

## **BID DOCUMENTS**

**WOLFEBORO MUNICIPAL ELECTRIC DEPARTMENT  
WOLFEBORO, NEW HAMPSHIRE**

**DISTRIBUTION TRANSFORMERS  
12.5 KV CONVERSION PHASE 6**

**PLM BID No. 918127-03  
WED W.O. 4614**

**MARCH 2021**



**ELECTRIC POWER ENGINEERING**

**46 LIZOTTE DRIVE, STE 201, MARLBOROUGH, MA TEL: (508) 435-0200 [WWW.PLMNET.COM](http://WWW.PLMNET.COM)**

**WOLFEBORO MUNICIPAL ELECTRIC DEPARTMENT  
WOLFEBORO, NEW HAMPSHIRE**

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**WOLFEBORO MUNICIPAL ELECTRIC DEPARTMENT  
WOLFEBORO, NEW HAMPSHIRE**

**Distribution Transformers - 12.5 kV Conversion Phase 6  
PLM Bid No. 918127-03  
WED W.O. 4614**

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**INSTRUCTIONS TO BIDDERS**

**GENERAL**

Bids must be received in triplicate in a sealed envelope marked "**Bid for Distribution Transformers - 12.5 kV Conversion Phase 6**", and addressed to:

**Mr. Barry Muccio, Director of Operations  
Wolfeboro Municipal Electric Department  
133 Middleton Rd.  
Wolfeboro, New Hampshire 03894**

Bids will be received until **2:30 PM on Thursday April 15, 2020** at which time they will be publicly opened and read aloud.

Bids may be mailed to the above address or delivered in person. One set of bid documents must include the original bid bond or surety and have original signatures.

All bids must be made on the Proposal Form provided in these specifications, unless additional space is required for terms and conditions, in which case, a supplementary sheet on bidders letterhead or quotation form may be used, and shall become a part of the Proposal Form. The Wolfeboro Municipal Electric Department (WMED) specifically reserves the right to reject any bid not made on the form provided, to waive any irregularity or informality, to reject any or all bids, or to accept any Bid (in total or for a specific bid item) which is deemed to be in the best interest of the WMED and the Town of Wolfeboro, New Hampshire.

All bids must be firm for a period of 60 days from the date of the bid opening.

**BOND REQUIREMENTS:**

**Bid Bonds:**

A bid bond in the amount of 5% of the bid price in the form of a certified check made payable to the Town of Wolfeboro Municipal Electric Department shall be required **where the sum of the items quoted exceeds \$20,000** and must accompany the bid proposal.

**AWARD OF CONTRACT**

The WMED reserves the right to:

- A. Award a contract by individual items, in aggregate or a combination thereof.

**WOLFEBORO MUNICIPAL ELECTRIC DEPARTMENT  
WOLFEBORO, NEW HAMPSHIRE**

**Distribution Transformers - 12.5 kV Conversion Phase 6  
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- B. Award a contract that is most advantageous to the WMED from a delivery and cost efficiency (best value) point of view. Best value will be determined by a comparative analysis of the following components:
1. Electrical information and physical characteristics;
  2. delivery schedule as specified by vendor;
  3. previous experience with manufacturer;
  4. previous experience with Bidder; and/or
  5. compliance with Specifications and Proposal documents.

**OTHER DATA REQUIRED:**

Each bidder shall include manufacturer's bulletins, specifications, dimension sheets, etc. describing the proposed equipment, and must insert in his copy of this specification in the spaces provided, a statement of conformity to the specifications. Any exceptions to the specifications must be indicated either in the spaces provided or on the bidder's letterhead and must be attached to these specifications.

See statement of delivery conditions on the Proposal Form.

**WOLFEBORO MUNICIPAL ELECTRIC DEPARTMENT  
WOLFEBORO, NEW HAMPSHIRE**

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**DISTRIBUTION TRANSFORMERS  
12.5 KV CONVERSION PHASE 6**

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**SECTION I  
TERMS AND CONDITIONS  
MARCH 2021**

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**GENERAL**

On-time shipment and trafficking during shipment are extremely important to facilitate on-time project completion. Close coordination of contractors and shippers is required.

**CONTRACTOR/OWNER**

The term "Manufacturer," "Contractor" or "Bidder" shall mean the party furnishing the material specified herein. The term "material," "apparatus," or "equipment" shall mean goods furnished under this Contract. The term "Owner," "Purchaser," "WMED" or "Department" shall mean the Wolfeboro Municipal Electric Department, or its designated representative.

**PLM/ENGINEER**

The term "Engineer," "PLM" or "Owner's Representative" as used herein shall mean Power Line Models, Inc., a Massachusetts Corporation. PLM is under separate contract with Owner to provide all technical services regarding this specification and to act as a designated technical representative of the Owner.

This Specification is the property of Power Line Models, Inc., and the Wolfeboro Municipal Electric Department. It is intended solely for use on this project. The unauthorized use of this specification for any other purpose is strictly prohibited.

**PRICING POLICY AND TERMS**

Firm prices are required. Terms shall be 100% net 30 days after receipt of equipment at site, compliance with additional terms in Section II, and invoicing at Owner's offices. Any cash discount period will date from the later of: the receipt of invoice by Owner, or the delivery of equipment, and not from the date of invoice. On invoices returned for correction, the cash discount period and terms will date from the receipt of owner of the corrected invoice. Material not received, short-shipped material, and rejected material shall not be processed for payment by Owner until all disputes are settled.

**EQUAL EMPLOYMENT OPPORTUNITY**

During the performance of the contract, the Bidder agrees as follows:

1. The Bidder will not discriminate against any employee or applicant for employment because of race, creed, color, sex, or national origin. The Bidder will take affirmative action to ensure that applicants are employed without regard to their race, creed, color, sex, or national origin. 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.

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, creed, color, sex, or national origin.

#### **ACKNOWLEDGMENT OF TERMS AND CONDITIONS**

By submitting a written proposal, the Bidder shall be deemed to have agreed to the terms and conditions set forth herein.

#### **PROPOSAL GUARANTY, PERFORMANCE AND PAYMENT BOND, NOTICE OF ACCEPTANCE OF PROPOSAL, NOTICE TO PROCEED**

The Proposal Guaranty shall be the check or Bid Bond required in the Instructions to Bidders. The Owner may reject all proposals and in such event all checks and Bid Bonds will thereupon be returned to the bidders. When a proposal is accepted, all checks and bid bonds will thereupon be returned to the bidders except those of the three apparent lowest responsive bidders, which may be retained until the contract is executed by the accepted Bidder and the Owner. Any bidder whose proposal is accepted shall furnish a satisfactory Performance and Payment Bond and execute the contract within ten days after delivery of Notice of Acceptance of Proposal or such additional time as is allowed by the Owner. Failure, neglect or refusal by the bidder to do so shall constitute a breach of agreement to enter into the contract effected by the bidder's proposal and the Owner's Notice of Acceptance of Proposal. The damages to the Owner of such a breach of agreement will include monetary loss from, among other things, interference with the Owner's construction program and normal operations. The amount of such damages is difficult or impossible to compute. The Owner has estimated and each bidder by submitting his proposal agrees that reasonable compensation for damages resulting from such breach of agreement shall be the amount of the Proposal Guaranty and promises to pay that amount as liquidated damages for such breach. If any bidder whose proposal is accepted fails, neglects or refuses to furnish Performance and Payment Bond and execute the contract as herein provided, such bidder shall not be the lowest responsive bidder. The Owner may then select the lowest responsive bidder and deliver a Notice of Acceptance of Proposal to such lowest responsive bidder. At some time after the execution of the Contract, written Notice to Proceed will be given by the Owner to the Bidder. The accepted Bidder shall begin work within ten days after delivery of the Notice to Proceed and shall continue regularly thereafter, unless otherwise directed in writing by the Owner or duly constituted authority, with such work force, materials and equipment as to assure completion of the work within the time stated in the Contract Documents.

#### **COMPLIANCE WITH TERMS AND CONDITIONS**

Any act done or omitted to be done by Bidder in violation or disregard of these terms and conditions shall not be binding upon Owner, nor shall Owner be responsible for any damage or loss to Bidder or any other person, firm or corporation arising out of or in consequence of any such act or omission.

No modifications to these Terms and Conditions shall be considered after Contract execution.

#### **ASSIGNMENT**

Manufacturer shall not assign or subcontract any portion of the work without the prior written approval of the Owner. If such approval is given, it shall not relieve Manufacturer from liability hereunder.

#### **CANCELLATION - APPARATUS**

Owner shall have the absolute right to cancel the entire contract upon the payment to the Manufacturer for all disbursements or expenses which the Manufacturer has incurred or has become obligated for prior to the date of Notice of Cancellation, less the reasonable resale value of the materials, equipment and apparatus which has been obtained and become an integral part of the apparatus.

#### **EXCUSABLE DELAYS**

Any failure of performance by either party shall not constitute default hereunder or give rise to any claim for damages or otherwise, if and to the extent, caused by an occurrence beyond the reasonable control of the party affected, including, but not limited to, acts of compliance with acts of governmental authorities, acts of God, strikes or other concerted acts of workmen, fires, floods, explosions, riots, war or armed conflict declared or undeclared, rebellion and sabotage. The party affected by any such occurrence shall give notice to the Owner within five working days of its commencement and shall keep the Owner informed of action taken to terminate the occurrence.

#### **DELAYS**

Any change in the delivery date shall be reported to the Owner immediately by telephone, followed by a written confirmation, detailing the reason for the change.

#### **NON-DISCLOSURE**

Bidder shall not make use of drawings, specifications, data and other information furnished to it by Owner. Bidder shall promptly return to Owner all drawings, specifications, data and other information furnished by Owner in connection with the performance of this order, and shall not retain or permit others to retain any reproduction or copy thereof. Bidder shall not disclose any such drawing, specification, data or other information to any third party and shall make no further use thereof (or of any information derived therefrom), either directly or indirectly, without Owner's prior written consent, except in connection with the performance of this order.

#### **PARTIAL SHIPMENT - APPARATUS**

Apparatus shall not be shipped short of materials unless written authorization is issued by Owner. The Manufacturer shall supply detailed material lists of short-shipped items, itemized by price, and up-to-date delivery schedules. Any short-shipped items shall be delivered f.o.b. designated location within the Town of Wolfeboro, New Hampshire.

#### **PACKING/INSURANCE**

All goods, material, or equipment must be safely packed in the manner described herein to ensure against damage and to comply with carrier's requirement as specified in applicable tariffs. All shipments are to be released to the carrier at full value and are to be fully insured for the total value of the material.

#### **FREIGHT**

The **PURCHASER** Contract Number shall be shown on all shipping papers and parcels. The Owner reserves the right to route all shipments. The Manufacturer shall provide shipping classifications, and shipping points if requested by Owner.

The **MANUFACTURER**, or any of his suppliers making shipment direct, shall transmit on the day of shipment:

1. Freight Bill - original and two copies



- |    |                 |   |                         |
|----|-----------------|---|-------------------------|
| 2. | Packing List    | - | two copies              |
| 3. | Bill of Lading  | - | original and two copies |
| 4. | Express Receipt | - | two copies              |

Delivery shall be f.o.b. Wolfeboro Municipal Electric Department, 133 Middleton Rd., Wolfeboro, New Hampshire, in open top style truck to facilitate unloading by crane. Loose equipment shall be secured to a wooden pallet to facilitate handling. Receiving hours are 8:00 a.m. to 3:00 p.m. Monday through Friday (except Holidays). **A minimum of 24 hours notice of shipment is required. Notify Barry Muccio, Wolfeboro Municipal Electric Department, Office (603) 569-6975, Mobile (603) 651-8126,**

#### RECEIPT/INSPECTION

All material shall be received and inspected by Owner. Such inspection, however, shall not relieve the Manufacturer from responsibility for their quality and correctness of work. Material judged to be inferior quality, or not suitable for use shall be rejected. The Manufacturer shall be informed of rejected material for determination of replacement and disposition.

#### DAMAGED MATERIAL

The Manufacturer and shipper shall be promptly informed of damaged material. The Manufacturer shall make all reasonable efforts to expeditiously ship replacement materials or schedule repairs. For material shipped f.o.b. destination, replacement and repairs shall be at the Manufacturer's expense.

Obvious damage shall be noted on the Bill of Lading at the time of receipt. An agent's signature on the Bill of Lading does not release the shipper and/or Manufacturer from liability for concealed damage.

#### INVOICING

Invoices (three-part) shall be submitted to and processed by Owner. Invoicing shall be itemized to include:

1. Material
2. Labor (if applicable)
3. Tax on Material (if applicable)
4. Service Engineering (if applicable)
5. Freight

#### TAXES/ULTIMATE DESTINATION

In States where the Owner is required to pay State or local sales or use taxes on the Total Contract Amount and the Contractor is required to receive the said taxes for payment to the State, the amount payable to the Contractor by the Owner shall be the Total Contract Amount including the amount of the said taxes, if any.

#### TITLE

Both legal and equitable title to all of the material furnished hereunder shall pass to the Owner FOB point indicated in the specification.

#### WARRANTY

The Manufacturer warrants that all material furnished herein shall be free from defects in design, material or workmanship and shall be suited in all respects both for the purpose for which it is intended and for all other uses for which it may be represented in writing by the Manufacturer to be suited. The Manufacturer also warrants the successful operation of all such material for a minimum period of 18 months from the date of

arrival of the equipment at its destination from the Manufacturer premises, or 12 months after energization; which ever is longer. This warranty shall cover freight costs to and from the Manufacturer repair facility, the cost of removal from the site, and reinstallation costs after repair. Manufacturer shall provide repair technicians as necessary at no cost to the Owner and also be responsible for travel costs, lodging, and parts. Payment shall not be deemed to constitute an acceptance of the equipment or a release of any responsibility on the part of Manufacturer.

#### **INDEMNITY**

Accepted Bidder agrees to protect, indemnify, and hold harmless from any and all claims, demands and actions whatsoever including, but not limited to, all legal costs and expenses for loss of life, injury to person or damage to property, in regard to the goods, materials or equipment sold hereunder, whether the said loss of life, injury to person, or damage to property is sustained by any officer, agent, servant, or employee of either Bidder or Owner or by an other person, firm, or corporation, when such claims, demands, or actions are caused by or arise out of:

1. Bidder's negligence or alleged negligence; or
2. Bidder's acts or omission; or
3. Bidder's failure to comply with terms and conditions of this purchase order.

#### **PATENTS**

Manufacturer agrees to protect, indemnify and save harmless Owner, its clients, officers, agents, servants and employees, from the payment of any royalties, damages, losses or expenses, legal or otherwise, claimed or established by any person, firm or corporation, for or growing out of any infringement upon Letters of Patent of the United States in respect to any part of the goods, material or equipment shipped on this order.

#### **STATUTES**

Manufacturer shall comply with the provisions of all applicable Federal, state, and local laws and regulations, for any goods, material or equipment to be furnished, hereunder, and shall upon request by Owner, furnish Owner with satisfactory proof of compliance with any designated law or regulation.

#### **CONTRACT AWARD**

Award of this Contract or portions thereof shall be made to the most responsive and responsible bidder(s) not later than sixty (60) calendar days after bid opening.

WOLFEBORO MUNICIPAL ELECTRIC DEPARTMENT  
WOLFEBORO, NEW HAMPSHIRE

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**DISTRIBUTION TRANSFORMERS  
12.5 KV CONVERSION PHASE 6**

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**SECTION II  
PROJECT ORGANIZATIONAL REQUIREMENTS  
MARCH 2021**

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**COMMUNICATION**

All technical communications and correspondence shall be addressed to:

PLM, Inc.  
46 Lizotte Dr., Suite 201  
Marlborough, Massachusetts 01752  
Attention: Mr. Allan M. Rice  
Phone: (774) 374 9679  
email: arice@plmnet.com

All commercial correspondence and copies of technical communications during the project shall be addressed to:

Wolfeboro Municipal Electric Department  
P.O.. Box 777 (US Mail Only)  
133 Middleton Rd. (Other)  
Wolfeboro, New Hampshire 03894  
Attention: Mr. Barry Muccio, Director of Operations  
Phone: (603) 569-6975  
email: meddirector@wolfeboronh.us

Proposals shall be sent **in duplicate** to Mr. Barry Muccio, Director of Operations, Wolfeboro Municipal Electric Department, 133 Middleton Rd., Wolfeboro, New Hampshire 03894.

**ADDITIONAL TERMS AND CONDITIONS**

1. Title  
  
Distribution Transformers and Equipment - 12.5 kV Conversion Phase 5A
2. Taxes  
  
The Owner is a municipal agency and, as such, state taxes are not applicable.

3. Freight

Freight shall be prepaid and allowed. The Contractor is responsible for all freight and cartage, including any additional freight to and from destination until the apparatus has been received in good condition, field tested, and accepted by Owner and PLM.

4. Terms of Payment

The Contractor shall be entitled to receive 100% of the Contract amount upon:

- a. Receipt and inspection of apparatus at destination.
- b. Payment shall not be made on apparatus that is not in compliance with the specifications until such time as the deficiency is corrected by the Manufacturer.
- c. Payment shall not be made on apparatus that is damaged in transit until apparatus is received in good condition.

**INSPECTION**

An Owner's Representative shall be allowed free access, at all reasonable times, to the Manufacturer's shops for inspection of the equipment or any of its parts, and to obtain information on the progress of the work, or to witness testing of the equipment. Any work or material found to be defective shall be rejected and shall be replaced by the Manufacturer at his own expense. Such inspection, however, shall not relieve the Manufacturer from responsibility for the quality and correctness of the work.

**WOLFEBORO MUNICIPAL ELECTRIC DEPARTMENT  
WOLFEBORO, NEW HAMPSHIRE**

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**DISTRIBUTION TRANSFORMERS  
12.5 KV CONVERSION PHASE 6**

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**SECTION III  
PROCEDURES AND LEGAL  
MARCH 2021**

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**BID BOND**

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**KNOW ALL MEN BY THESE PRESENTS:**

That \_\_\_\_\_, as Principal,  
(Bidder)  
and \_\_\_\_\_, as Surety,  
(Bonding Company)  
a corporation of \_\_\_\_\_, who is licensed to do business in the State of New  
Hampshire, whose principal office is located at \_\_\_\_\_  
\_\_\_\_\_, are firmly bound unto \_\_\_\_\_  
\_\_\_\_\_, as Obligees, (Owner)  
to fulfill the obligations of the Principal and the Surety under the Proposal to which reference is hereafter  
made, in the amount of 5% of the Contract Amount for payment whereof Principal and Surety bind themselves,  
their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, Principal has by written Proposal, dated \_\_\_\_\_, offered to enter into a  
Contract with Obligees for Contract Document Bid Schedule(s) items \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

for **Distribution Transformers - 12.5 kV Conversion Phase 6**, pursuant to the terms and conditions set  
forth in the Contract Documents, dated \_\_\_\_\_, including all Addenda thereto, the engineering  
provisions of which were prepared by PLM, Inc., which Proposal and Contract Documents are, by this  
reference, made a part hereof.

**NOW, THEREFORE**, the condition of this obligation is such that if the Principal within ten days, or  
such additional time allowed by the Obligees, after delivery by Obligees to Principal of Notice of Acceptance of  
Proposal for one or more of said Bid Schedules shall furnish Performance Bond and Payment Bond, and  
execute the Contract all as specified in said Contract Documents, then this obligation shall be null and void,  
otherwise to remain in full force and effect.

Any suit under this bond shall be instituted before the expiration of two years from the latest date announced for opening proposals.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

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(Surety)

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(Principal)

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(Title)

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(Title)

## PROPOSAL

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Wolfeboro Municipal Electric Department  
133 Middleton Rd.  
Wolfeboro, New Hampshire 03894

\_\_\_\_\_  
(Bidder)

\_\_\_\_\_  
(Date)

1. Pursuant to your Notice to Bidders inviting Proposals for the equipment described in the Contract Documents of which this Proposal is part, the undersigned Bidder hereby certifies and represents that it has examined and thoroughly understands the Contract Documents including the following:

ADDENDA NO.	DATE

2. The undersigned Bidder, having made such examinations and reached such understandings:
- a. encloses the required Proposal Guaranty in the amount of 5% of the Proposal amount.
  - b. accepts the obligation of a Bidder incurred by submitting this Proposal.
  - c. agrees to the rights reserved to the Owner set forth in the Notice to Bidders.
  - d. proposes to furnish the Performance and Payment Bond, and to execute the Contract as set forth in the Contract Documents, of which this Proposal is a part.
  - e. warrants that the proposal submitted is in accordance with the following Provisions as marked:
    - (1) the equipment offered, if any, is in accordance with the requirements of the Contract Documents, notwithstanding any variation between descriptive material furnished and the requirements of the Contract Documents . . . . . ☐
    - (2) the equipment offered, if any, deviates from the requirements of the Contract Documents, as listed on the specifications on the following form under the heading "DEVIATIONS." Deviations shall be noted on the Specifications in the spaces provided. If additional space is needed or space is not provided, Bidders must use their company letterhead and attach it to the specifications. The attachment shall become part of the Proposal Form. . . . . ☐

(If the Bidder fails to check one of the foregoing Provisions, the Proposal will be considered on the basis of Provisions (1) and the Bidder agrees to contract in accordance with that Provision.)

- f. certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph, the word "person" shall mean any natural person, joint venture, partnership corporation, or any other business or legal entity.

3. **DEVIATIONS**

Bidder shall provide a full explanation of deviations or exceptions to any portion of the Contract Documents. If additional space is needed, Bidders must use their company letterhead and attach it to the Proposal.

**Specification Section - Description of Deviations**

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4. The following statements of experience, personnel, equipment and general qualifications of the Bidder are submitted as a part of the Proposal and the Bidder represents and guarantees the truthfulness and accuracy thereof:

- a. Our organization has been in business continuously from \_\_\_\_\_.
- b. Our organization has had experience in manufacturing equipment comparable to that required under the proposed contract, a prime manufacturer, for \_\_\_\_ years, as a component manufacturer for \_\_\_\_ years or as an equipment supplier for \_\_\_\_ years.

(include statement of experience for each manufacturer if more than one is proposed.)



#### **PRICING**

**All bid price shall be firm for sixty (60) days from the date of the Bid Opening.**

The Owner reserves the right to reject any or all Proposals, waive irregularities or informalities, or to accept any bid which it determines to be in the best interests of the Town of Department and the Town of Wolfeboro, New Hampshire.

The owner is a municipal agency, and as such, state sales taxes are not applicable.

#### **DELIVERY AND INSTALLATION SCHEDULE**

The equipment and all related accessories will be delivered to the Owner's Operations Facility in Wolfeboro, New Hampshire. The proposed Equipment Delivery Date is **10 weeks** after receipt of order and will be per mutual agreement.

**Manufacturer to submit a fabrication and delivery schedule for each item with Proposal.**

#### **BID SCHEDULE**

(follows)

**Wolfeboro Municipal Electric Department**  
**Contract 918127-03 - WMED W.O. 4614 - Distribution System Equipment - 12.5 kV Conversion Phase 6**  
**Bid Schedule Page 1 of 1**

**A. Single Phase Conventional Pole Mounted Distribution Transformers (single primary bushing)**

Item	Quantity	Rating	Fusing	Primary	Secondary	Arrester	Price	Extended
No.	Req'd	(kVA)		(volts)	(volts)	(kV)	Per Unit	Price
1	1	5	-	4160 grd Y/2400 x 12,470 grd Y/7200	120/240	9		
2	31	10	-	4160 grd Y/2400 x 12,470 grd Y/7200	120/240	9		
3	59	15	-	4160 grd Y/2400 x 12,470 grd Y/7200	120/240	9		
4	42	25	-	4160 grd Y/2400 x 12,470 grd Y/7200	120/240	9		
5	3	37.5	-	4160 grd Y/2400 x 12,470 grd Y/7200	120/240	9		
6	1	50	-	4160 grd Y/2400 x 12,470 grd Y/7200	120/240	9		
<b>Total Part A</b>								

**B. Single Phase Padmounted Transformers, Loop Feed, Dead Front, Internal Fusing**

Item	Quantity	Rating	Fusing	Primary	Secondary	Arrester	Price	Extended
No.	Req'd	(kVA)		(volts)	(volts)	(kV)	Per Unit	Price
7	1	10	internal	4160 grd Y/2400 x 12,470 grd Y/7200	240/120	*		
8	2	25	internal	4160 grd Y/2400 x 12,470 grd Y/7200	240/120	*		
9	2	37.5	internal	4160 grd Y/2400 x 12,470 grd Y/7200	240/120	*		
<b>Total Part B</b>								

\*Elbow surge arrester to be furnished by Owner if req'd

**PROPOSAL**

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The party by whom this Proposal is submitted and by whom the contract will be entered into, in case this

Proposal is accepted is a \_\_\_\_\_ doing business at  
("Corporation", "Partnership", or "Individual")

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
(Street) (City) (State) (Zip)

to which address Notice of Acceptance of Proposal and all other written notices may be mailed or delivered until further written notice is given the Owner.

\_\_\_\_\_  
(Legal Name of Bidding Organization)

By: \_\_\_\_\_  
(Signature of Authorized Person)

\_\_\_\_\_  
(Title)

The undersigned hereby certifies and represents to the Owner that the person signing this Proposal on behalf of the Bidder is authorized to do so.

\_\_\_\_\_  
(Partner of Partnership  
or Official of Corporation)

## PERFORMANCE AND PAYMENT BOND

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### KNOW THAT BY THESE PRESENTS:

That \_\_\_\_\_, as Principal,  
(Bidder)

and \_\_\_\_\_, as Surety,  
(Bonding Company)

a corporation of \_\_\_\_\_, who is licensed to do business in the State of  
New Hampshire, whose principal office is located at \_\_\_\_\_

are firmly bound unto \_\_\_\_\_,  
(Owner)

as Obligee, to fulfill the obligations of the Principal and the Surety under the Contract to which reference  
is hereafter made,

in the amount of \_\_\_\_\_ Dollars (\$\_\_\_\_\_)

for payment whereof Principal and Surety bind themselves, their heirs, executors, administrators,  
successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, Principal has by written Proposal dated \_\_\_\_\_ offered to enter into a

Contract with Obligee for **Distribution Transformers - 12.5 kV Conversion Phase 6** for

Bid Schedule(s) items \_\_\_\_\_  
\_\_\_\_\_ pursuant to the terms and conditions set forth in the

Contract Documents dated \_\_\_\_\_, including all  
Addenda thereto, the engineering provisions of which were prepared by Power Line Models, Inc., which  
Contract, including all modifications to the Contract that may hereafter be made, notice of said  
modifications to the Surety being hereby waived, is by this reference made a part hereof, and which is  
hereinafter referred to as the Contract.

**NOW, THEREFORE**, the condition of this obligation is such that if the Principal shall faithfully perform all provisions of the Contract on his part, and maintain the Obligee and the Obligee's property free and clear of all liens arising out of agreements for labor and material and pay all laborers, mechanics and subcontractors and materialmen, and all persons who shall supply such person or persons of subcontractors or materialmen with provisions and supplies for the carrying on of such work, and indemnify and save harmless the Obligee from all loss, cost or damage which it may suffer by reason of the failure to do any of the foregoing, then this obligation shall be void; otherwise, it shall remain in full force and effect.

All persons who have furnished labor, materials or supplies for use in and about the work provided for in the Contract shall have a direct right of action under this bond, subject to the Owner's priority.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
(Surety)

\_\_\_\_\_  
(Principal)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Title)

## AGREEMENT

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**THIS CONTRACT** is made and entered into by and between the Owner and the Bidder whose names are subscribed hereto.

**WHEREAS:** The Owner has invited Proposals, received and analyzed said Proposals and duly given Notice of Acceptance of Proposal to the Bidder as set forth in detail in the Contract Documents, all of which Contract Documents are made a part hereof and which constitute the whole Contract between the Owner and the Bidder, and

**WHEREAS:** The Bidder has offered in its Proposal to furnish the equipment and materials required by one or more of the Bid Schedule(s) items which are part of its Proposal.

**NOW, THEREFORE:** It is hereby agreed that:

(a) The Bidder shall furnish all equipment and materials, pay all costs, and perform all requirements of this Contract for **Contract PLM No: 918127-03, WED W.O. 4614** Bid Schedule items \_\_\_\_\_ in the manner specified in the Contract Documents, and

(b) if the Proposal calls for a single Lump Sum price(s) in the Bid Schedule(s) items set forth in (a) above, the Owner shall pay to the Bidder a Total Contract Amount of \_\_\_\_\_ /100 Dollars (\_\_\_\_\_) , and

(c) if the Proposal calls for unit prices in the Bid Schedule(s) items set forth in (a) above, the Owner shall pay to the Bidder a Total Contract Amount computed from the unit prices in said Bid Schedule(s) items set forth in the Bidder's Proposal and the actual quantities of units furnished. Based upon the unit prices in said Bid Schedule(s) items set forth the Bidder's Proposal and upon the quantities estimated from the Contract Drawings for bidding purposes, the Estimated Total Contract Amount is \_\_\_\_\_ /100 Dollars (\$ \_\_\_\_\_), and

(d) in States where the Owner is required to pay State or local sales or use taxes on the Total Contract Amount and the Bidder is required to receive the said taxes for payment to the State, the amount payable to the Bidder by the Owner shall be the Total Contract Amount as above specified including the amount of the said taxes, if any, and

(e) it is further agreed that the Bidder shall start work immediately after delivery of the Owner's Notice to Proceed and shall complete the construction as set forth in the Construction Schedule, with the Construction Time after said Notice to Proceed set forth in the Special Conditions or the Proposal, whichever is earlier.

## AGREEMENT

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**IN WITNESS WHEREOF**, five (5) identical counterparts of this Contract, each of which shall for all purposes be deemed an original hereof, have been duly executed by the parties hereto.

CONTRACT DOCUMENTS  
REVIEWED AS TO FORM:

\_\_\_\_\_  
Town of Wolfeboro, New Hampshire  
Municipal Electric Department  
(Owner)

The undersigned hereby certifies and represents to the Bidder that the person signing this Contract on behalf of the Owner is authorized to do so.

By \_\_\_\_\_

Title \_\_\_\_\_

By \_\_\_\_\_

Date \_\_\_\_\_

Title \_\_\_\_\_  
Official of Owner

The undersigned hereby certifies and represents to the Owner that the person signing this Contract on behalf of the Bidder is authorized to do so.

\_\_\_\_\_  
(Bidder)

By \_\_\_\_\_

By \_\_\_\_\_

Title \_\_\_\_\_

Title \_\_\_\_\_  
Partner of Partnership  
or Official of Corporation

Date \_\_\_\_\_

Final Distribution (Fully Executed Document in Electronic Format)

Owner  
Bidder  
Engineer

**DISTRIBUTION TRANSFORMERS  
12.5 KV CONVERSION PHASE 6**

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**SECTION IV  
TECHNICAL SPECIFICATION  
MARCH 2021**

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**A. GENERAL**

Portions of the technical specifications may utilize the Construction Specifications Institute (CSI) 16 division format and are written in imperative and streamlined form. The imperative language is directed to Manufacturer unless specifically noted otherwise. The words "shall be" will be included by inference where a colon (:) is used within sentences or phrases in sections within these Divisions.

**B. MATERIALS AND WORKMANSHIP**

All materials shall be new and of high quality which will yield long life and reliable operation. All equipment shall be modern in design and shall not have been in prior service except as required by factory tests. Workmanship shall be of high quality in every detail.

**C. VARIATIONS FROM REQUIREMENTS AND SPECIFICATIONS**

No change, variation or deviation from the specifications shall be made except by written order of the Wolfeboro Municipal Electric Department (WMED) or its designated representative. Should the manufacturer find, at any time during the progress of the work, that in his opinion, existing conditions demand, make desirable or beneficial a modification in requirements covering any particular item or items, he shall promptly report such matters to WMED for their decision and instructions.

**D. STANDARDS**

The latest revision of the standards of ANSI, NEMA, IEEE, AISC, ASTM, and ASME shall be met in design, testing and manufacture of the equipment covered by this specification.



## **SECTION 01 33 23**

### **SHOP DRAWINGS, PRODUCT DATA AND SAMPLES**

#### **PART 1 – GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Presentation
- B. Submittal Requirements - General
- C. Submittal Schedule
- D. Drawing and Document Review

##### **1.02 PRESENTATION**

- A. Present in a clear and thorough manner.
- B. Identify field dimensions, show relation to adjacent or critical features.
- C. Use printed sheet size of not less than 8-1/2" by 11" and not more than 24" by 36". Manufacturer's drawings shall uniformly be 24" by 36" inches to the maximum extent practical.
- D. The primary text on all drawings and instructional data shall be provided in the English language.
- E. All dimensions and measurements shall be provided in English units. Metric equivalents may also be shown on the drawings.
- F. Graphic scales, symbol legends, revision blocks, etc. shall be provided.

##### **1.03 SUBMITTAL REQUIREMENTS - GENERAL**

- A. Make submittals as required by the individual specification sections.
- B. Coordinate and check all submittals and shop drawings furnished by suppliers and sub-manufacturers for accuracy and conformance with requirements of the Contract Documents.
- C. Format: PDF
- D. Drawings shall be provided to Owner and Engineer in electronic format, by email attachment.
  - 1. Owner – Barry Muccio ([meddirector@wolfeboronh.us](mailto:meddirector@wolfeboronh.us))
  - 2. Engineer – Allan Rice ([arice@plmnet.com](mailto:arice@plmnet.com))

- E. Types of Drawings and Documents for Review - Drawings to be submitted for review may include, and may not be limited to, the following:
  - 1. Equipment Outline
  - 2. Nameplates
  - 3. Component Details
  - 4. Factory Test Data
- F. "Off-the-Shelf" Review Drawings
  - 1. "Off-the-Shelf" type drawings from subcontractors shall be accepted only if they have been certified for the apparatus herein specified. Preliminary drawings shown rough outline or proposed schematic may be submitted for information, but will not be accepted in lieu of detailed review drawings. All preliminary drawings shall be clearly marked as such.
  - 2. Standard "off-the-shelf" drawings shall be accepted only if each drawing is identified with an OWNER order number and an OWNER's name. This type of drawing may be 8-1/2" x 11" or 11" x 17" (printed size).
  - 3. When one standard drawing covers more than one type of an item, the MANUFACTURER shall clearly indicate on the drawing which type applies.

#### **1.04 SUBMITTAL SCHEDULE**

- A. Provide a submittal schedule within fourteen (14) calendar days after Contract Award for approval.
- B. Schedule submittals to expedite the project.
- C. Include the following:
  - 1. Description of each submittal.
  - 2. Date by which each submittal will be delivered.
  - 3. Date by which each submittal must be approved to maintain project schedule.
  - 4. Relevant Specification Section reference.
- D. Allow reasonable time for Engineer and Owner to review shop drawings and for possible resubmittal.

#### **1.05 ENGINEER'S DRAWING REVIEW**

- A. Intent of Review - Owner and Engineer will review Manufacturer's drawings for compliance with Specification requirements and information content. Drawings submitted for review shall be applicable in all respects to the apparatus specified and shall be complete in construction detail and refinement for the specific intent.
- B. Review will be completed within a reasonable time after receipt of each submittal in proper sequence, and will be returned to Manufacturer with one of the following markings:

1. "Approved" indicates submittal has been reviewed and appears to be in conformance with requirements of the Contract Documents. Manufacturer may proceed with construction shown on the submittal.
  2. "Make Corrections Noted" indicates submittal appears to be in conformance with requirements of the Contract Documents. Manufacturer shall incorporate the corrections noted and may proceed with construction shown on the submittal. No resubmittal is required.
  3. "Amend-resubmit" indicates submittal does not appear to be in conformance with the Contract Documents. Comments will be noted on the submittal or in a separate letter. Manufacturer shall recheck, make necessary revisions and resubmit.
  4. "Submittal not required - no action taken" indicates that the submittal is not called for by the Contract Documents and that no action was taken on the submittal.
- C. Review for conformance with design concepts and compliance with Specifications does not require Owner or Engineer to review features solely related to construction or all dimensions, quantities and other data. Manufacturer shall not rely on Owner's or Engineer's approval as a verification or check of all such items in the submittal or of satisfactory and safe installation and construction. Manufacturer shall verify all fabrication and installation requirements, quantities and dimensions.
- D. The Manufacturer's responsibility for errors and omissions in submittals is not relieved by the Owner's or Engineer's review.
- E. Shop drawing acceptance by the Owner or Engineer shall not be construed as approving departures from the Contract requirements.

#### **1.06 FINAL AS-BUILT DRAWINGS**

- A. Revise all drawings to reflect the as-shipped condition of the equipment.
- B. Submit complete set of as-built drawings prior to delivery of the equipment.
- C. Indicate "As-Built" in the revision block.

#### **PART 2 - PRODUCTS (NOT USED)**

#### **PART 3 - EXECUTION (NOT USED)**

#### **END OF SECTION**

## **SECTION 01 65 00**

### **PRODUCT DELIVERY REQUIREMENTS**

#### **PART 1 – GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Products
- B. Transportation and Handling
- C. Receiving of Products at Project Site

##### **1.02 PRODUCTS:**

- A. Means new material, machinery, components, equipment, fixtures, systems and manufactured units used in Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work.
- B. Provide interchangeable components of the same manufacturer, for similar components.

##### **1.03 TRANSPORTATION AND HANDLING**

- A. The Manufacturer shall clearly label all crates or containers containing hazardous or weather sensitive materials. The international standard warning symbols shall be used on each crate, box, or shipment, in addition to the written descriptive warning.
- B. All equipment shall be suitably packed and protected during shipment. Each shipping unit shall be sealed in a clean, dry condition, with leak-tight shipping covers securely mounted for shipment. All covers to be removed during installation shall be clearly marked.
- C. Ship heavy or bulky equipment in open-top truck to facilitate unloading at Owner's site.
- D. Where appropriate, mount heavy parts on skids or in crates, and box or bundle securely small parts that may be lost. Mark packaged items for ready identification. Arrange Products exceeding 200 pounds in weight so that slings may be properly attached for lifting by crane.
- E. Mark all parts for ease of field assembly.
- F. Provide notices and packing lists required by Contract Documents.
- G. Manufacturer to retain responsibility for any damage to Product until delivery is accepted by Owner.
- H. Adhere to any specific delivery or handling instructions included elsewhere in the contract documents.

## **PART 2 - PRODUCTS (NOT USED)**

## **PART 3 - EXECUTION**

### **3.01 RECEIVING OF PRODUCTS**

- A. Arranged on delivery vehicle to minimize handling of equipment.
- B. Provide one week advance of shipment.

**END OF SECTION**

**WOLFEBORO MUNICIPAL ELECTRIC DEPARTMENT  
PROCUREMENT SPECIFICATION  
PADMOUNT DISTRIBUTION TRANSFORMER  
SINGLE-PHASE, LOOP FEED**

**1. General:** This specification contains requirements for padmount distribution transformers, single-phase, loop feed, oil immersed, self cooled, for use on the WED system. Transformers shall conform to ANSI C57.12.38 and C57.12.28, latest revision, except as specified herein. Provide type 2 arrangement.

**2. Primary Voltages, BIL:** In accordance with the following table:

PRIMARY VOLTAGE	BIL
12.47 Grd Y/7.2 kV x 4.16 Grd Y/2.4 kV	95 kV

**3. Primary Taps:** None required.

**4. Series Multiple Ratio Switch:** Provide series-multiple voltage ratio switch for dual ratio transformers. Series multiple switch to be located in the transformer primary compartment.

**5. Secondary Voltage:** 240/120 volts.

**6. Standard KVA Ratings:** 10, 15, 25, 37.5, 50, 75, 100, 167 @ 65°C rise

**7. Grounding:** Provide grounding strap between X2 bushing and lug on tank wall. Provide ground connector on tank.

**8. Nameplate Markings/Labeling:** In addition to the information specified in ANSI C57.12.00, the nameplate shall contain a PCB statement, the total volume of oil in gallons, and a manufacturer's barcode in accordance with ANSI C57.12.35.

A separate non-PCB label shall be affixed to the transformer tank in the low voltage compartment. The label shall contain white lettering on a blue background, and shall contain the words "NON-PCB" and a statement of the PCB content in PPM.

For dual ratio transformers the manufacturer shall stencil the transformer tank adjacent to the series multiple voltage ratio switch to indicate the voltages associated with each position of that switch.

**9. Primary Bushings:** Provide two externally clamped, externally removable 200A, 15 kV bushing wells with molded shield and externally removable stud. Provide 200A bushing well loadbreak insert for each bushing. Provide standard parking stand to accommodate standard ESNA accessories adjacent to each primary bushing well.

**10. Primary Loop Feed Switch:** Not required.

**11. Secondary Bushings:** Provide three insulated secondary bushings, with copper or aluminum NEMA 4-hole spade terminals per ANSI C57.12.25, Fig. 4a.

**12. Primary Fusing:** Provide Bay-O-Net type fuse assembly with flapper valve and partial range current limiting fuse under oil in series with the transformer primary winding connection. Current limiting fuse shall be inaccessible, and connected on the source side of the Bay-O-Net fuse.

Size Bay-O-Net fuses in accordance with the following table. Size current limiting fuse to properly coordinate

**WOLFEBORO MUNICIPAL ELECTRIC DEPARTMENT  
PROCUREMENT SPECIFICATION  
PADMOUNT DISTRIBUTION TRANSFORMER  
SINGLE-PHASE, LOOP FEED**

with the specified Bay-O-Net fuse. For dual ratio transformers, fuse for lower voltage (2.4 kV) and provide removable tag secured to the Bay-O-Net fuse holder with wire or tie wrap, indicating **"Fused for 2.4 kV Operation"**.

TRANSFORMER KVA	BAY-O-NET FUSE	
	4.16 GRD Y/2.4 kV	12.47 GRD Y/7.2 kV
25	353C10	353C06
50	353C12	353C08
75	353C14	353C08
100	353C14	353C10
167	353C17	353C12

**13. Accessories:** Provide the following accessories and spares with each transformer ordered:

- ▶ One (1) fuse link for 7.2 kV operation with all dual ratio transformers
- ▶ One (1) additional spare fuse link for each primary voltage.
- ▶ MSDS sheets for all items furnished under this specification, including oil used in this transformer.

**14. Core and Coil Assembly:** Core and coil assembly must withstand the mechanical stresses from multiple bolted secondary short circuit events.

**15. Transformer Enclosure:** Enclosure integrity and finish shall be in accordance with ANSI C57.12.28, latest revision. Enclosure shall have formed top to encourage water runoff. Provide removable lifting bolts or lugs. Design cover to hinge upwards to open completely and expose the entire area in front of the transformer tank. Cover shall be removable, but cover hinges shall be captive type such that a pin or latch must be removed in order to fully remove the cover from the transformer. Cover hinges shall not allow the cover to inadvertently drop off when opening. Cover latch assembly shall have captive pentahead bolt and provisions to install one standard padlock (½" minimum hole for shackle).

**16. Enclosure Dimensions:** Transformer size shall be limited to the following dimensions:

Width of base: 36" maximum, 30" minimum clear between flanges in terminal compartment.

Depth of base: 36" minimum, 42" maximum overall depth

**17. Enclosure Finish:** Transformer finish shall be highest quality, as evidenced by exemplary performance under the following standards: ANSI C57.12.28, ASTM B117 1000 hours 5% salt spray corrosion test, ASTM G53 500 hour ultraviolet accelerated weathering test, ASTM D2794 impact test. Color to be Dark Green.

**18. Warning Labels:** Provide danger label in accordance with NEMA Std. No. 260, latest revision. Affix label to inside of compartment, located so as to be readily and clearly visible when an enclosure cover is open.

**19. Life Expectancy:** Transformer shall be designed to have a normal life expectancy of at least 30 - 35 years in utility service.

**20. Efficiency:** Transformer shall meet the efficiency requirements of the latest revision of the Department of Energy's efficiency values, amended efficiency standards for distribution transformers, Part II, 10 CFR Part

**WOLFEBORO MUNICIPAL ELECTRIC DEPARTMENT  
PROCUREMENT SPECIFICATION  
PADMOUNT DISTRIBUTION TRANSFORMER  
SINGLE-PHASE, LOOP FEED**

431, Energy Conservation Program: Energy Conservation Standard for Distribution Transformers: Final Rule.



**WOLFEBORO MUNICIPAL ELECTRIC DEPARTMENT  
PROCUREMENT SPECIFICATION  
POLEMOUNT DISTRIBUTION TRANSFORMERS  
SINGLE PHASE CONVENTIONAL**

- 1. General:** This specification contains requirements for pole mounted distribution transformers, single phase, conventional, 60 hz., oil immersed, self-cooled, for use on the WMED distribution system.  
Transformers shall conform to ANSI C57.12.20, latest revision, subject to additions or modifications as specified herein.  
Transformers may be used in combination for three phase installations.  
**Refer to Bid Schedule or other supporting documents for quantities of specific kVA and voltage ratings to be furnished.**
- 2. Weights, Dimensions and Mounting:** Submit outline showing weights and dimensions with bid. Provide single mounting position. Height of tank from top mounting bracket to bottom of tank not to exceed 38 inches.
- 3. Primary Voltages, BIL and Surge Arresters:** In accordance with the following table:

PRIMARY VOLTAGE	BIL	SURGE ARRESTER	
		DUTY CYCLE	MCOV
12.47 Grd Y/7.2 kV (single primary bushing, 1 surge arrester, suitable for phase to ground connection on a 12.47 kV four wire primary system)	95 kV	9 kV	7.65 kV
12.47 Grd Y/7.2 kV x 4.16 Grd Y/2.4 kV (dual primary voltage, single primary bushing, 1 surge arrester, suitable for phase to phase connection on a 12.47 or 4.16 kV four wire primary system)	60 kV x 95 kV	9 kV	7.65 kV
7.2/12.47Y kV x 2.4/4.16Y kV (dual primary voltage, two primary bushings, 1 surge arrester, suitable for ungrounded wye connection on a 12.47 or 4.16 kV four wire primary system)	60 kV x 95 kV	9 kV	7.65 kV

- 4. Primary Taps:** None.
- 5. Series Multiple Ratio Switch:** Provide external series-multiple voltage ratio switch for dual ratio transformers.
- 6. Secondary Voltage:** 120/240 or 480GrdY/277 volts.
- 7. Standard KVA Ratings:** 5, 10, 15, 25, 37.5, 50, 75, 100, 167
- 8. Grounding:** provide grounding strap between X2 bushing (if present) and lug on tank wall. Provide ground connector on tank for connection to pole grounds.
- 9. Nameplate Markings/Labeling:** In addition to the information specified in ANSI C57.12.00, the nameplate shall contain a PCB statement, the total volume of oil in gallons, and a manufacturer's barcode in accordance with ANSI C57.12.35.

**WOLFEBORO MUNICIPAL ELECTRIC DEPARTMENT  
PROCUREMENT SPECIFICATION  
POLEMOUNT DISTRIBUTION TRANSFORMERS  
SINGLE PHASE CONVENTIONAL**

The manufacturer shall stencil the transformer tank in 2" minimum height black numbers with the kVA rating. This stencil shall be approximately 90 degrees around the tank from the secondary bushings.

For dual ratio transformers, the manufacturer shall stencil the transformer tank adjacent to the series multiple voltage ratio switch to indicate the voltages associated with each position of that switch. A warning label or stencil shall also be applied to indicate that the de-energized tap changer must be in the center, nominal voltage position when the series-multiple ratio switch is in the 2.4 kV position.

A separate non-PCB label shall be affixed to the transformer under the kVA stencil, but no closer than 3" above the bottom of the tank. The label shall contain white lettering on a blue background, and shall contain the words "NON-PCB" and a statement of the PCB content in PPM.

**10. Primary Bushings:**

For transformers rated 12.47 Grd Y/7.2 kV and 12.47 Grd Y/7.2 kV x 4.16 Grd Y/2.4 kV, provide one bushing, 95 kV BIL, top cover mounted, with compatible wildlife protector (Central Moloney 703803 or 703804 series with 70380450 handwheel or equal).

For transformers rated 7.2/12.47Y kV x 2.4/4.16Y kV, provide two bushings, 95 kV BIL, top cover mounted, with compatible wildlife protector (Central Moloney 703803 or 703804 series with 70380450 handwheel or equal).

**11. Secondary Bushings:** For transformers rated 100 kVA and below, provide standard eye-bolt type secondary bushings in accordance with ANSI C57.12.20.

**12. Surge Arresters:** Provide one direct connected 9 kV (7.65 kV MCOV) polymer housed MOV heavy duty distribution class surge arrester mounted to the transformer tank adjacent to the H1 bushing with galvanized hardware. Provide insulated copper cable, with eye connector at each end, to connect the surge arrester hot terminal to the transformer bushing. Provide wildlife protector that completely covers all metal parts and disconnect.

**13. Automatic Pressure Relief Device:** Provide automatic pressure relief device to prevent tank rupture in the event of internal explosion (Qualitrol 202 series or equal).

**14. Cover:** Provide removable top cover and/or handhole. Provide gaskets suitable for multiple cover and handhole resealings without distortion of the gasket.

**15. Core and Coil Assembly:** Core and coil assembly must withstand the mechanical stresses from multiple bolted secondary short circuit events.

**16. Color:** Transformer tank shall be gray in color, conforming to 5BG7.0/0.4.

**17. Life Expectancy:** Transformer shall be designed to have a normal life expectancy of at least 30 to 35 years in typical utility service.

**18. MSDS Sheets:** Provide MSDS sheets for all items furnished under this specification, including specific transformer oil used in this transformer.

**19. Efficiency:** Transformers shall meet the requirements of the latest revision of the Department of Energy's efficiency values, 10 CFR Part 431, Subpart K-Distribution Transformers.