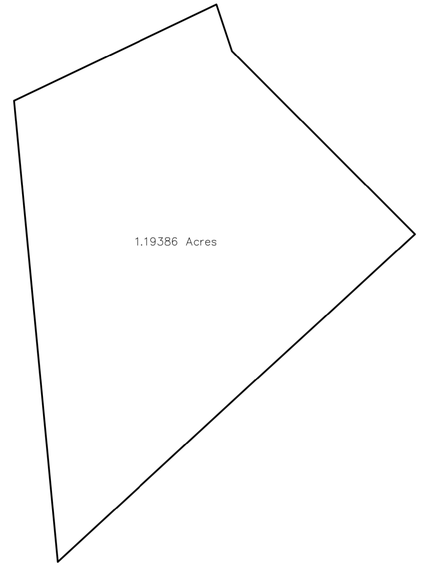
Zip Code: 27893



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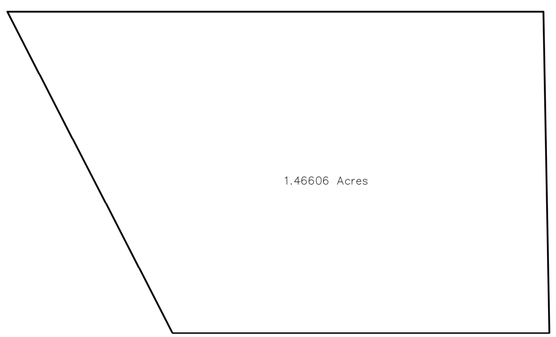
Zip Code: 27893



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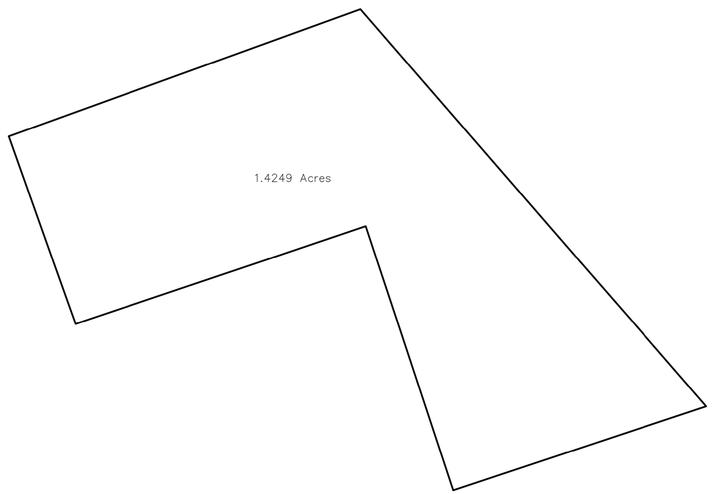

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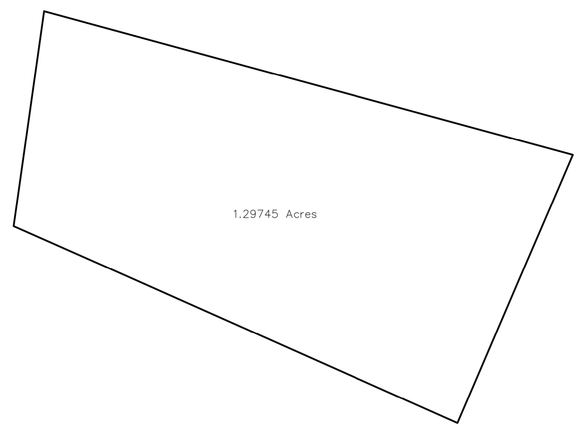
Zip Code: 27896



BID SCHEDULE No.7
Zip Code: 27893

50 25 12.5 0 50
1"=50'

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Raleigh, NC 27612
NC F-0221

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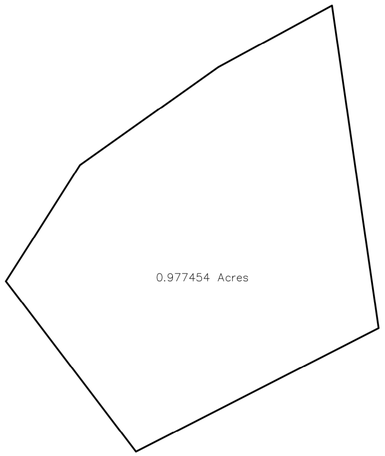
0		MW	01/22/2021

PROJECT NAME:
CITY OF WILSON
WILSON, NORTH CAROLINA

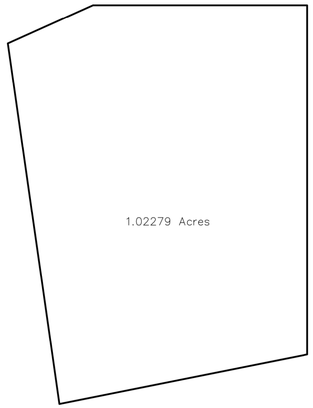
DRAWING TITLE:
EXHIBIT 4
BESS SITE PERIMETERS

DRAWN BY:	BLP
CHECKED BY:	MW
APPROVED BY:	MW
DATE:	01/20/2021
SCALE:	1"=50'
FILE NUMBER:	SiteProcurement

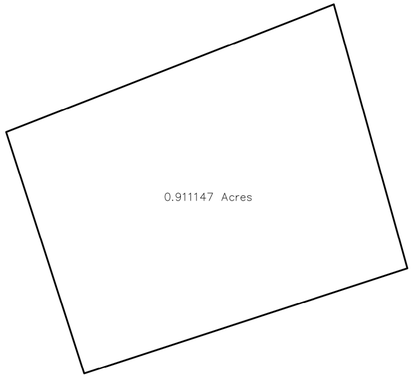
SHEET:
EX4-1



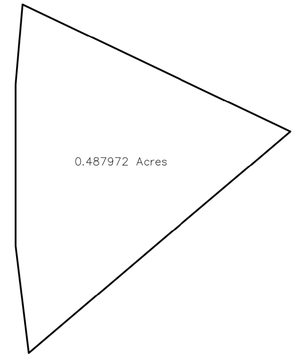
BID SCHEDULE No.8
Zip Code: 27893



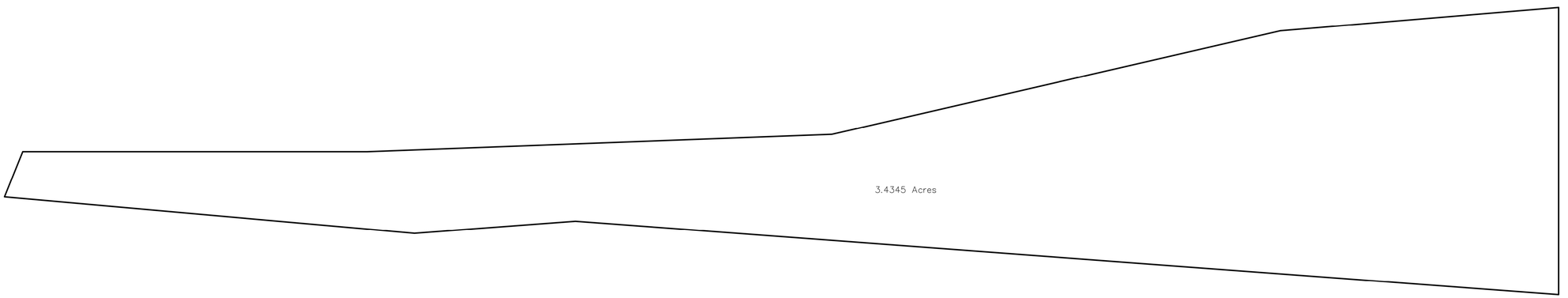
BID SCHEDULE No.9
Zip Code: 27896



BID SCHEDULE No.10
Zip Code: 27896



BID SCHEDULE No.11
Zip Code: 27822



BID SCHEDULE No.12
Zip Code: 27851

50 25 12.5 0 50
1"= 50'

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0		MW	01/22/2021

PROJECT NAME:
CITY OF WILSON
WILSON, NORTH CAROLINA

DRAWING TITLE:
EXHIBIT 4
BESS SITE PERIMETERS

DRAWN BY:	BLP
CHECKED BY:	MW
APPROVED BY:	MW
DATE:	01/20/2021
SCALE:	1"=50'
FILE NUMBER:	SiteProcurement

SHEET:
EX4-2