BHMG Engineers, Inc.

9735 Landmark Parkway Drive
Suite 110A
St. Louis, MO 63127

Blake Toliver

January 8, 2024

Electric Department / Rochelle Municipal Utilities
E: btoliver@rmu.net
P: (815) 901-5257

Ref: 2201K001 – Rte. 38 Substation
Transformer Purchase Recommendation

Dear Mr. Blake Toliver:

The City received and opened bids on December 05, 2023 for the power transformer purchase, a part of the Rte. 38 Substation project. A total of two (2) bids were received and have been reviewed for completeness and ability to meet specification requirements.

Bidder	Total Bid Price	Lead Time
Virginia	$1,561,344.00	60 weeks
WEG	$2,047,300.00	56 weeks

The bids were evaluated on a 20-year life cycle, considering purchase price and cost to operate. The Virginia unit was the most economical option. However, when selecting a long life product, price is not always the only thing to consider. The industry quality recognition of the units aligns with the price, with WEG being the best. That said, we have done many projects with Virginia. VTC has a good list of reference completed projects. The company appears to be in good standing and employs certified and trained craftsmen.

The low bid is over the Engineer's estimate of $1,500,000 for the contract. Unfortunately, electric utility materials continue to increase rapidly. The city does need to expand their system with this Rte. 38 substation, and we do not see pricing come down anytime soon. Therefore, it is the recommendation of BHMG to award the project to Virginia Transformer on a price basis, or WEG if based on industry recognition and assumed quality, for the supply of the transformer.

Should you have any questions concerning the proposals or the project, please do not hesitate to contact us.

Sincerely,

Chris Couch
Assistant Project Manager

Enclosures: Proposal Evaluation, Bid Tab, Quotes

Transformer Bid Evaluation

2201 - Rochelle Rte 38 Substation Transformer

#	Company	Proposal ($)	Manufacturer Location	Leadtime (weeks)	No Load Losses (kW)	50% Load Losses (kW)	Full Load Losses (kW)	20 Yr Loss Estimate 0.1 $/kwh	Total Price ($$)	Estimated Weight (lbs)	Impedance (%IZ)	Warranty (years)	Tap Changer (manufacturer)	Notes
1	Virginia Transformer	$ 1,561,344.00		60	15.50	35.00	70.00	$1,191,360.00	$2,752,704.00	122,200	7.5	5	Reinhausen	Core and coil only warranty after 12 months
2	WEG	$ 2,047,300.00	Washington, MO	56	14.38	32.00	64.80	$1,099,905.60	$3,147,205.60	126,670	7.5	5	Reinhausen	

BHMG

2201 K001 Rochelle Municipal Utilities - Rte. 38 Substation - Transformer Purchase

BIDDERS / PROPOSALS	Virginia Transformer *Power Equipment Sales Co.*	WEG *Moehn Electric Sales*		
BID SECURITY	5%	5%		
Furnish the Goods & Special Services for the Equipment Purchase	+ 25,000 - 1,520,500 -	2,047,300 -		
PROJECT COMPLETION TIME - PROPOSAL 1	385 - 420 Days	140 WKS		

✓	Registered Bidder	✓	Registered Bidder				Registered Bidder
X	Non-Collusion Affidavit	X	Non-Collusion Affidavit		Non-Collusion Affidavit		Non-Collusion Affidavit
X	Bid Bond	X	Bid Bond		Bid Bond		Bid Bond
X	Bid Form	X	Bid Form		Bid Form		Bid Form
	Any other documents as required by the specification		Any other documents as required by the specificaton		Any other documents as required by the specificaton		Any other documents as required by the specificaton

BHMG ENGINEERS, INC.
Consulting Engineers
9735 Landmark Parkway Dr., Suite 110A
St. Louis, MO 63127

Rochelle Municipal Utilities
Rte. 38 Substation
Transformer Purchase
Bids Received 12/5/23, 2:00 p.m.

Bid Opening Witnesses:

City: _____

BHMG: Laura Stacker

CHUBB

Surety
202B Halls Mill Road, PO Box 1650
Whitehouse Station, NJ 08889-1650

O +908.903.3485
F +908.903.3656

Federal Insurance Company

AIA Document A310™ - 2010 Bid Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR
(Name, legal status and address):
WEG Transformers USA LLC
6349 Avantha Drive
Washington, MO 63090

OWNER
(Name, legal status and address):
City of Rochelle, John Bearrows, Mayor
420 North 6th Street
Rochelle, IL 61068

BOND AMOUNT
5% Five Percent of Amount Bid

SURETY
(Name, legal status and principal place of business):
Federal Insurance Company
202B Halls Mill Rd., PO Box 1650
Whitehouse Station, NJ 08889-1650

PROJECT
(Name, location or address, and Project number, if any)
Rte. 38 Substation Transformer Purchase, Reference Specification 2201 K001

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this 1st day of December, 2023

WEG Transformers USA LLC

(Witness)

(Principal)

By: Andrew Kassebaum

(Title)

(Corporate Seal)

Federal Insurance Company

Tiffany Zahn

(Witness) Tiffany Zahn

By: R. H. M.

(Attorney-in-Fact) Richard H. Mitchell

Printed in cooperation with the American Institute of Architects (AIA) by Chubb. The language in this document conforms to the language used in ***AIA Document A310 ™ - 2010.***

CHUBB

Power of Attorney

Federal Insurance Company | Vigilant Insurance Company | Pacific Indemnity Company
Westchester Fire Insurance Company | ACE American Insurance Company

Know All by These Presents, that **FEDERAL INSURANCE COMPANY**, an Indiana corporation, **VIGILANT INSURANCE COMPANY**, a New York corporation, **PACIFIC INDEMNITY COMPANY**, a Wisconsin corporation, **WESTCHESTER FIRE INSURANCE COMPANY** and **ACE AMERICAN INSURANCE COMPANY** corporations of the Commonwealth of Pennsylvania, do each hereby constitute and appoint Anna Childress, Mark W. Edwards II, Alisa B. Ferris, Robert R. Freel, Richard H. Mitchell, William M. Smith and Jeffrey M. Wilson of Birmingham, Alabama; Robert Read Davis of Atlanta, Georgia; Richard E. Daniels of Pensacola, Florida and Robert M. Verdin of Metairie, Louisiana ----------

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said **FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY** and **ACE AMERICAN INSURANCE COMPANY** have each executed and attested these presents and affixed their corporate seals on this **25th** day of **April, 2023.**

Dawn M. Chloros

Dawn M. Chloros, Assistant Secretary

Stephen M Haney

Stephen M Haney, Vice President

STATE OF NEW JERSEY
County of Hunterdon ss.

On this **25th** day of **April 2023** before me, a Notary Public of New Jersey, personally came Dawn M. Chloros and Stephen M. Haney, to me known to be Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY, the companies which executed the foregoing Power of Attorney, and the said Dawn M. Chloros and Stephen M. Haney, being by me duly sworn, severally and each for herself and himself did depose and say that they are Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY and know the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that their signatures as such officers were duly affixed and subscribed by like authority.

Notarial Seal

ALBERT CONTURSI NOTARY PUBLIC NEW JERSEY

Albert Contursi
NOTARY PUBLIC OF NEW JERSEY
No 50202369
Commission Expires August 22, 2027

Albert Contursi
Notary Public

CERTIFICATION

Resolutions adopted by the Boards of Directors of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY on August 30, 2016; WESTCHESTER FIRE INSURANCE COMPANY on December 11, 2006; and ACE AMERICAN INSURANCE COMPANY on March 20, 2009:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into in the ordinary course of business (each a "Written Commitment"):

(1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.

(2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such person's written appointment as such attorney-in-fact.

(3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(4) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing to any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.

(5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I, Dawn M. Chloros, Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY (the "Companies") do hereby certify that

(i) the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
(ii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station, NJ, this December 1, 2023

Dawn M. Chloros

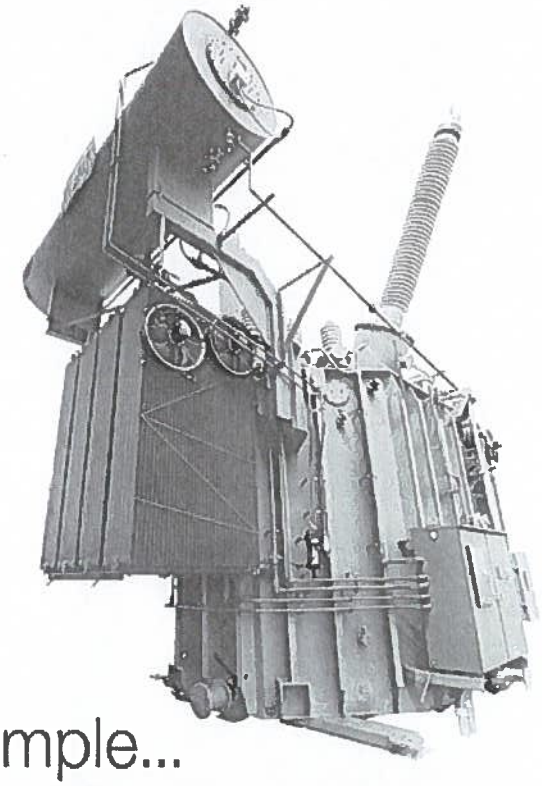
Dawn M. Chloros, Assistant Secretary

FEDERAL INSURANCE COMPANY INDIANA

IN THE EVENT YOU WISH TO VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT:
Telephone (908) 903- 3493 Fax (908) 903- 3656 e-mail: surety@chubb.com

TRANSFORMERS USA

Proposal



Simple...

WEG WILL

- Make it easy to do business
- Handle complex specifications
- Manage the complete project
- Provide short cycle deliveries
- Manufacture the most reliable transformer
- Provide support during the entire life of your transformer

Transformers • Autotransformers • Arc Furnace • Rectifiers • Unit Substation Cast Coil • Field Service • Logistics • Project Management

TRANSFORMERS USA

December 4, 2023

To: Rochelle Municipal Utilities

c.c.: Moehn Electrical Sales

SUB: **1 x 20/37.33 MVA, 34.5/13.8 kV LTC Transformer**
YOUR REF: **Rte. 38 Substation Transformer Purchase**
OUR REF: WTU23-862

Dear Sir or Madam,

With reference to the above mentioned inquiry, we are pleased to present our detailed commercial and technical proposal and confirm that our proposal is based on the requirements specified by the above mentioned RFP.

Our proposal consists in the following sections:

A- Price sheets
B- Completed Customer forms
C- Project Specific T&Cs
D- Price Adjustment Methodology
E- ANSI Data Sheets
F- Comments/Deviations on Specifications
G- Standard T&C's

Please refer to sections C and F for additional information and assumptions made regarding this offer.

We hope you will find our offer in line with your requirements. If you have any questions or need additional information or clarification please do not hesitate to contact our representative (see details under cc:) or us directly (Andrew Kassebaum) at tel.: (636) 239-9388, fax: (636) 239-9398, E-mail: akassebaum@weg.net.

Thank you and assuring you of our best services. Sincerely yours,

WEG Transformers USA

Andrew Kassebaum
Quotation Engineer
Tel.: (636) 239-9388
Fax: (636) 239-9398
E-Mail: akassebaum@weg.net

Alex Crews
Product & Sales Manager
Tel.: (636) 239-9340
Fax: (636) 239-9398
E-Mail: acrews@weg.net

TRANSFORMERS USA

STANDARD PRICING OF EQUIPMENT

All below prices are in USD
No Taxes are included in these prices.

Item	Description	Qty.	Unit Price	Total Price
1	20/26.67/33.33//22.4/29.87/37.33 MVA, 55/65C rise – 34.5/13.8 kV,Wye-Wye-Delta three winding 60 Hz, ZH-X=7.5% (20 MVA base) with HV DETC and LV LTC along with accessories.	1	1,972,300	1,972,300
	Freight for item 1		25,000	25,000
	Offloading for item 1		15,000	15,000
	Service for item 1		35,000	35,000
	Total for item 1		2,047,300	2,047,300

The prices above will have their major materials adjusted per our attached methodology during the course of the order. We hope you will find our offer in line with your requirements. Should you require any further information, please feel free to contact us.

Andrew Kassebaum
Quotation Engineer
T: +1 636 239 9388
akassebaum@weg.net

Alex Crews
Sales & Marketing Manager WTU
T: +1 636 239 9340
acrews@weg.net

TRANSFORMERS USA

PRICES FOR OPTIONAL EQUIPMENT

All below prices are in USD

Item	Description	Unit	Qty.	Unit Price	Total Price
SPARE PARTS FOR LINEITEMS 1.					
1	High Voltage Phase Bushing with gasket	pcs	1	1,800	1,800
2	Low Voltage Phase Bushing with gasket	pcs	1	2,400	2,400
3	Set of gaskets	set	1	3,000	3,000
	Total for spares				7,200
OPTIONS FOR LINEITEMS 1.					
1	Shock Recorder (if not returned)	pcs	1	2,500	2,500

We hope you will find our offer in line with your requirements. Should you require any further information, please feel free to contact us.

Non-Collusion Affidavit

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

STATE OF Missouri

COUNTY OF Franklin

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

Signed: Andrew Kassebaum

Title: Quotation Engineer

Subscribed and sworn to before me this 4th day of December 20 23

Seal of Notary:

CHERYL A VOSS
NOTARY PUBLIC - NOTARY SEAL
STATE OF MISSOURI
MY COMMISSION EXPIRES APRIL 21, 2027
FRANKLIN COUNTY
COMMISSION #15423040

Notary Public

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

BID FORM

Table of Contents

This Bid is submitted by: WEG Transformers USA

Bid Form

ARTICLE 1 - BID RECIPIENT

1.01 This Bid is submitted to:

City of Rochelle
420 N 6th Street
Rochelle, IL 61068

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into a Contract with Buyer in the form included in the Bidding Documents to furnish the Goods and Special Services as specified or indicated in the Bidding Documents, for the prices and within the times indicated in this Bid, and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 - BIDDER'S ACKNOWLEDGMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Buyer.

ARTICLE 3 - BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, the related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date
none	none
Type text here	

B. Bidder has visited the Point of Destination and site where the Goods are to be installed or Special Services will be provided and become familiar with and is satisfied as to the observable local conditions that may affect cost, progress, or the furnishing of Goods and Special Services, if required to do so by the Bidding Documents, or if, in Bidder's judgment, any local condition may affect cost, progress, or the furnishing of Goods and Special Services.

C. Bidder is familiar with and is satisfied as to all Laws and Regulations in effect as of the date of the Bid that may affect cost, progress, and the furnishing of Goods and Special Services.

D. Bidder has carefully studied, considered, and correlated the information known to Bidder; information commonly known to sellers of similar goods doing business in the locality of the Point of Destination and the site where the Goods will be installed or where Special Services will be provided; information and observations obtained from Bidder's visits, if any, to the Point of Destination and the site where the Goods will be installed or Special Services will be provided; and any reports and drawings identified in the Bidding Documents regarding the Point of Destination and the site where the Goods will be installed or where Special Services will be provided, with respect to the effect of such information, observations, and documents on the cost, progress, and performance of Seller's obligations under the Bidding Documents.

E. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution (if any) thereof by Engineer is acceptable to Bidder.

F. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for furnishing the Goods and Special Services for which this Bid is submitted.

ARTICLE 4 - BIDDER'S CERTIFICATIONS

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.

C. Bidder has not solicited or induced any individual or entity to refrain from bidding.

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "Corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.

2. "Fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Buyer,

(b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Buyer of the benefits of free and open competition.

3. "Collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Buyer, a purpose of which is to establish bid prices at artificial, non-competitive levels.

4. "Coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process.

ARTICLE 5 - BASIS OF BID

5.01 **Proposal No. 1 -** Bidder will furnish the Goods and Special Services in accordance with the Contract Documents, including **Allowance No. 1** as stipulated in the documents for required scope changes, for the following price(s):

#	Size (mva)	Primary Voltage	Secondary Voltage	Price per Unit
1.)	20/26.66/37.33	34.5kV Wye	13.8kV Wye	2,047,300

Lump Sum Total Bid Price for Proposal No. 1 including allowance	**$** 2,047,300

SCHEDULE GUARANTEES

Drawing Submittal: 14-16 Calender Weeks ~~Calendar days~~ from ARO
Assembly Complete: 136 Calender Weeks ~~Calendar days~~ from ARO
Factory Testing Complete: 138 Calender Weeks ~~Calendar days~~ from ARO
Delivery: 140 Calender Weeks ~~Calendar days~~ from ARO

EQUIPMENT DETAILS

Manufacturer: WEG Transformers USA
Location: Washington, Missouri
Core and Coil Weight: 51742 lbs.
LTC Weight: lbs.
Liquid Weight: 37298 lbs.
Total Weight: 126670 lbs.

PERFORMANCE GUARANTEES

Guaranteed minimum efficiency at rated load at rated voltage and on rated voltage taps:

25% OA Load: 99.63
50% OA Load: 99.7
100% OA Load 99.66

Guaranteed maximum losses at rated load at rated voltage and on rated voltage taps:

No Load (core):	14.38	kW
25% OA Load (windings):		kW
50% OA Load (windings):		kW
100% OA Load (windings):	64.8	kW
(Includes all auxiliaries)		

5.02 **Allowances**

A. General

1. Allowances as set forth in the specifications are to be used as compensation for items as set forth in this section.

B. Allowances

1. Use the allowances only as authorized for OWNER purposes and only by an approved allowance disbursement form that indicates the amount to be charged to the respective amount.

2. At substantial completion of the work, credit unused amounts remaining in the allowances to the owner by change order.

C. Allowance Disbursement

1. Contractor/vendor shall submit a request for allowance disbursement. Include all substantiating and/or required data along with the request.

2. Once the owner has accepted the disbursement, the Engineer will sign the allowance disbursement form.

D. Schedule of Allowances

1. The following allowances shall be included in the base bid.

2. Allowance No. 1 – include the stipulated sum of **$25,000.00** for required scope change in the project.

5.03 It is understood and agreed by the undersigned that the Municipal Utility reserves the unrestricted privilege to reject the foregoing proposal indicated above and which the Municipality may consider excessive or unreasonable; to accept such proposal which it may consider fair and reasonable.

The lump sum of the proposal shall be the basis for establishing the amount of the performance bond and for comparison of bids.

The above delivery dates and times are to be filled in by the bidder before

submitting his proposal.

ARTICLE 6 - TIME OF COMPLETION

6.01 Bidder agrees that the work will be substantially complete on or before date specified in 5.01 and will be completed and ready for final payment in accordance with Paragraph 14.07.B of the General Conditions on or before 30 days after date specified in 5.01.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 - ATTACHMENTS TO THIS BID

7.01 The following documents are attached to and made a condition of this Bid:

A. List of Proposed Major Suppliers

B. Affidavit of Non-Collusion

C. List of Project References

D. Bidder's Qualifications.

ARTICLE 8 - DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders and the General Conditions.

ARTICLE 9 - BID SUBMITTAL

9.01 This Bid submitted by:

If Bidder is:

A Corporation

Corporation Name: _____

State of Incorporation: _____

Type: _____
(General Business, Professional, Service, Other)

By: _____
(Signature – attach evidence of authority to sign)

Name: *(typed or printed)* _____

Title: _____

(Corporate Seal)

Attest: _____

(Signature of Corporate Secretary)

Business Address: _____

_____

Phone: _____

Email Address: _____

A Limited Liability Company (LLC)

LLC Name: WEG Transformers USA LLC

State in which organized: Georgia

By: Andrew Kassebaum

(Signature – attach evidence of authority to sign)

Name: *(typed or printed)* Andrew Kassebaum

Business Address: 6350 Weg Drive,

Washington, Missouri 63090

Phone: 636-239-9388

Email: akassebaum@weg.net

TRANSFORMERS USA

WEG TRANSFORMERS USA – SPECIFIC T&Cs

1. SCOPE

Our offer includes design, manufacture, inspection and testing at the noted Works, packing for shipment and delivery FOB Destination, unloaded.

The transformers proposed are:

Line Item	Description	Qty.	Plant
1	20/26.67/33.33//22.4/29.87/37.33 MVA, 55/65C rise – 34.5/13.8 kV,Wye-Wye-Delta three winding 60 Hz, ZH-X=7.5% (20 MVA base) with HV DETC and LV LTC along with	1	MO,USA

The proposed transformers are proposed in accordance to the latest ANSI -IEEE C57.12.00 standards and this including oil for first filling as per specification. A listing of all applicable standards is available upon request.

2. VALIDITY:

Our proposal will remain valid until December 30, 2023 and for the mutually agreed contract delivery.

Before acceptance of an order, we reserve the right to subject the buyer and/or end-user to a credit check. Changes in credit rate of the buyer may also trigger changes in the payment schedule.

3. DELIVERY:

Our standard delivery would be per the below schedule:

Line Item	Description	Weeks ARO (unit 1)	Subsequent Units
1	20/26.67/33.33//22.4/29.87/37.33 MVA, 55/65C rise – 34.5/13.8 kV,Wye-Wye-Delta three winding 60 Hz, ZH-X=7.5% (20 MVA base) with HV DETC and LV LTC along with accessories	130-140	N/A

We can accept LD's for late deliveries beyond this term, for an amount of 750 per day, with a maximum of 5% of the contractual equipment value. See also our general terms and conditions.
The Purchaser shall be entitled to liquidated damages under the following conditions:

1) Liquidated damages have been mutually agreed and have been incorporated in the final contract with clear definition of triggering conditions and limitations
2) Limited to the LDs resulted from conditions that are under Supplier's control. For example, delayed delivery due to the Purchaser's site not being ready shall be excluded from the LD

All WEG transformers are shipped with shockrecorders. WEG does not charge its customers for the shockrecorders if they are returned to WEG within 1 month of delivery. Shock recorders can be returned free of charge. Customers that like to keep their shock recorders can purchase them for 2,500 USD each.

4. TAXES & TARRIFS

Our prices do not include: Federal, State or local sales, use, excise or any other taxes and fees related to the sale of products and services performed under the eventual contract. Our prices do not include any import tarrifs from our Mexico Plants.

5. PAYMENT TERMS

Although we are willing to discuss alternate payment terms should you desire so, our standard payment terms would be:

Item	Milestone	%
1	at time of placing the order	20
2	at submission of first set of drawing	20
3	at time of completion of core and coil assembly (pre VPD)	40
4	at time of successful testing at our works	10
5	at time of delivery	10

WEG Transformers USA expects payment of 80% before shipment of the transformers.
Note that all invoices are due net 30 days.

Our prices are subject to revision as per WEG price adjustment methodology. The payment following the advice of the revised price will include an adjustment for all progress payments invoiced to date (even if payment has not been made yet).

TRANSFORMERS USA

6. WARRANTY

We have offered our standard warranty of 60/66 months.

WEG requires that the maintenance instructions and intervals as indicated in the product manuals are followed. Maintenance should be executed by a professional maintenance contractor and/or own experienced maintenance personnel from the customer. Reports of such maintenance should be made available to WEG for review and acceptance, to maintain this warranty effective.

7. DRAWING SUBMISSION SCHEDULE

All mechanical and electrical drawings and control and wiring schematics will be submitted as follows:

Line Item	Description	Weeks ARO (unit 1)
1	20/26.67/33.33//22.4/29.87/37.33 MVA, 55/65C rise – 34.5/13.8 kV,Wye-Wye-Delta three winding 60 Hz, ZH-X=7.5% (20 MVA base) with HV DETC and LV LTC along with accessories	14-16

Drawing approval time included in our offered delivery time is assumed to be no more than 2 weeks. In case the approval time is longer, it might cause to the customer additional costs and/or later delivery.

8. MANUFACTURING QUALITY TESTS

All Routine Tests will be carried out as per ANSI / IEEE and per the RFQ.
Type and design tests that are not listed in the above mentioned clause of the RFP, can be performed at an additional cost and may increase the delivery time(s).

To avoid misinterpretation of the specification, we will submit an ITP to the customer for review after receipt of the order.

Any manufacturing quality test performed outside our factory should be performed under the guidance and supervision of WEG at all times, to ensure the validity of the warranty.

9. RECOMMENDED SPARES FOR 5 YEARS OPERATION

We have added a listing of recommended spare parts in this proposal for your convenience.

TRANSFORMERS USA

10. FIELD SERVICE WORK

The following start-up / commissioning parts will be supplied along with the main transformers on a free of charge basis:

Nr	Description	Unit	Qty
1	Set of assembly gaskets	Set	1
2	Touch up Paint for the last coat	Cans	3

The following site activities are quoted as an option:

Item	Activity	Line Items
1	offloading	1
2	assembly: full service	1
3	oil filling: (not needed for items:1)	-
4	testing and commissioning: full service	1

The quoted fields service prices are valid for execution within 2 - 4 weeks after arrival of the transformer to site, during regular working days.

Offloading quoted is by crane, one pick and drop. An area of at least 50 feet or 15.3 meters around the drop-off point must be clear of any obstruction to allow for a safe and quick offloading. It is the customer's responsibility to ensure the pad is approachable within 50 feet or 15.3 meters and the access road to do so from the nearest public road is the responsibility of the Purchaser. Purchaser shall bear all cost for any modifications needed to this access road.

The following units will ship oil filled: line items 1.

Please contact us for additional services like removal, repair of refurbishment of existing transformers and coordination of such activities.

11. SPECIAL TOOLS

No special tools and tackles are offered as the same are not required for the installation, operation and maintenance of the Transformers offered.

General purpose tools required for such purpose are generally available with any good contractor.

TRANSFORMERS USA

12. CANCELLATION CHARGES

The cancellation charges in relation to this project are calculated on the unit's contractual value less any transportation, unloading, or field service costs and are as follows:

Milestone	% of CV
Order Received	20%
Start of Design	30%
Submittal of outline drawing	40%
Order of core/coil materials	50%
Start of order of other materials	60%
Receipt of core/coil materials	70%
Start of Production	80%
Finish Core/Coils	90%
Unit tanked and oil filled	100%

Transportation cancellation charges will be invoiced per actuals as received from the transportation company.
The above table is intended to avoid endless discussion concerning the valuation of a non finished good at time of cancellation of the contract, and will be agreed between parties in lieu of any proof of costs and/or damages sustained by the vender.

In no case an unfinished good will carry a warranty and additional costs for preparing, packing or transportation are excluded from the above table.

13. SUSPENSION CHARGES AND DELAYED SHIPMENT

Suspension is defined as the instruction from the Purchaser to stop all work temporarily on a unit of the contract. Delayed shipment is the case where WEG is allowed to continue the work, but where the delivery to site is postponed by the Purchaser and thus requiring storage of the unit.

When suspension occurs less than 20 weeks prior to the delivery of a unit, and the unit needs to be rescheduled to a later date, the suspension charges in relation to this project are calculated on the unit's contractual value less transportation costs and are up to 30% of the contract value.

These charges apply for rescheduling the works at the convenience of the Purchaser. Once the unit has been tested, any suspension will be treated as a delayed shipment.
For the conditions that apply for delayed shipments, we refer to our standard terms and conditions.

Suspension beyond 6 months may be converted into a cancellation of the contract, and the fee will be the higher of the 30% and the applicable cancellation charge.

TRANSFORMERS USA

14. APPLICABLE TERMS AND CONDITIONS

Although we are willing to negotiate, we have based our proposal on our standard and specific terms and conditions.

We are willing to make changes to better suit all parties' requirements prior to signing an agreement.

PRICE ADJUSTMENT METHODOLOGY

METHODOLOGY

Due to the long lead times currently available, the following major materials will be subject to price adjustment during the course of the order. These components are Copper, Mild Steel, Oil, and Core Steel.

The calculation of the new sale price is based upon the percentage content of the price that each of the transformer component represent in the pricing structure of the product for the design given hereunder. The pricing structure is specific to each Participant's design/specification and is defined in the Key Component Percentage Composition Tables. The following index's will be used:

Copper - AMM Metal Market - COMEX Copper 1M - Copper Grade 1 - XC-HG-FR1M
Steel - AMM Metal Market - Hot Rolled - United States - MB-STE-0184
Oil - Energy Information Administration (EIA) Cushing OK WTI Spot Price FOB - https://www.eia.gov/
Core Steel - Data provided by WEG

Price adjustment will be performed at the start of WEG's production and be an average of the previous 2 weeks. If the change is less than 1% of the sales price, then no adjustment will be made.

The initial indices to be used will be the following from the time of our quotation submittal:

Copper	3.6625	US Dollar per pound
Steel	45.12	US Dollar per cwt
Oil	89.43	US Dollar per barrel
Core Steel	2.27	US Dollar per pound

The change in price for each individual transformer shall be determined as follows.
1- Select the appropriate Percentage Composition Table for each unit.
2- Retrieve commodity data from the source listed in the appropriate Reference Indices table.
3- The price adjustment for each Key Transformer Component shall be calculated according to the following formulas.

$Vi = Pi \times V\%$

$Vf = [\ Vi\ ] \times [\ (If - Ii) / Ii\ ] + Vi$

Where:

Pi = The initial (previous) total price of the subject transformer
Pf = The final (new) total price of the subject transformer
V% = The percent contribution of the component to the total price of the transformer
Vi = The initial (previous) contribution value of the key component
Vf = The final (new) contribution value of the key component
Ii = The initial index number for the adjustment time period
If = The final index number for the adjustment time period

The final contribution values for all key components shall then be summed to arrive at the final total price of the transformer according to the following formulas

$Pf = \Sigma\ Vf$
$Pf = Vf1 + Vf2 + Vf3 + \ldots\ Vfn$

Where:

n = The number of components in the subject transformer

KEY COMPONENT PERCENTAGE TABLES

Description	Copper	Mild Steel	Oil	Core Steel	Other(Firm)
Item 1 - 20/37.33 MVA 3.5/13.8 KV Transformer	5.9%	4.5%	1.3%	6.4%	81.9%

SAMPLE CALCULATIONS

EXAMPLE ONLY

This Example Follows Calculations per "Adjustment Methodology" above.

Initial Sales Price (Pi) = $500,000

Weighting Factors Key Transformer Component	(V%) Component Percentage	(Vi) Component Contribution Value	(Ii) Initial Index Number	(If) Final Index Number	Variance %	Change In Value $	(Vf) Value $
Copper (AMM)	14.10%	$70,500	3.885	4.338	11.66%	$8,220	$78,720
Mild Steel - Hot Rolled (AMM)	17.70%	$88,500	91.2	82.5	-9.54%	-$8,442	$80,058
Mineral Oil (Cushing spot price/$barrel)	2.80%	$14,000	65.65	75.54	15.06%	$2,109	$16,109
Core Steel	14.10%	$70,500	1.60	1.75	9.38%	$6,609	$77,109
All Other (Firm)	51.30%	$256,500	100	100	0.00%	$0	$256,500
Total	100.00%	$500,000				$8,496	(Pf) $508,496

% Increase:	1.70%

Reference Number:	WTU23-862	**Item No.:**	**Customer:**	Rochell Muni	**Inquiry:**
ANSI Standards:	C57.12.00 - 2015		C57.12.10 - 2010	C57.12.90 - 2015	**Date:** 12/4/23

RATINGS

ANSI Class I Power Transformer — **YNyn0+d**

Type:	Station Type	Cooling Class		H Winding		X Winding		Y Winding	
Phase:	3	Avg Winding Rise		34.5	kV	13.80	kV	5.116	kV
Frequency:	60 Hz	ONAN	55	20	MVA	20	MVA	Buried	MVA
Temp. Rise:	55/65 Deg C	ONAN	65	22.4	MVA	22.4	MVA		MVA
Cooling Class	ONAN/ONAF1/ONAF2	ONAF1	65	29.865	MVA	29.865	MVA		MVA
Insulating Liquid:	Mineral Oil Type II	ONAF2	65	37.33	MVA	37.33	MVA		MVA

TAP RANGE

H Winding	+5% to -5% in steps of 2.5% with DETC
X Winding	+/-10% in steps of 0.625% with LTC

CONNECTIONS FOR OPERATION

Transformers In Bank	To Transformer From	Phase	Connected	To	Phase	Connected
1	34.5	3	Wye	13.8	3	Wye
Neutral terminal of	LV	winding to be grounded		Solidly		

INSULATION LEVELS

Items	Nominal System Voltage (kV)	Basis Lightning Impulse Insulation Level (BIL) (kV Crest) Windings	Bushings	For Class I Transformers Low Frequency Test Voltages Applied Voltage (kVrms)	Induced Voltage Test Level
H-line	34.5	200	200	NA	2 X Rated Voltage
H-neutral	NA	NA	NA	NA	
X-line	15	110	110	34	
X-neutral	15.0	110	110	34	
Y-Line	8.7	75	NA	26	

PERFORMANCE DATA Based on 75 deg C Reference Temperature and 20 MVA in nominal tap position.

Excitation Voltage %	Exciting Current %	No Load kW	Load kW	Total kW	Power Factor	Percent Regulation	Percent Efficiency at 1/4 Load	1/2 Load	3/4 Load	Full Load
100%	0.225	14.38	64.80	79.18	1.00	0.60	99.63	99.70	99.66	99.61
110%	0.90	22.00			0.80	4.92	99.54	99.62	99.58	99.51

PERFORMANCE DATA Based on 85 deg C Reference Temperature and 37.33 MVA in nominal tap position.

Excitation Voltage %	Exciting Current %	No Load kW	Load kW	Total kW	Power Factor	Percent Regulation	Percent Efficiency at 1/4 Load	1/2 Load	3/4 Load	Full Load
100%	0.12	14.38	232.00	246.38	1.00	1.60	99.69	99.61	99.49	99.34
105%	0.22	18.00			0.85	8.56	99.64	99.55	99.39	99.23

AUXILIARY LOSSES

Transformer MVA	Class	kW Aux. Loss	
20	ONAN	Approx:	0
37.33	ONAF2	Approx:	2.4

IMPEDANCE VOLTAGE

Between Windings	at MVA	% IZ	% IZ_0
H - X	20	7.50	
H - Y			
X - Y			

SOUND LEVEL NEMA TR1-2013

Class	Sound Pressure		at
ONAN	72	dB (A)	0.3 m
ONAF2	75	dB (A)	2.0 m

Type Current Transformers:

Location	Qty/Phase	Ratio	Accuracy
H1,H2,H3	2	1200:5 MR	C400
H1,H2,H3			
H0			
X1,X2,X3	2	1200:5 MR	C400
X1,X2,X3			
X2 (WTI)	1	1565/5	C100
X0		1200:5 MR	C400

MECHANICAL DATA (Not for construction purposes.)

Dimensions (Approximate)	(Inches)	(mm)
Height	158	(4013)
Width	261	(6629)
Depth	197	(5004)
Height to Tank Cover	158	(4013)
Untanking Height (without slings)	261	(6629)
Weights (Approximate)	(Pounds)	(kg)
Core and Coils (untanking part)	51742	(23470)
Tank and Fittings	37630	(17069)
Liquid 5115 Gallons	37298	(16918)
Total Weight	126670	(57456)
Shipping Weight (heaviest part)	113424	(51448) Oil Filled
	78443	(35581) Gas Filled

Items to be removed for shipment: Refer Below

Rads & Fans

Size of Largest Package

Height	Width	Depth
158	261	142

See our technical remarks and clarifications on the specifications.

Insulation Liquid Preservation :	Sealed tank, with positive press. System	
	H Winding	**X Winding**
Winding Conductor :	Copper	Copper

TRANSFORMERS USA

Comments/Clarifications on Specification
Quote WTU23-862

Specification No.: RTE. 38 Substation Transformer Purchase

Sr. No.	Clause No.	Comments/Clarification
1	2.1.B.7	High Voltage neutral BIL shall be 110KV
2	2.1.B.9	Low Voltage line and neutral BIL shall be 110KV

Our quotation is fully in compliance with the technical specification of the RFQ for all other constructional aspects. See the technical data sheets for guaranteed electrical and mechanical particulars.

Field service Comments:

Sr. No.	Clause No.	Comments/Clarification
1	General	Customer will be responsible to ensure that the area around the transformer will be suitable for any field service activities requested. The unit must be on a suitable pad, equipment must be grounded and enough clearance must be ensured for safely perform the activities. The ground around the transformer must be backfilled, compacted and suitable for safely placement of ladders and operation of cranes and trucks.

TERMS AND CONDITIONS FOR SALE OF TRANSFORMERS

1. General. The terms and conditions contained herein, together with any additional or different terms contained in WEG Proposal, if any, submitted to Purchaser (which Proposal shall control over these terms and conditions to the extent it contains any conflicting terms and conditions) constitute the entire agreement between the parties with respect to this order and supersede all prior communications and agreements. Acceptance by WEG of Purchaser's order, or Purchaser's acceptance of WEG's Proposal is expressly limited to and conditioned upon Purchaser's acceptance of these terms and conditions which may not be changed or waived except in a writing signed by both parties. Any additional, inconsistent or different terms and conditions contained in Purchaser's purchase order or other documents supplied by Purchaser are hereby expressly rejected. Unless the context otherwise requires, the term "Equipment" as used herein includes all equipment, parts, and accessories sold, and all software and application software licensed to Purchaser under this order. Unless the context otherwise indicates, the term "Services" as used herein shall mean labor, supervision and project engineering services provided under this order.

2. Prices, Taxes, Customs Duties.

(a) The price does not include any Federal, state or local property, license, privilege, sales, use, excise, gross receipts, or other like taxes which may now or hereafter be applicable to, measured by, or imposed upon or with respect to the transaction, the Equipment, its sale, its value or its use, or any services performed in connection herewith. Purchaser agrees to pay or reimburse any such taxes which WEG or its suppliers are required to pay or collect. If Purchaser is exempt from the payment of any tax or holds a direct payment permit, Purchaser shall, upon order placement, provide WEG a copy, acceptable to the relevant governmental authorities of any such certificate or permit.

(b) Unless specified to the contrary in writing in the **specific WEG terms and conditions**, WEG's prices herein include customs duties and other importation or exportation fees applicable to sales in North America.

3. Payment.

(a) Unless specified to the contrary in writing by WEG, payment terms are net cash, payable without offset, by wire transfer, in United States Dollars, 30 days from date of invoice.

(b) If, in the judgment of WEG the financial condition of Purchaser at any time prior to delivery does not justify the terms of payment specified, then WEG may require payment in advance, payment security satisfactory to WEG or cancel any outstanding order, whereupon WEG shall be entitled to receive reasonable cancellation charges.

(c) If delivery is delayed by Purchaser, payment shall become due on the date WEG gives written notice of readiness to ship.

(d) Delays in delivery or non-conformities in any installments delivered shall not relieve Purchaser of its obligation to accept and pay for remaining installments.

(e) If Purchaser does not pay an invoice when due, Purchaser shall pay, in addition to the overdue payment, a late charge equal to the lesser of 1.5 % per month or the highest applicable rate allowed by law on all such overdue amounts plus WEG's attorneys' fees and court costs incurred in connection with collection.

4. Changes.

(a) Any changes requested by Purchaser affecting the ordered scope of work must be accepted by WEG and resulting adjustments to affected provisions including price, schedule, and guarantees, mutually agreed in writing prior to implementation of the change.

(b) WEG may, at its expense, make such changes in the Equipment or Services as it deems necessary, in its sole discretion, to meet any performance guarantees provided for in the Proposal. If Purchaser refuses to approve any such changes, WEG shall be relieved of its obligations to meet such guarantees to the extent to which WEG may be affected by such refusal.

5. Delivery, Title and Risk of Loss.

(a) Equipment delivered in the continental United States or Canada is delivered Delivery Duty Paid (DDP)- common carrier delivery point nearest to named destination. All shipping terms are Incoterms 2017 unless otherwise indicated in writing in the **specific terms and conditions**.

(b) Where the delivery of Equipment is delayed by Purchaser or by Force Majeure, WEG may deliver the equipment by moving it to storage for the account of Purchaser.

(c) Purchaser shall be responsible for providing free and clear access for WEG to deliver Equipment to, and perform field assembly and testing at, named destination. Clear access includes appropriate roads to transport Equipment and cranes alongside the transformer pad with clearance to offload, assemble, and test Equipment free from obstructions, structures, energized lines, or other equipment. Any additional access costs shall be the responsibility of Purchaser.

(d) Shipping and delivery dates are contingent upon Purchaser's timely approvals and delivery by Purchaser of any documentation required for WEG's performance hereunder. Claims for shortages or other errors in delivery must be made in writing to WEG within ten (10) days of delivery.

(e) Unless specified to the contrary in writing in the **specific WEG terms and conditions**, title to and risk of loss of the Equipment shall pass upon delivery.

6. Inspection, Testing and Acceptance.

(a) Any inspections by Purchaser of Equipment on WEG's premises shall be scheduled in advance and during normal working hours.

(b) When factory acceptance testing is included in the Agreement, WEG shall notify Purchaser when WEG will conduct a standard acceptance test for Purchaser prior to shipment. Unless Purchaser states specific objections in writing within ten (10) days after completion of the test, completion of the acceptance test constitutes Purchaser's factory acceptance of the Equipment and authorizes shipment.

(c) When on-site acceptance testing is included in the Agreement, a standard WEG on-site acceptance test will be performed by WEG's personnel to verify that all Equipment supplied hereunder has arrived at site complete, without physical damage, and is ready for use. Completion of the on-site acceptance test constitutes full and final acceptance of the Equipment.

(d) If Equipment is not accepted by Purchaser within thirty (30) days after arrival of the Equipment at the site, final acceptance shall be deemed made.

7. Warranty.

(a) Unless specified to the contrary in writing in the **specific WEG terms and conditions**, WEG warrants the Equipment (excluding software) against defects in material and workmanship for a period expiring on the earlier of twelve (12) months after installation or eighteen (18) months from date of shipment.

(b) Services. WEG warrants Services against defects in workmanship for a period of ninety (90) days from the date of completion of such Services.

(c) Parts. If applicable to the scope of WEG's work hereunder, WEG further warrants: (i) spare parts and

components sold by WEG against defects in material and workmanship for a period of twelve (12) months after shipment and (ii) repaired or refurbished parts repaired by WEG against defects in material and workmanship for a period of ninety (90) days after shipment, unless repaired pursuant to an original Equipment warranty, in which case the repair is warranted for the time remaining of the original warranty period.

(d) Remedies. Should any failure to conform with the applicable warranties appear during the specified periods under normal and proper use and provided the Equipment has been properly stored, installed, operated and maintained, and if given prompt written notice by Purchaser, WEG shall correct such nonconformity by, at its option, (i) repair or replacement of the nonconforming Equipment or parts thereof, or (ii) refund of the purchase price of the nonconforming Equipment or parts thereof, or (iii) in the case of nonconforming Services, provide equivalent Services at the job site or refund the price therefor. Repairs or replacements pursuant to warranty shall not renew or extend the applicable original warranty period, provided however, that any such repairs or replacement of Equipment or parts thereof shall be warranted for the time remaining of the original warranty period or 30 days, whichever is longer. Purchaser shall be responsible for providing free and clear working access to repair or replace the nonconforming Equipment, including de-energizing and re-energizing the Equipment and any necessary disassembly and re-assembly of other equipment or structures, is for the Purchaser's risk and expense; whereas transportation only to and from repair or factory facility is for the Seller's risk and expense.

(e) These warranties shall not apply to any Equipment or parts thereof which (i) have been improperly repaired or altered; (ii) have been subjected to misuse, negligence or accident; (iii) have been used in a manner contrary to WEG's instructions; (iv) are comprised of materials provided or design stipulated by Purchaser; (v) are used equipment; or (vi) result from normal wear and tear.

(f) THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF QUALITY AND PERFORMANCE, WRITTEN, ORAL OR IMPLIED, AND WEG HEREBY DISCLAIMS ALL OTHER WARRANTIES INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ARISING FROM COURSE OF DEALING OR USAGE OF TRADE.

(g) Correction of nonconformities in the manner and for the period of time provided above shall be Purchaser's sole and exclusive remedy for any failure of WEG to comply with its obligations hereunder.

8. Patent Indemnity.

(a) WEG shall defend at its own expense any actions brought against Purchaser alleging that the Equipment furnished hereunder by WEG or the use of said Equipment to practice any process supplied hereunder by WEG directly infringes any claim of a patent of the United States of America, Canada or Mexico and to pay all damages and costs finally awarded in said actions. WEG shall have the right to settle or otherwise terminate said actions in behalf of Purchaser.

(b) WEG shall have no obligations hereunder and this provision shall not apply: (i) to any other equipment or processes, including Equipment or processes supplied hereunder by WEG which have been modified or combined with other equipment or processes; (ii) to any products or articles manufactured by any equipment or processes; (iii) to any patent issued after the date of this Agreement; and (iv) in the event any of said actions is settled or otherwise terminated without the prior written consent of WEG.

(c) If, in any action hereunder, the Equipment is held to constitute infringement, or the practice of any process using the Equipment is finally enjoined, WEG shall, at its option and its own expense, either procure for Purchaser the right to continue using said Equipment; or, modify or replace it with non-infringing equipment; or, with Purchaser's assistance, modify the process so that it becomes non-infringing; or remove it and refund the purchase price allocable to the infringing equipment. THE FOREGOING PARAGRAPHS STATE THE ENTIRE LIABILITY OF WEG WITH RESPECT TO PATENT INFRINGEMENT.

(d) To the extent that said Equipment or any part thereof is modified by Purchaser, or combined by Purchaser

with equipment or processes not furnished hereunder (except to the extent that WEG is a contributory infringer) or said Equipment or any part thereof is used by Purchaser to perform a process not furnished hereunder by WEG or to produce an article, and by reason of said modification, combination, performance or production, an action is brought against WEG, Purchaser agrees to defend and indemnify WEG in the same manner and to the same extent that WEG indemnifies Purchaser in this "Patent Indemnity" paragraph.

9. Limitation of Liability.

(a) In no event shall WEG, its suppliers or subcontractors be liable for special, indirect, incidental or consequential damages, whether in contract, warranty, tort, negligence, strict liability or otherwise, including, but not limited to, loss of profits or revenue, loss of use of the Equipment or any associated equipment, cost of capital, cost of substitute equipment, facilities or services, downtime costs, delays, or claims of customers of the Purchaser or other third parties for such or other damages. WEG's liability for any claim whether in contract, warranty, negligence, tort, strict liability, or otherwise for any loss or damage arising out of, connected with, or resulting from this Agreement or the performance or breach thereof, shall in no case (except as provided in the section entitled "Patent Indemnity") exceed the purchase price allocable to the Equipment or part thereof or Services which gives rise to the claim. The limitations in this section shall prevail over any conflicting terms, except to the extent that such terms further restrict WEG's liability.

(b) All WEG liability shall end upon expiration of the applicable warranty period, provided that Purchaser may continue to enforce a claim for which it has given notice prior to that date by commencing an action or arbitration, as applicable under this Agreement, before expiration of any statute of limitations or other legal time limitation but in no event later than one year after expiration of such warranty period.

(c) In no event, regardless of cause, shall WEG assume responsibility for or be liable for penalties or penalty clauses of any description or for indemnification of Purchaser or others for costs, damages, or expenses arising out of or related to the Equipment and/or Services.

10. Nuclear Liability. In the event that the Equipment or parts sold hereunder are to be used in a nuclear facility, the Purchaser shall, prior to such use, arrange for insurance or a governmental indemnity protecting WEG against liability and hereby releases and agrees to indemnify WEG and its suppliers from any nuclear damage, which in any manner arises out of a nuclear incident, whether alleged to be due, in whole or in part, to the negligence of WEG or its suppliers.

11. Laws and Regulations. Purchaser has sole responsibility for compliance with all applicable Federal, state and local laws and regulations relating to the operation or use of the Equipment. If Purchaser desires a modification to the order as a result of any change or revision to any law or regulation after the date of the proposal, such modification shall be treated as a change order. Nothing contained herein shall be construed as imposing responsibility or liability upon WEG for the obtaining of any permits, licenses or approvals from any agency required in connection with the supply, erection or operation of the Equipment. WEG's obligations are conditioned upon Purchaser's compliance with all U.S. and other applicable trade control laws and regulations. Purchaser shall not trans-ship, re-export, divert or direct Equipment other than in and to the ultimate country of destination declared by Purchaser and specified as the country of ultimate destination on WEG's invoice.

12. Software License.

(a) If software is furnished as part of the sale made hereunder, Purchaser obtains a limited license to use certain proprietary software identified in WEG's proposal, subject to the following: (i) the software may be used only in conjunction with equipment specified by WEG, (ii) the software is to be kept strictly confidential, (iii) the software shall not be copied, reverse engineered, or modified, (iv) the Purchaser's right to use the software shall become effective upon delivery and shall continue until the related equipment is no longer used by the Purchaser or until otherwise terminated hereunder, and (v) the rights to use the software are non-exclusive, and non-transferable, except with WEG's prior written consent.

(b) Nothing contained in this Agreement shall be deemed to convey any title to or ownership in the software

or the intellectual property contained therein in whole or in part to Purchaser, nor to designate the software a "work made for hire" under the Copyright Act, nor to confer upon any person who is not a named party to this Agreement any right or remedy under or by reason of this Agreement. In the event of termination of this License, Purchaser shall immediately cease using the software and without retaining any copies, notes or excerpts thereof, return to WEG the software and all copies thereof and shall remove all machine readable software from all of Purchaser's storage media.

13. Inventions and Information. Unless otherwise agreed in writing by WEG and Purchaser, all right, title and interest in any inventions, developments, improvements or modifications of or for Equipment and Services shall remain with WEG. Any design, manufacturing drawings or other information submitted to the Purchaser remain the exclusive property of WEG. Purchaser shall not, without WEG's prior written consent, copy or disclose such information to a third party. Such information shall be used solely for the operation or maintenance of the Equipment and not for any other purpose, including the duplication thereof in whole or in part.

14. Force Majeure. WEG shall not be liable for loss, damage, detention, or delay, nor be deemed to be in default from causes beyond its reasonable control including but not limited to acts of war (declared or undeclared) fire, strike, labor difficulties, Acts of God, acts or omissions of any governmental authority or of Purchaser, compliance with government regulations, insurrection or riot, embargo, delays or shortages in transportation or inability to obtain necessary labor, materials, or manufacturing facilities from usual sources or from defects or delays in the performance of its suppliers or subcontractors due to any of the foregoing enumerated causes. In the event of delay due to any such cause, the date of delivery will be extended by period equal to the delay.

15. Cancellation. Unless specified to the contrary in writing in the **specific WEG terms and conditions**, Purchaser may cancel any order or contract only upon prior written notice and payment of termination charges, including but not limited to, all costs identified to the order or contract incurred prior to the effective date of termination and all expenses incurred by WEG attributable to the termination, plus a fixed sum of ten (10) percent of the final total selling price to compensate for disruption in scheduling, planned production and other indirect costs.

16. Termination. No termination by Purchaser for default shall be effective unless, within fifteen (15) days after receipt by WEG of Purchaser's written notice specifying such default, WEG shall have failed to initiate and pursue with due diligence correction of such specified default.

17. Assignment. Any assignment of this Agreement or any rights or obligations hereunder without prior written consent of WEG shall be void.

18. Choice of Law. This agreement shall be governed by the laws of the State of Georgia, but excluding the provisions of the United Nations Convention on Contracts for the International Sale of Goods and excluding Georgia law with respect to conflicts of law. Purchaser agrees that all causes of action under this agreement shall be brought in the Superior Court of Gwinnett County, Georgia, or the U.S. District Court for the Northern District of Georgia, and hereby waives any challenges that Purchaser may have to such court's personal jurisdiction over Purchaser. If any provision hereof, partly or completely, shall be held invalid or unenforceable, such invalidity or unenforceability shall not affect any other provision or portion hereof and these terms shall be construed as if such invalid or unenforceable provision or portion thereof had never existed.

19. Entire Agreement. This Agreement, including written bid proposal and written (email or otherwise) clarifications made to the original bid proposal, constitutes the entire agreement between WEG and Purchaser, and there are no agreements, understandings, restrictions, warranties, or representations between WEG and Purchaser other than those set forth or provided for herein.

TRANSFORMERS USA

Five Year Power Transformer Warranty

WEG Transformers USA, hereafter referred to as **WEG,** warrants to the original purchaser that the complete transformer, together with all parts included in the original purchase (the "Transformer"), has been designed in accordance with the specifications of the original purchaser, and that the Transformer will be free from defects in material and workmanship under normal use and service for a period of sixty (60) months from the date of energization of the transformer, not to exceed sixty six (66) months from arrival of the Transformer at its first destination.

Remedies. Should any failure to conform with the applicable warranties appear during the specified periods under normal and proper use and provided the Equipment has been properly stored, installed, operated and maintained, and if given prompt written notice by Purchaser, WEG shall correct such nonconformity by, at its option, (i) repair or replacement of the nonconforming Equipment or parts thereof, or (ii) refund of the purchase price of the nonconforming Equipment or parts thereof, or (iii) in the case of nonconforming Services, provide equivalent Services at the job site or refund the price therefor. Repairs or replacements pursuant to warranty shall not renew or extend the applicable original warranty period, provided however, that any such repairs or replacement of Equipment or parts thereof shall be warranted for the time remaining of the original warranty period or 30 days, whichever is longer. Purchaser shall be responsible for providing free and clear working access to repair or replace the nonconforming Equipment, including de-energizing and re-energizing the Equipment and any necessary disassembly and re-assembly of other equipment or structures, at the Purchaser's risk and expense; whereas transportation to and from repair or factory facility is at WEG's risk and expense. This warranty does not cover I/O costs. Purchaser shall be responsible for I/O costs including disassembly and reassembly of the transformer and the loading and unloading of the transformer to the carrier.

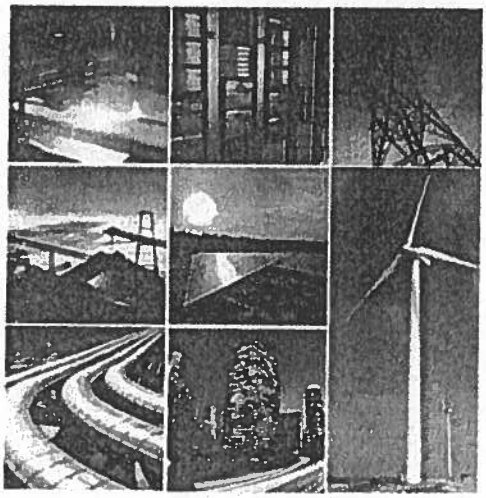
These warranties shall not apply to any Equipment or parts thereof which (i) have been improperly repaired or altered; (ii) have been subjected to misuse, negligence or accident; (iii) have been used in a manner contrary to WEG's instructions; (iv) are comprised of materials provided or design stipulated by Purchaser; (v) are used equipment; or (vi) result from normal wear and tear.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF QUALITY AND PERFORMANCE, WRITTEN, ORAL OR IMPLIED, AND WEG HEREBY DISCLAIMS ALL OTHER WARRANTIES INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ARISING FROM COURSE OF DEALING OR USAGE OF TRADE.

Correction of nonconformities in the manner and for the period of time provided above shall be Purchaser's sole and exclusive remedy for any failure of WEG to comply with its obligations hereunder.

Revision No: 0

VIRGINIA - GEORGIA TRANSFORMER
ONE SOURCE–ONE COMMITMENT



ROCHELLE MUNICIPAL UTILITIES
Rte 38 Substation Rochelle IL

Proposal #: M234601A| 04 December 2023

Customer Contact Information
Rte 38 Substation Rochelle IL
ROCHELLE MUNICIPAL UTILITIES
KEN WIESE
333 LINCOLN HIGHWAY
ROCHELLE, IL 61068
815-562-4155

VTC Contact Information
BRIAN MCCARRICK
540-682-6618
Brian_McCarrick@vatransformer.com

220 Glade View Drive, NE Roanoke, 24012
Phone:540-345-9892 Fax:540-342-7694
www.vatransformer.com

VIRGINIA - GEORGIA TRANSFORMER
ONE SOURCE–ONE COMMITMENT

Document A310™ – 2010

Conforms with The American Institute of Architects AIA Document 310

Bid Bond

CONTRACTOR:
(Name, legal status and address)

Virginia Transformer Corp
220 Glade View Dr. NE
Roanoke, VA 24012-6470

SURETY:
(Name, legal status and principal place of business)

Travelers Casualty and Surety Company of America
One Tower Square
Hartford, CT 06183

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

OWNER:
(Name, legal status and address)

The City of Rochelle- Rochelle Municipal Utilities
420 North 6th Street
Rochelle, IL 61068

BOND AMOUNT: $ 5% Five Percent of Amount Bid

PROJECT:
(Name, location or address, and Project number, if any)

VTC Quote No. M234601A; Rte. 38 Substation Transformer Purchase

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this 5th day of December, 2023

Vanessa Nichols
(Witness)

Virginia Transformer Corp
(Principal) *(Seal)*

By: [signature]
(Title) Senior Vice President

Elizabeth A. Dyer
(Witness) Elizabeth A. Dyer

Travelers Casualty and Surety Company of America
(Surety) *(Seal)*

By: Kyle A. Campbell
(Title) Kyle A. Campbell Attorney-in-Fact

TRAVELERS

Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **KYLE A CAMPBELL** of **ROANOKE**, **Virginia**, their true and lawful Attorney(s)-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **21st** day of **April, 2021**.

State of Connecticut

City of Hartford ss.

By: _____
Robert L. Raney, Senior Vice President

On this the **21st** day of **April, 2021**, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of each of the Companies, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June, 2026**

_____
Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of each of the Companies, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of each of the Companies, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this **5th** day of **December**, **2023**.

_____
Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney(s)-in-Fact and the details of the bond to which this Power of Attorney is attached.

BID FORM

Table of Contents

This Bid is submitted by: Virginia Transformer Corporation

Bid Form

ARTICLE 1 - BID RECIPIENT

1.01 This Bid is submitted to:

City of Rochelle
420 N 6th Street
Rochelle, IL 61068

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into a Contract with Buyer in the form included in the Bidding Documents to furnish the Goods and Special Services as specified or indicated in the Bidding Documents, for the prices and within the times indicated in this Bid, and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 - BIDDER'S ACKNOWLEDGMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Buyer.

ARTICLE 3 - BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, the related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date
NA	

B. Bidder has visited the Point of Destination and site where the Goods are to be installed or Special Services will be provided and become familiar with and is satisfied as to the observable local conditions that may affect cost, progress, or the furnishing of Goods and Special Services, if required to do so by the Bidding Documents, or if, in Bidder's judgment, any local condition may affect cost, progress, or the furnishing of Goods and Special Services.

C. Bidder is familiar with and is satisfied as to all Laws and Regulations in effect as of the date of the Bid that may affect cost, progress, and the furnishing of Goods and Special Services.

D. Bidder has carefully studied, considered, and correlated the information known to Bidder; information commonly known to sellers of similar goods doing business in the locality of the Point of Destination and the site where the Goods will be installed or where Special Services will be provided; information and observations obtained from Bidder's visits, if any, to the Point of Destination and the site where the Goods will be installed or Special Services will be provided; and any reports and drawings identified in the Bidding Documents regarding the Point of Destination and the site where the Goods will be installed or where Special Services will be provided, with respect to the effect of such information, observations, and documents on the cost, progress, and performance of Seller's obligations under the Bidding Documents.

E. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution (if any) thereof by Engineer is acceptable to Bidder.

F. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for furnishing the Goods and Special Services for which this Bid is submitted.

ARTICLE 4 - BIDDER'S CERTIFICATIONS

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.

C. Bidder has not solicited or induced any individual or entity to refrain from bidding.

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "Corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.

2. "Fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Buyer,

(b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Buyer of the benefits of free and open competition.

3. "Collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Buyer, a purpose of which is to establish bid prices at artificial, non-competitive levels.

4. "Coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process.

ARTICLE 5 - BASIS OF BID

5.01 **Proposal No. 1 -** Bidder will furnish the Goods and Special Services in accordance with the Contract Documents, including **Allowance No. 1** as stipulated in the documents for required scope changes, for the following price(s):

#	Size (mva)	Primary Voltage	Secondary Voltage	Price per Unit
1.)	20/26.66/37.33	34.5kV Wye	13.8kV Wye	$1,520,508

Lump Sum Total Bid Price for Proposal No. 1 including allowance +	$ 25,000

SCHEDULE GUARANTEES

Drawing Submittal:	126-140	Calendar days from ARO
Assembly Complete:	310 - 340	Calendar days from ARO
Factory Testing Complete:	350 - 385	Calendar days from ARO
Delivery:	385 - 420	Calendar days from ARO

EQUIPMENT DETAILS

Manufacturer:	Reinhausen	
Location:	On LV	
Core and Coil Weight:	During Detailed Engineering	lbs.
LTC Weight:	TBD	lbs.
Liquid Weight:	33,060	lbs. (Approx.)
Total Weight:	122,200	lbs. (Approx.)

PERFORMANCE GUARANTEES

Guaranteed minimum efficiency at rated load at rated voltage and on rated voltage taps:

25% OA Load:	99.60%
50% OA Load:	99.67%
100% OA Load	99.57%

Non-Collusion Affidavit

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

STATE OF Virginia

COUNTY OF Roanoke

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

Signed: _____

Title: Service President

Subscribed and sworn to before me this 14th day of December 20 23

Seal of Notary:

MELANIE MARIE WOOMER
COMMONWEALTH OF VIRGINIA
REGISTRATION NO. 7691684
MY COMM. EXPIRES 12/31/2024
NOTARY PUBLIC

Melanie Woomer
Notary Public

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

SECTION 00420

Qualifications

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Appointment of Counsel

B. Pre-qualifications

C. Bidder's Qualifications

D. Certifications

E. References

F. Signatures.

1.02 AWARD OF BID

A. Failure of Bidder to meet all qualification criteria as stated in these Specifications shall disqualify Bidder from consideration for the Project.

B. The Owner reserves the right to exclude Bidder from consideration due to the Bidder's failure to present with written documentation his experience and capability to complete the project to the Owner's expectations.

PART 2 – QUALIFICATIONS

2.01 APPOINTMENT OF COUNSEL – NON-RESIDENT

A. Bidder has appointed Robert A. Ziogas, whose address is 310 First St., ste 100, Roanoke, VA 24011 as the agent of Bidder for service of process in the event any litigation or controversy results between the Bidder and Owner arising out of the contractual relationship created by the acceptance of this Bid. Bidder agrees that the courts of the State in which the project is located will have jurisdiction over Bidder for all such purposes to the same extent as though Bidder were a resident of the State.

2.02 PRE-QUALIFICATION

A. Failure of Bidder to meet the Pre-qualification requirements as stated in the Instruction to Bidders Bid shall disqualify Bidder from consideration for the Project.

2.03 BIDDER'S QUALIFICATIONS

A. Bidder shall prove to the Owner's satisfaction Bidder's experience in completing similar projects, thus demonstrating the ability of the Bidder to complete the Project to the Owner's Satisfaction.

B. Bidder shall submit written proof and abide by the written proof that the Bidder will complete a minimum of (30) thirty percent of the overall project by his own company and workers.

C. Bidder shall submit documentation proving that the Bidder is capable of funding the Project and is not in financial hardship.

D. Bidder shall submit documentation proving that the Bidder uses only qualified, licensed workers experienced in the line of work.

E. Bidder's subcontractors shall be the responsibility of the Bidder and shall be considered part of the Bidder's company and shall meet qualification requirements for all aspects of the Project.

2.04 CERTIFICATIONS

A. The Bidder certifies the following as required by law:

1. Bidder has not been convicted of bribery or attempting to bribe an officer or employee of the State, nor has the Bidder made an admission of guilt of such conduct which is a matter of record, nor has an official, agent or employee of the Bidder been so convicted or made such admission of bribery on its behalf and pursuant to the direction or authorization of a responsible official thereof.

2. Bidder is not barred from bidding with any unit of state or local government as a result of unlawful bid rigging.

3. Under penalty of perjury, the Bidder certifies that the Federal Taxpayer Identification Number noted below is correct and the Bidder is doing business as a (please check one):

___ Individual	___ Real Estate Agent
___ Partnership	___ Government Entity
_✓_ Corporation	___ Trust or Estate

4. Bidder, if an individual, is not in default on an educational loan.

2.05 REFERENCES

A. Bidder shall submit a minimum of three (3) written letters of recommendation with references' signatures and contact information to the Engineer.

B. These References shall be from the Owner, Project Manager, or other individual who is knowledgeable on the project, or recent previous Projects with very similar Scope of Work completed under the current Bidder's name.

C. Bidder shall submit a minimum of three (3) company brochures, or company information sheets, along with list of completed equivalent projects.

2.06 SIGNATURES

Firm Name: Virginia Transformer Corporation

Federal Taxpayer Identification Number: 54-0895926

By: Rakesh Rathi

Title: SR Vice President

By:

Title: MANAGER of Inside Sales

Note: If the Bidder is a corporation, the legal name of the corporation shall be set forth above together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation; if the Bidder is a partnership, the true name of the firm shall be set forth above together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership; and if the Bidder is an individual, his signature shall be placed above. If signature is by an agent, other than an officer of a corporation or member of a partnership, a power of attorney must be submitted with the bid.

PART 3 – EXECUTION ***NOT USED***

END OF SECTION

Reference Questionnaire

(Please have a minimum of three (3) references complete this form and submit with Bid documents, reference forms are subject to verification by City)

Giving reference for: VIRGINIA TRANSFORMER
(name of company)

Firm giving Reference: CITY OF LEESBURG
Address: 501 W. MEADOW ST
Phone: LEESBURG, FLORIDA 34748
Fax:
Email: mike.thornton@leesburgflorida.gov

1. **Q:** Name of project and scope of services, what was the awarded dollar value?
   A: Manufacture and install 4 each substation power transformers - total cost $2,732,117

2. **Q:** Did the vendor meet the project budget and what was the budget??
   A: Yes - $2,800,000

3. **Q:** Have there been any change orders, and if so how many?
   A: No - Only material price increases as allowed by the contract.

4. **Q:** Was the project manager accessible to get in contact with?
   A: Yes

5. **Q:** Did they meet the project deadline?
   A: Yes - They installed all 4 ahead of schedule.

6. **Q:** Would you use them again?
   A: The City has no reason to not contract with VTA should the opportunity arise in the future.

7. **Q:** Overall, what would you rate their performance? (Scale from 1-5)

   A: ☐ **5** *Excellent* ☑ **4** *Good* ☐ **3** *Fair* ☐ **2** *Poor* ☐ **1** *Unacceptable*

8. **Q:** Is there anything else we should know, that we have not asked?
   A: No

The undersigned does hereby certify that the foregoing and subsequent statements are true and correct and are made independently, free from vendor interference/collusion.

Name: Mike Thornton Title: Purchasing Manager

Print Name: Mike Thornton

Date: February 16, 2022

Reference Questionnaire

(Please have a minimum of three (3) references complete this form and submit with Bid documents, reference forms are subject to verification by City)

Giving reference for:
(name of company)

Firm giving Reference: Sylacauga Utilities Board
Address: 1414 Edwards Street
Phone: 256-249-0372
Fax:
Email: ecarither@sylacauga.net

1. **Q:** Name of project and scope of services, what was the awarded dollar value?
   A: 3 Power Transformers $740,097
   3Ø Power Transformers $636,776
2. **Q:** Did the vendor meet the project budget and what was the budget??
   A: Yes 2015 Three 3Ø Power Transformers at $246,699 ea
   2019 Two 3Ø Power Transformers at $318,388 ea
3. **Q:** Have there been any change orders, and if so how many?
   A: No
4. **Q:** Was the project manager accessible to get in contact with?
   A: Greg Slorensky has been great to work with.
5. **Q:** Did they meet the project deadline?
   A: Yes
6. **Q:** Would you use them again?
   A: Definitely
7. **Q:** Overall, what would you rate their performance? (Scale from 1-5)

   A: ☒ **5** *Excellent* ☐ **4** *Good* ☐ **3** *Fair* ☐ **2** *Poor* ☐ **1** *Unacceptable*
8. **Q:** Is there anything else we should know, that we have not asked?
   A: —

The undersigned does hereby certify that the foregoing and subsequent statements are true and correct and are made independently, free from vendor interference/collusion.

Name: Eric Carithers Title: Electric Superintendent

Print Name: Eric Carithers

Date: 2-7-2022

Reference Questionnaire

DAN MORGAN
Consultant, Power & Distribution

Giving reference for: *(name of company)* Texas Electric Cooperatives
Your Exclusive Energy Partner

Firm giving Reference:
Address: 100 Cooperative Way, Georgetown, TX 78626
Phone: CELL (210) 861-5158
Fax: E-MAIL dan.morganemail@gmail.com
Email: WEB www.texas-ec.org

1. **Q:** Name of project and scope of services, what was the awarded dollar value?
   A: Multiple IR Review projects for 9 Virginia Power-Transformers with total approximate value of ≈ $ 6 Million.
2. **Q:** Did the vendor meet the project budget and what was the budget??
   A: Budget confidential - Virginia Transformer met goal supplied at quoted & contracted price.
3. **Q:** Have there been any change orders, and if so how many?
   A: only 2-3 changes - VTC worked to make required changes.
4. **Q:** Was the project manager accessible to get in contact with?
   A: Always
5. **Q:** Did they meet the project deadline?
   A: yes
6. **Q:** Would you use them again?
   A: Absolutely
7. **Q:** Overall, what would you rate their performance? (Scale from 1-5)
   A: ☑ 5 *Excellent* ☐ 4 *Good* ☐ 3 *Fair* ☐ 2 *Poor* ☐ 1 *Unacceptable*
8. **Q:** Is there anything else we should know, that we have not asked?
   A: VTC performed well and met our Power-Transformer needs.

The undersigned does hereby certify that the foregoing and subsequent statements are true and correct and are made independently, free from vendor interference/collusion.

Name: David L. Morgan Title: [redacted]

Print Name: [redacted]

Date: 2/9/2021

Table of Contents

Virginia Transformer Corporation

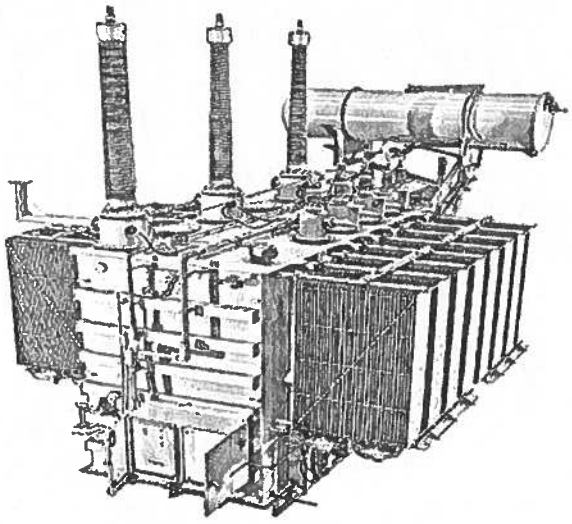
For over 50 years, innovative technology and a commitment to superior customer service and support has established Virginia Transformer Corp(VTC) as an engineering company leading in manufacturing a variety of transformers.

VTC designs and manufactures custom power transformers ranging from 500 KVA to 400 MVA, 500 kV class (core type) and up to 1400 MVA, 500 kV class (shell type), and dry-type units up to 15000 KVA, 35 kV.

VTC has design and manufacturing facilities in Roanoke, VA, Pocatello, ID, Chihuahua, Mexico and Georgia Transformer in Rincon GA. In addition, VTC has design and procurement capabilities in Delhi, India, establishing a world-wide presence as a supplier of transformer solutions. VTC reserves the right to manufacture the product quoted herein at VTC owned or affiliated plants in North America.

ISO 9001

"The Commitment Company"



Commercial Summary

Base Price

Item	Description	Qty	Unit Price (USD)	Extended Price (USD)
1	20,000 / 22,400 / 26,667 / 29,867 / 33,333 / 37,333 kVA | 34.5 - 13.8 kV	1	$1,520,500	$1,520,500

Tax Certificates Requirement

Upon acceptance of our proposal, the purchaser is required to submit a sales tax exemption certificate with the Purchase order, otherwise VTC will charge appropriate state taxes based on the destination.

TERMS AND CONDITIONS: Unless other terms or MSA is agreed between Customer and VTC/GTC, the Proposal will be governed by VTC/GTC Standard Terms & Conditions, attached towards the end of technical Proposal or provide as Separate Document.

Price Policy

Quoted Price is Firm for the Proposed Lead time.
In the event of customer delay on a job quoted with a firm price and shipment date, VTC/GTC will apply the BLS Transformer Index to adjust price. The agreed firm price will be escalated with the base period being the quoted shipment date and the Settlement date being the month of shipment. Only increases in the BLS index will be considered for this calculation. Any advance payments will be credited to the final invoice. No adjustment will be applied if the transformer is completed and shipped prior to the quoted shipment date.

Validity of Quote

02/03/2024

Estimated Freight Cost

Item	Ship To	Qty	Freight Cost (USD)	Extended Freight Cost (USD)
1	Rochelle, IL (Freight charges included in base price)	1	$15,836	$15,836

Indicated Prices are Estimate Only, VTC will quote freight at the time of shipment, Actual Amount incurred will be Invoiced along with 15% Handling Charges.

ITEM #1

Suggested Spare Parts

Particulars	Price (USD/Per Unit)
FAN - Qty 1	$1,500
GASKET SET - Qty 1	$1,000
HV BUSHING - Qty 1	$4,100
LV BUSHING - Qty 1	$2,900

Shipping

Unit Shipment By	55-60 Weeks from Order Acknowledgement date.VTC reserves the right to ship unit up to 3 months earlier than the contractual ship date.
Freight	PREPAID & ADD
Estimated Freight Cost (Per Unit)	$15,836
INCO Terms	FOB - FREE ON BOARD(Rochelle, IL)
Proposed Manufacturing Location	ROANOKE, VA USA
Impact Recorder	Impact Recorder to be provided on Returnable Basis, $ 7,500 to be invoiced if not returned in 30 days after Delivery.

VTC cannot guarantee multiple units to arrive at the same time unless more than one unit can be loaded on the same truck. VTC cannot guarantee arrival dates and times at the job site. Final Lead time will be confirmed at the time of order acknowledgements

Proposed Payment Terms

30% Advance with Purchase Order
30% upon drawing submittal, net 30 days
40% invoiced at the time of Shipment or upon moving to storage, Net 30 days

Field Service

Field Service Assembly & Testing (Make-up Oil Only)	Included
Field Service Offloading	Included
Field Service SFRA Testing	Included

1. Field Service Prices indicated are Estimates only and will be Adjusted at the time of Actual Service.
2. For any units that are placed in storage Field service charges will be increased by 10% every 6 months, or part thereof.
3. On the Transformers that go into storage. Freight, Offloading, and Field Dress Out prices will be quoted at the time of shipment.
4. VTC/GTC will not Store Transformers. Storage of the transformer may be for a limited period of time based on space availability, if explicitly agreed upon by VTC/GTC. If Quoted, Space storage charges will be Provided. Any unit placed in storage must be paid in full within 30 days of completion of the transformer, acceptance will be deemed to have occurred upon placement in storage and transfer of title will take along with all associated milestone payments. Any additional testing requested at the time of shipment will be charged separately. We will require at least 60-days notice prior to requested shipment date, to remove a transformer from storage.
5. Please note that the included price for Field Service Offloading with Free and Clear Access is based on following
a) Usage of Crane rated up to 250-ton, 28-foot radius.
b) No Jack & Slide Equipment requirement to place transformer on the pad.
c) Demurrage for delays based on customer or site condition will incur price adders.
If site conditions have access constraints for Offload - that require larger than a 250-ton, 28-foot Crane and / or Jack & Slide equipment, a price adder will be charged by VTC.

Warranty

60/60 Months Extended Warranty With In/Out	Includes Core and Coil only after first 12 Months.

To ensure validity of Warranty coverage, Virginia - Georgia Transformer requires Dissolved Gas Analysis (DGA) reports of the supplied unit to be provided every year for the period of Warranty coverage. The annual DGA's should be emailed to: FieldService@vatransformer.com

Testing - As Per IEEE ANSI 57.12.90

Megger Test	Included
Routine	Included
Test Report of Thermally Duplicate Design	Included

All tests are as per ANSI/IEEE standard guideline. For Witness testing, cost for travel, transportation, lodging and meals are not included in the quoted price. If customer requires additional time beyond the scheduled witness test period, an additional charge of $10,000/day will apply.

Drawings

Drawings are typically supplied 18-20 Weeks after Order Acknowledgement. Actual Drawing lead time will be confirmed at the time of order Acknowledgement Only.Customer approvals of drawings are required within one week from date of submittal unless otherwise agreed to in writing by VTC-authorized representative.

Technical Summary

This proposal is Virginia Transformer's complete understanding of the specification requirements provided, and is the basis for acceptance of any resulting orders.

ITEM #1

Transformer Ratings

ITEM :1			QUANTITY #1
kVA	20,000 / 22,400 / 26,667 / 29,867 / 33,333 / 37,333	Application	POWER DIST.
Cooling Class	ONAN/ONAF/ONAF	Winding Temp Rise (Avg)	55/65 °C
# Phase	3	Dielectric Fluid	TYPE II MINERAL
Frequency (Hertz)	60	Winding Material	COPPER
HV Rating (V)	34,500 Y/19,919	LV Rating (V)	13,800 Y/7,967
HV BIL (kV)	200	LV BIL (kV)	150
TV kVA	Not Applicable	TV Voltage	5,116
TV Winding	UNLOADED	TV BIL (kV)	75
HV Tap Changer	DETC	LV Tap Changer	LTC
HV Taps	2 FCAN,2 FCBN @2.5 %	LV Taps	16 ABOVE,16 BELOW @0.625 %
Nom. Impedance	7.50 % +/- 7.50 % @ 20,000 kVA	Noise (dBA)	Standard NEMA TR-1
HV Bushing Mtng	Segment IV, Side Mounted	LV Bushing Mtng	Segment II, Side Mounted
HV Terminal Chamber	FULL ATC	LV Terminal Chamber	FULL ATC
HV Coil Type	CIRCULAR	LV Coil Type	CIRCULAR
Paint Color - ANSI	70	Paint Type	III URETHANE OVER EPOXY
Losses	Guaranteed with IEEE Tolerance		
No Load Losses	15.50 kW at 100% volts	Load Losses	70.00 kW @ 20,000 kVA

Mechanical Features

De-energized Manual No Load Tap Changer
Diagrammatic Name Plate
Gasketed Manhole in Cover
Nitrogen System with Regulator
Panel Type Radiators
Two Stainless Steel Ground Pads welded to Base on Diagonally Opposite Corners
Welded Top Cover

Radiators

Environment Protection	Hot Dipped Galvanized & Unpainted	**Radiator Type**	Demount Type

VTC standard radiators are Hot Dipped Galvanized and Unpainted which do not require painting. These radiators are suitable for all climatic conditions that include chemical, petro-chemical and marine conditions. Unless specified differently below, these standard, galvanized radiators will be provided.

Standard Gauges and Accessories

Gauges Details	Make
Electronic Temp Monitor	SCHWEITZER
Liquid Level Gauge W/Contact	QUALITROL CORP.
Liquid Temp Gauge W/Contact	QUALITROL CORP.
Pressure Relief Device W/Contact	QUALITROL CORP.
Pressure Vacuum Gauge	QUALITROL CORP.
Sudden Pressure Relay (GAS) With Seal in Relay	QUALITROL CORP.
Simulated Winding Temp Gauge W/Contact	QUALITROL CORP.

Bushings

Bushing	kV BIL	Location	Qty / Phase	Make
HV	200	Segment IV	1	HITACHI (ABB)/PCORE
LV	150	Segment II	1	HITACHI (ABB)/PCORE

Current Transformers

Location	Qty / Phase	CT Ratio	Ratio	Class / Accuracy
HV	2	1200:5	Multi Ratio	C400
LV	2	1200:5	Multi Ratio	C400
LV Neutral	1	1200:5	Multi Ratio	C400

Lightning Arresters

Location	Type	kV Class	MCOV	Manufacturer	Material
HV	Station Class	36	29	HITACHI (ABB)	POLYMER
LV	Station Class	12	10.2	HITACHI (ABB)	POLYMER

Load Tap Changer

Liquid Level Guage	Included
Location	On LV Winding
LTC Type	RMV II
Make	REINHAUSEN MFG
Pressure Relief Device	Included

NOTE: The actual voltages at various taps of the LTC shall correspond to the nearest turn in accordance with IEEE Std C57.12.00 2010 clause 9.1. This can lead to different step voltage between steps.

Included Spare Parts

Item	Remarks
GASKET SET - Qty 1	Included
HV BUSHING - Qty 1	Included
LV BUSHING - Qty 1	Included

Ambient Conditions

Ambient Temperature(°C)	Min. -20 / Av. 30 / Max. 40
Seismic Zone	LOW
Altitude(Feet)	< 3,300

Unit shall be designed per the latest ANSI standards for Seismic per IEEE 693 – 2018

Dimensions and Weights

Overall & Shipping Estimated Dimensions:		
Dimension	**Overall Dimensions (Inches)**	**Shipping Dimensions (Inches)**
Width	235	235
Depth	171	122
Height	167	162
Overall & Shipping Estimated Weights:		
Weight of the Unit (Lbs)		**Shipping Weight (Lbs)**
122,200		110,550
Parts Shipped Separately:		
Fans and Mounting		
HV Bushings		
Radiator Oil		
Radiators		

Assembly of any ship separate parts is not in VTC scope unless, VTC field service assembly option is purchased or included in the base price.

Clarifications/Deviations to Specifications and Technical Notes

TECHNICAL
CLARIFICATIONS

1.We have quoted our offer as per ANSI standards.
2. Values of Test like Induced Voltage, SFRA, Corona and Partial Discharge shall be as applicable in ANSI standard.
3. Please note Dynamic Short Circuit test is not considered in our proposal. However, if required test reports for Similar/higher rating can be submitted for your reference only at the event of order.
4. LV arrestors MCOV rating taken as per LV voltage.

General Terms and Conditions of Sale

Virginia Transformer Corp's General Terms and Conditions of Sale

Virginia Transformer Corp, hereinafter referred to as Seller, hereby offers to supply the items and/or services identified in the quotation, proposal, or acknowledgment expressly conditional upon the Buyer's acceptance of the following terms. Seller, by its commencement of performance, shall not prejudice its rights to enforcement of these conditions. Any confirmatory action by the Buyer hereunder, or any acceptance of such equipment or services, installation, energization, or utilization shall constitute assent to said terms or conditions. Stenographic and clerical errors on this quotation, proposal, or acknowledgment are subject to correction.

1. **ACCEPTANCE OF ORDER:** None of Buyer's Terms and Conditions contained the Purchase Order or other submittal by Buyer shall alter Seller's Terms and Conditions in any respect and shall not apply to this transaction unless specifically agreed to in writing by the Seller.

2. **EXPIRATION OF OFFER**: All offers of sale by Seller are valid for thirty (30) days from the date of the offer based on product delivery within 6 months unless otherwise specifically stated in the Seller's offer or as otherwise may be expressly agreed to in writing by the Seller. All such offers of Seller are subject to change without notice after this period unless earlier withdrawn by the Seller.

3. **MINIMUM ORDER VALUE:** The minimum acceptable value of any order is $500.00. Buyer's accumulation of several items into one purchase is authorized to reach the minimum order value.

4. **F.O.B. POINT AND SHIPMENTS ACCEPTANCE OF ORDER:** Title to the goods and risk of loss shall pass to Buyer at the FOB point. All supplies and services are sold FOB origin and the point of origin shall be that of Seller's factories or locations identified in its proposal or sales contract form unless as otherwise specifically agreed to in writing on the face of Seller's sales contract. Seller assumes no responsibility for delay, breakage, damage, or loss after delivery to the carrier as evidenced by **in good order** receipts from the carrier. All claims for loss, damage and delay in transit are to be handled by Buyer directly with the carrier. Seller shall select method of transportation and route on behalf of Buyer unless Buyer specifies the method and route and is to pay freight costs in addition to price. Seller reserves the right to make partial shipments at its discretion. Claims for shortages or incorrect items must be made in writing to Seller within seven days after receipt of shipment. Failure to give such notice shall constitute an unqualified acceptance of equipment and waiver by Buyer of all claims for such shortages or incorrect items.

When terms are F.O.B. destination or freight allowed to destination, **destination** means common carrier delivery point nearest the destination the continental United States, excluding Alaska, Hawaii, Puerto Rico, etc.). When terms are F.O.B. job site or pad, Buyer guarantees all access roads are suitable for normal unimpeded access to site with free and clear access to area directly adjacent to the placement point of the unit with no physical obstructions and clear of stored materials.

Shipping schedules and delivery arrangements are made in best effort and good faith. Seller cannot, however, accept liability for penalty or damages resulting from shipping delays caused by Force Majeure including but not limited to strikes, fires, truck availability, labor or material shortages, Acts of God, or any other cause beyond VTC's reasonable control. Ship Separate Parts may not arriveconcurrently with the transformer and some assembly may be required. Shipment may be made earlier after due notice to Buyer.

5. **BUYER'S OBLIGATION OF ASSISTANCE**: Except to the extent Seller has otherwise assumed such responsibility for itself under express provisions of the attachment hereto entitled **Proposal**, Buyer shall:

(a) place at Seller's disposal all information necessary for performance of the work including any plans, plant layout, wiring instructions and operational information that may reasonably be expected to affect the performance of the work. This includes to the extent reasonable previous studies or reports and other data relative to the design, installation, and selection of equipment for the work to be performed by Seller.

(b) guarantee access to and to make all reasonable provisions for Seller to enter on its property and other public and private lands as is required for performance of the work including safe storage of equipment, materials, and tools during the process of any such off-site work.

(c) agree to cooperate in all reasonable ways necessary to Seller's performance of the work.

(d) covenant that it has disclosed fully and accurately to Seller all general and local conditions which can affect performance of the work prescribed hereunder or the price thereof. Buyer acknowledges that Seller is entitled to rely on information furnished by Buyer in developing its specifications, equipment selection, price, and other terms of this order.

6. **PAYMENT TERMS**: Terms are 30% with the initial order, 30% upon Drawing Submission, net 30 days, and 40% at shipment, net 30 days, calculated from the date of invoice if credit arrangements have been approved, in advance by Seller, and these terms are included on the Seller's proposal. **Otherwise, payment is required before shipment or delivery in a form and arrangement acceptable to Seller.** In addition to any other rights or remedies available to Seller, failure to pay the amount(s) due within the time specified will result in a late charge of one and one half (1-1/2%) percent per month to Buyer's account until final payment. Payments shall not be contingent on end-user payment to Buyer and Seller reserves the right to refuse to fulfill all obligations (including field service and voiding of warranty) if payment is not received as due. In instances involving orders for more than one unit, the foregoing

amounts will be billed and due for each unit. In instances where items are quoted by line item in the proposal, those will be billed, and payment will be due upon rendering of each item.

Purchaser grants Seller a security in the goods to secure payment of all outstanding balances. Purchaser authorizes Seller to file financing statements, ficture filings, and to execute and file any other documents and take all other steps to perfect its security interest.

Except to the extent otherwise specified by Seller in its quotation or proposal, payments shall become due without setoff. If Seller consents to delay shipments after completion of any product, the goods may be placed in storage by Seller for Buyer's account and risk, and Buyer shall pay all charges for storage, cranes, trucking and other incidental expenses incurred by Seller and the provisions in the **Storage** paragraph below shall further apply.

Any order for products by Buyer shall constitute a representation that Buyer is solvent. In addition, upon Seller's request, Buyer will furnish a written representation concerning its solvency and provide adequate assurances of its ability to satisfy its financial obligations under its contract with Seller, including but not limited to current financial statements, at any time prior to shipment. If Buyer's financial condition at any time does not justify continuance of the work to be performed by Seller hereunder on the agreed terms of payment, Seller may require full or partial payment in advance. In the event of Buyer's bankruptcy or insolvency; or in the event any proceeding is brought against Buyer, voluntarily or involuntarily, under the bankruptcy or any insolvency laws; Seller shall be entitled to cancel any order then outstanding at any time during the period allowed for filing claims against the estate and shall receive reimbursement for its proper cancellation charges. Seller's rights under this article are in addition to all rights available to it at law or in equity.

Any delay in payment as due, will impact all deliverables from Seller including the achievement of deliverables through the guaranteed delivery date. Any extended delay in payment can be the basis for the order to be held and any applicable liquidated damages in favor of Buyer shall be deemed waived.

7. **CHARGEBACKS, SET-OFF, OFFSETS OR WITHHOLDING:** Seller will not accept any back charges, set-off, offsets, or withholding for material or services without the prior written consent of Seller.

8. **DELIVERY:** The prices quoted are for the shipment dates provided on the Seller's proposal. While the Seller shall have no obligation to comply with unilateral directives to change schedules or temporarily cease work, Seller may accommodate Buyer's reasonable written requests for acceleration or deceleration made at least ninety/sixty (90/60) days respectively prior to scheduled delivery. Such changes may or may not be accepted by Seller at its sole discretion. In the event Seller accepts such changes, Seller shall be under no

obligation to comply therewith until a price adjustment acceptable to Seller is negotiated between the parties and evidenced by an amendment to the order. Any agreement to delay delivery shall not exceed 6 months from original acknowledgement ship date; goods not released for shipment within such revised time frame shall be automatically deemed canceled and subject to Seller's Cancellation terms listed below.

9. **Storage:**In the event goods are placed in storage at the request of the Purchaser, it is agreed that title will pass to the Purchaser upon placement into storage.Irrespective of anything herein to the contrary, Purchaser will be invoiced for the balance of the purchase price of the goods when they are placed in storage and payment will be due net 30 days. Risk of loss shall pass to Purchaser who shall be responsible for insuring the goods and Seller shall have no liability for loss or damage when the goods remain in its possession in storage.Purchaser further agrees that for any goods placed in storage, Seller will be provided a minimum of three weeks advanced notice before requested delivery out of storage and delivery will then be made subject to availability of carrier and transportation services. Payment of storage fees will be due prior to shipment from storage.

10. **EXPORT REGULATIONS:** Buyer acknowledges that if the items purchased hereunder are to be exported, they are subject to the U.S. Commerce and/or State Department Export Regulations. Buyer accepts full responsibility for and agrees to comply fully with such regulations, including obtaining export licenses and re-export permission unless otherwise agreed that Seller is to be exporter of record.

11. **CANCELLATION & TERMINATION**: Seller, in addition to all other rights and remedies under this order or at law, shall have the right to cancel and terminate Buyer's order for breach by Buyer including, but not limited to, if Buyer fails to make payment as due or if Buyer is adjudicated bankrupt, files a petition in bankruptcy, makes an assignment for the benefit of creditors or if action under any law for the relief of debtors is taken. In the event of cancellation and termination of this order for breach of the provisions hereof by Buyer, Seller shall have no further liability to Buyer and Seller shall not be liable for any costs of cancellation, special, incidental, or consequential damages (including punitive or exemplary damages) for any cause or of any nature whatsoever and such cancellation and termination. All cancellations or terminations by Seller for Buyer's breach shall be subject to the following cancellation or termination charges:

    - 30% of order amount after order entry by Seller.
    - Additional 15% of order amount after outline drawing completion / submission.
    - If manufacturing has begun, charges will be based upon commitments for materials and percent completion in addition to the 45% for engineering and order entry.

In the event Buyer cancels its order, Buyer shall be responsible to Seller for cancellation charges in the amounts set forth above in Cancellation & Termination paragraph 11 which Buyer shall pay Seller upon such cancellation.

12. **RESCHEDULING FEE:** Any extended delays by the customer/Purchaser which result in the loss of the scheduled production slot will be subject to a re-scheduling fee of 30% of the specific order value.

13. **PATENT INFRINGEMENT**: To the extent that the items ordered are manufactured to designs, drawings, specifications, or instructions furnished by Buyer, Buyer guarantees that the manufacture and sale or use of such items will not infringe upon any U.S., or foreign patents. Buyer further agrees to indemnify and hold harmless the Seller from any expense, loss, cost, damage, or liability of any kind which may be incurred because of any such infringement or alleged infringement of patent rights with respect to such items and to defend, at its own cost and expense, any action or claim in which such infringement is alleged. Buyer shall promptly notify Seller of any such action and shall provide Seller an opportunity, at Seller's option, to participate in any defense of such action or claim at Seller's own expense.

Seller shall hold Buyer harmless from costs actually incurred arising directly from the defense of any suit for infringement of any domestic or foreign patent by a Seller-manufactured item, provided Seller shall be given timely written notice of such suit and the option to replace the same, obtain a license, make other arrangements to avoid litigation or to defend the suit. No indemnification is offered or applicable for alleged infringement arising from the use of Seller's items in combination with other items supplied by Buyer or from compliance with drawings, specifications or instructions furnished by Buyer as described in the paragraph above. Further, no indemnification by Seller applies if this order is accepted under a U.S. government contract containing an Authorization and Consent Clause applicable hereto as prescribed by U.S. federal procurement laws and regulations.

14. **DISCLOSURE OF INFORMATION / PROPERTY OF SELLER**: Any information, suggestions or ideas transmitted by either Buyer or Seller in connection with performance hereunder are not to be regarded as secret or submitted in confidence unless it is stamped or marked **Confidential** prior to delivery by the disclosing party. Neither party shall use or disclose such property to any third party or any one not having a need to know, including employees, without the prior written consent from the disclosing party. Title to all tools, test equipment and facilities not furnished by Buyer or specifically paid for by Buyer as a separate line item under any order, shall remain with Seller. Further, Seller does not agree to submit to Buyer because of the Consideration paid under this order, any information, technical data, or drawings which are proprietary to Seller; nor does Seller agree to grant to Buyer any patent rights, title, or license without Seller's expressed prior written consent.

15. **TAXES:** The purchase price of the Goods and Services does not include transportation taxes and sales, use, excise, value added, import or any similar tax or other governmental charge arising pursuant to or in connection with the sale, purchase, processing, delivery, storage, use, consumption, performance or transportation of the Goods and Services. Buyer is responsible for payment of any transportation taxes, and any present or future sales, use, excise, value added, import or any similar tax or other governmental charge applicable to the Agreement and to the sale and/or furnishing of the Goods and Services if a Sales Tax exemption form is not received by Seller from Buyer.

16. **EQUIPMENT WARRANTIES AND REMEDY:**

(A) For the period set forth below in this paragraph, Seller warrants that each newly manufactured item sold hereunder, and such portion of a repaired/refurbished item as has been repaired or replaced by Seller under this warranty, shall be free from defects in material, workmanship, or title at the time of shipment and shall perform during the warranty period in accordance with the specifications incorporated herein. Should any failure to conform to these warranties (excluding any defects in title) be discovered and brought to Seller's attention during the warranty period and be substantiated by examination at Seller's factory or by authorized field personnel, then (i) Seller shall correct such failure by, at Seller's exclusive option, repair or replacement of the nonconforming item or portion thereof with Buyer promptly making product available to be worked by Seller's personnel or agents without interference with no additional cost to the Seller; or (ii) Buyer making available product F.O.B. Seller's plant with Seller's written return authorization, at Seller's exclusive option, for repair or replacement of the nonconforming item or portion thereof. Buyer agrees that this remedy shall be its sole and exclusive remedy against Seller and that no other remedy shall be available or pursued by Buyer against Seller. In no event shall the Seller be liable for any costs or expenses in excess of those described in this paragraph and expressly excluding any liability or damages for special, incidental, or consequential damages.

The warranty period for newly manufactured items shall extend 12 months from the date of first energization or 18 months from the date of shipment whichever occurs first or unless a different warranty period is agreed to by Seller. The warranty period for repaired/refurbished articles shall extend for the unexpired warranty period of the item repaired or replaced or for 90 days, whichever is longer. This warranty shall be voided and not extend to any item that upon examination by Seller is found to have been subject to:

(a) mishandling, misuse, negligence, or accident.
(b)storage, installation, operation, testing, or maintenance that either was not in accordance with Seller's specifications, instructions, manuals, or otherwise improper, or contrary to industry standards.
(c) tampering as evidenced for example by broken seals, damaged packaging containers, etc.

(d) testing of equipment above normally accepted field tests.
(e) repair or alteration by anyone other than Seller without Seller's express advance written approval.
(f) payment(s) not received per terms of sale.

Failure to promptly notify Seller in writing upon discovery of any non-conforming items during the warranty period shall void the warranty as to such items. Buyer shall describe any such non-conformity in detail, expressing its position as to return of any article under the remedy provided herein. No returns shall be accepted without prior approval by Seller. No back charges shall be accepted without the prior written consent of Seller's authorized representative. Where a failure cannot be corrected by Seller's reasonable efforts, the parties shall mutually agree upon an equitable adjustment in price. The preceding sets forth the exclusive remedies for claims (except as to title) based on defect whether in contract or tort (including negligence or strict liability) and however instituted. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND SELLER DISCLAIMS IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

(B)**SELLER'S INSTALLATION WARRANTY**: Seller warrants that all work hereunder shall be performed in accordance with the standards employed by Seller in performing the same or similar services for itself. Seller disclaims any and all other representations or warranties expressed or implied including without limitation any representation or warranty that a) any unauthorized entry, burglary, theft, embezzlement, or any other crimes will be prevented by the equipment and/or installation thereof or that b) any particular purpose or standard of care intended or desired or any particular results to be achieved by Buyer through the installation and operation of the items to be delivered hereunder. Seller's installation services and installation warranty does not include or imply any assistance for system field troubleshooting and no back charges for such services shall be accepted without the prior written consent of Seller's authorized representative.

(C) **EXTENDED WARRANTY PERIOD OPTION FOR CORE AND COIL:**When purchased, the warranty period may be extended by the period specified in such purchase covering core and coils only against failure occurring with respect to normal operation and within the parameters for which the transformer was designed. For extended Warranty period, to ensure validity of Extended Warranty period coverage, Virginia Transformer requires Dissolved Gas Analysis (DGA) reports of the supplied unit to be provided every year for the period of extended warranty period coverage. The annual DGAs should be emailed to:FieldService@vatransformer.com. Failure to conduct annual DGAs and provide the reports to Seller may void the purchased extended warranty. Except for the extended time period all other provisions, terms, conditions, and limitations set forth above shall apply to the extended warranty period. In case of any disturbance in the system that causes the transformer to trip off-line, following information shall be forwarded to Virginia Transformer Corp within 48

hours: Event summary with relevant data, Protection system data, Overvoltage conditions (If any), Fault data (if any) and offset timing with peak current value, Loading, Environmental and atmospheric conditions. Failure to timely provide this information may void the warranty.

(D)**EXTENDED BUMPER TO BUMPER WARRANTY PERIOD OPTION:**When purchased, the warranty for the extended period specified will cover the entire Transformer including core and coils and all associated transformer accessories against failure occurring with respect to normal operation and within the parameters for which the transformer was designed. Bumper to Bumper Warranty does not cover normal wear and tear including paint and gaskets beyond five years. For extended Warranty period, to ensure validity of Extended Warranty period coverage, Virginia Transformer requires Dissolved Gas Analysis (DGA) reports of the supplied unit to be provided every year for the period of extended warranty coverage, and the additional data as stated in Section15(A) The annual DGA's should be emailed to: FieldService@vatransformer.com. Failure to conduct annual DGAs and provide the reports to Seller may void the purchased extended warranty. Except for the extended time period all other provisions, terms, conditions, and limitations set forth above shall apply to the extended warranty period.

(E) **IN/OUT COVERAGE OPTION:** When purchased, Seller will cover only the expenses to transport the transformer to a repair facility and back to site for warranty failures occurring within the period defined. Buyer will make transformer ready for shipment in the condition it was originally received per the Outline Drawing with clear and free access by Carrier. Craning, civil work, disconnection, and reconnection of the transformer, etc. is the responsibility of the Buyer.

17. **CONFIGURATION STATUS AND SUBSTITUTION OF MATERIALS:**Seller reserves the right to make substitution of materials without degrading the quality of product. Customer approval will be solicited when changes affect form, fit or function. Seller further reserves the right to discontinue any items without notice and to change or modify specifications at any time without incurring any obligation to incorporate new or modified features in components or products previously sold or shipped.

18. **LIMITATION OF LIABILITY:**Neither party shall be liable to the other for any incidental, indirect, special, punitive, or consequential damages regardless of whether liability would arise under contract or tort (including negligence and strict liability), warranty, indemnity, or otherwise. Neither party's liability on any claim for loss or damage arising out of this contract or from the performance or breach thereof shall exceed the price of the item giving rise to the claims for loss or damage in the event more than one item is included in this contract/order with distinct pricing being allocated to each item in arriving at the total contract/order price.

19. **HAZARDOUS BUSINESS:** Unless otherwise agreed in writing by an authorized representative of the Seller, goods sold hereunder are not intended for use in connection with any nuclear facility or any other hazardous activity such as commercial or military aircraft,

missile installation, space exploration or other critical applications where failure of a single component could cause substantial harm to persons or property. If so used, Seller disclaims all liability for any nuclear damage contamination or other injury and Buyer shall indemnify and hold Seller harmless from such liability whether as a result of breach of contract, warranty, tort (including negligence) or other grounds. Neither Seller nor its suppliers shall have any liability to the Buyer or its insurers whether based on contract, warranty, tort (including negligence or strict liability) or other grounds for on-site damage to any property located at a nuclear facility.

20. **COMPLIANCE WITH LAW**: Buyer shall comply with all applicable Federal, State, municipal and local laws including but not limited to: laws concerning procurement integrity (particularly subsections 27(a), (d) and (f) of the Office of Federal Procurement Policy Act, as amended, 41 U.S.C. §423 and FAR 3.104-3; the Byrd Amendment (31 U.S.C. §1352); laws governing lobbying activities (2 U.S.C. §261 et seq., particularly § 267); laws prohibiting the giving of bribes (18 U.S.C. §201(b) or gratuities (18 U.S.C. §201 (c); the Foreign Corrupt Practices Act of 1977, as amended, (15 U.S.C. §78m, 78dd-1, 78dd-2, and 78ff). Buyer acknowledges that if items purchased are to be exported, Buyer has the complete responsibility and agrees to comply with all export laws and regulations of the U.S. Department of Commerce and of the U.S. State Department, or other governmental body. Seller hereby certifies that all goods sold hereunder which are produced or manufactured in the United States of America are products in compliance with the Fair Labor Standards Act of 1938 which shall be considered as satisfied by this certification.

21. **INSURANCE**: Buyer shall maintain its usual and customary insurance coverage for automobile, workmen's compensation and third-party liability claims during performance of this order and, if requested by Seller, name Seller an insured under its third-party liability coverage.

22. **NON-WAIVER**: The failure of Seller to enforce at any time any of the provisions of this order shall not constitute a waiver of such provisions or a waiver of the right of Seller to enforce any or all provisions. If any term or provisions of this order is held invalid or unenforceable by any court of competent jurisdiction, the remainder of this order shall continue to be valid and binding upon the parties unless performance thereof is rendered legally impractical and no longer fulfills the intention of the parties under this order.

23. **APPLICABLE LAW AND FORUM FOR RESOLUTION OF DISPUTES:** This contract shall be deemed to have been made and performed in, and shall be construed, interpreted and the rights and obligations of the parties determined by the law of the Commonwealth of Virginia excluding choice of law rules. Any dispute, controversy or claim arising out of or related to this contract, or any breach thereof, shall be resolved by binding arbitration administrated by the American Arbitration Association under its Commercial Arbitration Rules and judgment on the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. Such arbitration shall take place in Roanoke, Va. In case of non- performance by Buyer

requiring arbitration or other legal action, Seller's costs, and reasonable attorney's fees of arbitration or other legal action shall be the responsibility of the Buyer

24. **PRICE SURCHARGE:** In the event any components such as,core steel,mineral oil,electricity,labor etc. are subject to abnormal price increases, and VTC/GTC is not able to otherwise mitigate these increases, during the period between the proposal date and the settlement date, VTC/GTC may pass along those specific incremental cost increases.

25. **ASSIGNMENT:** Except as otherwise expressly provided herein, no assignment of this order or Buyer's rights under this order shall be made by Buyer without the prior written agreement of the Seller. All amounts due to the Seller, including the assignment fee of $10,000, must be paid to the Seller before any assignments will be granted. In addition, Buyer must provide financial and other information as requested by the Seller to support the ability of the assignee to pay future amounts that may become due. Seller reserves the right to deny any request for assignment.

26. **FORCE MAJEURE:** In addition to other liability limitation herein contained, seller shall not be responsible to the Buyer for any loss or damage due to failure or delay in performance or delivery of any of the items or services required under this order when such delay or failure is due to causes beyond the Seller's reasonable control. Such causes shall include without limitation fires, floods, epidemics, pandemics, quarantines, unusually severe weather, strikes, embargoes, wars, political strife, riots, delays in transportation, compliance with any regulation or directives of any national, state, or local municipal government or authority and unforeseeable shortages in fuel, power, materials, or labor. Seller shall not be liable for delays in delivery or performance, or for failure to manufacture, deliver or perform, due to an inability on account of a cause beyond the reasonable control of Seller to obtain necessary materials, components, services, or facilities. Seller will notify Buyer of any material delay excused by this clause and will specify the revised delivery date as soon as practicable. In the event of any such delay, there will be no termination and the date of delivery or of performance shall be extended for a period equal to the time lost by reason of the delay.

27. **ORDER TERMS EXCLUSIVE:** These Terms and Conditions together with Seller's Proposal and Order Acknowledgement constitute the entire and sole agreement between the parties concerning the subject matter of this order and the parties acknowledge and agree that none of them has made any representation with respect to the subject matter of this order or any representations including the execution and delivery hereof except as specifically set forth herein. Captions as used herein are for convenience or reference only and shall not be deemed or construed as in any way limiting or extending the meaning of any terms and conditions contained herein.

28. **CUSTOMER CONTRACTS:** Buyer will include in its contracts with its purchaser customers the warranty conditions and limitations Section 15 (Equipment Warranties and Remedy), and the limitations of liability provisions set out in Section 17 (Limitation of Liability). Buyer shall

indemnify and hold harmless Seller from any liability to any customer or third parties as a result of the failure to include such conditions and limitations in its contracts with its purchaser customers.

29. **MODIFICATION:** This order may not be modified except by written instrument executed by the following authorized representatives; Director of Contracts, Director of Finance, Senior VP of Materials / MIS, Corporate Controller, President, and CEO.

30. **SECTION TITLES:** Section titles appearing in the General Terms and Conditions of Sale are for convenience only and shall not be construed as interpretations of text.

31. **APPENDICIES:** Any appendix or other terms and conditions of the Seller as may be attached hereto and/or identified herewith are hereby incorporated and made a part of these Terms and Conditions and all orders or contracts shall be subject to such additional terms and conditions which shall control over any inconsistency with the Terms and Conditions stated herein.

32. **"Intellectual Property Rights"** means all registered and unregistered intellectual property rights throughout the world, including rights in patents, copyrights, trademarks, trade secrets, designs, databases, and domain names and moral rights.

33. **Grant of License by VTC Upon** receipt of full payment for the Transformer and conditioned upon Customer not defaulting on its obligations under this Agreement, VTC hereby grants to Customera perpetual, royalty-free license to use the Intellectual Property Rights of VTC which are incorporated in the Transformer. Such license is limited solely to the use of the Transformer by Customer for the purposes and at the location described in VTC's Proposal. Customer may only transfer this license to a third party upon first providing VTC with a written acknowledgment by such transferee of VTC's ownership of its Intellectual Property Rights contained in the Transformer.

34. If any purchase order submitted by the owner/purchaser contains or invokes terms or conditions other than this Contract or the Terms and Conditions agreed to between VTC and the owner/purchaser, then Seller/VTC may, without penalty, reject said terms and conditions on the purchase order by striking them out.

SMITHERS
QUALITY ASSESSMENTS

CERTIFICATE OF APPROVAL

This is to Certify that the Quality Management System of:

Virginia Transformer Corporation
220 Glade View Drive
Roanoke, VA 24012

(Page 1 of 2; see Appendix)

has been assessed and approved by Smithers Quality Assessments, Inc., to the following quality management system standards and requirements:

ISO 9001:2015 with Design

The Quality Management System is Applicable to:

Design, Manufacture and Commercialization of Transformers and Associated Equipment and Services for Electrical Power Systems.

Approval Certificate Number: 21.204.1

Original Approval: July 25, 2021

Current Certificate: July 25, 2021

Certificate Expires: July 24, 2024

The use of the accreditation mark indicates accreditation in respect of those activities covered by the above certificate number.

on behalf of SQA - J. Michael Hochschwender, CEO

The approval is subject to the company maintaining its system to the required standards which will be monitored by Smithers Quality Assessments, Inc., 121 S. Main St., Akron, Ohio 44308, USA

ANAB ACCREDITED ISO/IEC 17021 MANAGEMENT SYSTEMS CERTIFICATION BODY

APPENDIX A
TO THE CERTIFICATE
OF REGISTRATION NO.: 21.204.1

SMITHERS QUALITY ASSESSMENTS, INC.

Site:

Virginia Transformer Corporation
220 Glade View Drive
Roanoke, VA 24012
Scope of activities: Design, Manufacture and Commercialization of Transformers and Associated Equipment and Services for Electrical Power Systems.

The above site is certified by Smithers Quality Assessments, Inc. with regard to ISO 9001:2015 with Design. The following locations are included utilizing a Multi-site (with no Sampling) approach.

Location(s):

Virginia Transformer-Troutville
100 Smorgon Way
Troutville, VA 24175
Scope of activities: Manufacture and Commercialization of Transformers and Associated Equipment and Services for Electrical Power Systems. Includes Tank Fabrication.

Caravels, LLC dba Georgia Transformer Corp.
2769 Highway 21 South
Rincon, GA 31326
Scope of activities: Manufacture and Commercialization of Transformers and Associated Equipment and Services for Electrical Power Systems.

VTC West S.A. de C.V.
Ave. Homero #3307
Complejo Industrial Chihuahua
Chihuahua, Chihuahua 31136 Mexico
Scope of activities: Manufacture and Commercialization of Transformers and Associated Equipment.

VTCU Corp (a subsidiary of Virginia Transformer Corp.)
3770 Pole Line Road # 37
Pocatello, ID 83201
Scope of activities: Manufacture, Sale Service and Repair of Transformers.

Applicable Standard: ISO 9001:2015 with Design

This appendix applies only to those sites listed above. As other sites are assessed and approved, or as sites already approved are removed from active services, this appendix will be amended to show the current status.
Sites not listed on this appendix shall not be viewed as approved.

ANAB ACCREDITED ISO/IEC 17021 MANAGEMENT SYSTEMS CERTIFICATION BODY

Customer History Report

QUOTE#	ITEM	QTEDATE	CUST NAME	CITY	ST	KVA	KV	LTC	QTY	APPLICATION
M223604A	1	9/9/2022	ROUGHRIDER ELECTRIC COOP	DICKINSON	ND	12000	115000	N	1	POWER DIST.
M223605A	1	9/9/2022	NORTH ITASCA ELECTRIC COOP	BIGFORK	MN	7500	69000	N	1	POWER DIST.
M223606A	1	9/9/2022	POLK COUNTY RURAL PUBLIC POWER	STROMSBURG	NE	10000	69000	N	1	POWER DIST.
M223603A	1	9/8/2022	HOWARD GREELEY RURAL PUB PWR	COLUMBUS	NE	5000	34500	N	1	POWER DIST.
M223603A	2	9/8/2022	HOWARD GREELEY RURAL PUB PWR	COLUMBUS	NE	7500	34500	N	1	POWER DIST.
M223602A	1	9/7/2022	CITY UTILITIES	SPRINGFIELD	MO	16800	67000	N	3	POWER DIST.
G223504A	1	9/2/2022	AIKEN ELECTRIC COOPERATIVE, IN	AIKEN	SC	20000	115000	N	1	POWER DIST.
G223303A	1	8/19/2022	CITY OF ROCKY MOUNT, NC	ROCKY MOUNT	NC	90000	230000	Y	1	AUTOTRANSFORMER
M223303A	1	8/19/2022	HUNTSVILLE UTILITIES	HUNTSVILLE	AL	15000	43800	N	6	POWER DIST.
B223304A	1	8/18/2022	MAQUOKETA VALLEY ELEC CO-OP	ANAMOSA	IA	5000	69000	N	2	POWER DIST.
B223301A	1	8/15/2022	STEARNS ELECTRIC ASSOC	NEAR SAUK CENTER	MN	10000	115000	N	1	POWER DIST.
M223301A	1	8/15/2022	BRISTOL TENNESSEE ESSENTIAL SE	BRISTOL	TN	150000	161700	Y	2	AUTOTRANSFORMER
O223201A	1	8/8/2022	MORGAN COUNTY REA	FORT MORGAN	CO	24000	69000	N	1	POWER DIST.
B223103A	1	8/3/2022	PEOPLE'S COOPERATIVE SERVICES	ORONOCO	MN	5000	69000	Y	1	POWER DIST.
B223104A	1	8/3/2022	RUNESTONE ELECTRIC ASSN.	ALEXANDRIA	MN	7500	115000	N	1	POWER DIST.
M223001A	1	7/28/2022	CITY OF TUSKEGEE	TUSKEGEE	AL	12000	110000	N	2	POWER DIST.
G223003A	1	7/26/2022	CITY OF CONCORD	CONCORD	NH	15000	101250	N	2	POWER DIST.
B223001A	1	7/25/2022	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	100000	230000	N	1	POWER DIST.
B223003A	1	7/25/2022	GUTHRIE COUNTY REC	GUTHRIE COUNTY	IA	5000	69000	N	1	POWER DIST.
B223004A	1	7/25/2022	NORTHWEST IOWA POWER COOP	LE MARS	IA	5600	67000	N	4	POWER DIST.
G223001A	1	7/25/2022	STEUBEN REC	BATH	NY	10000	34400	N	1	POWER DIST.
G223002A	1	7/25/2022	STEUBEN REC	BATH	NY	5000	34400	N	1	POWER DIST.
O222801A	1	7/14/2022	OKLAHOMA MUNICIPAL POWER	EDMOND	OK	7500	24940	N	1	POWER DIST.
G222801A	1	7/11/2022	TOWN OF FRONT ROYAL	FRONT ROYAL	VA	10000	34400	N	1	POWER DIST.
B222702A	1	7/8/2022	ELKHORN RURAL PPD	BATTLE CREEK	NE	10000	69000	N	1	POWER DIST.
B222703A	1	7/8/2022	EAST RIVER ELECT PWR COOP	MADISON	SD	8400	69000	N	1	POWER DIST.
B222703B	1	7/8/2022	EAST RIVER ELECT PWR COOP	MADISON	SD	8400	69000	N	1	POWER DIST.
B222703C	1	7/8/2022	EAST RIVER ELECT PWR COOP	MADISON	SD	8400	69000	N	1	POWER DIST.
B222705A	1	7/8/2022	EAST RIVER ELECT PWR COOP	MADISON	SD	5600	69000	N	1	POWER DIST.
B222701A	1	7/7/2022	SUN PRAIRIE WATER & LIGHT	SUN PRAIRIE	WI	15000	67000	N	1	POWER DIST.
G222701A	1	7/7/2022	MECKLENBURG ELECTRIC CO-OP	CHASE CITY	VA	20000	115000	N	2	POWER DIST.
G222605A	1	7/1/2022	CEE-US	WEST COLUMBIA	SC	20000	115000	N	1	POWER DIST.
M222604A	1	7/1/2022	ARAB ELECTRIC COOPERATIVE, INC	ARAB	AL	30000	161700	N	2	POWER DIST.
G222603A	1	6/29/2022	BOROUGH OF PARK RIDGE PUBLIC	PARK RIDGE	NJ	10000	26400	N	1	POWER DIST.
B222601A	1	6/28/2022	MINNKOTA POWER COOP., INC	GRAND FORKS	ND	10000	115000	N	1	POWER DIST.
G222602A	1	6/28/2022	NORTH GEORGIA EMC	DALTON	GA	25000	115000	N	2	POWER DIST.
O222601A	1	6/28/2022	PLATTE RIVER POWER AUTHORITY	FORT COLLINS	CO	100000	230000	Y	2	AUTOTRANSFORMER
M222601A	1	6/27/2022	CITY OF FLORENCE	FLORENCE	AL	20000	43800	N	1	POWER DIST.
M222602A	1	6/27/2022	CITY OF LINDSBORG	LINDSBORG	KS	7000	34400	N	1	POWER DIST.
M222603A	1	6/27/2022	NORTH ALABAMA ELECTRIC COOPERA	STEVENSON	AL	18000	161700	N	2	POWER DIST.
B222501A	1	6/21/2022	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	10000	69000	N	1	POWER DIST.
O222501A	1	6/21/2022	TECHLINE AUSTIN	AUSTIN	TX	15000	138000	N	1	POWER DIST.
G222502A	1	6/20/2022	COMMISSION OF PUBLIC WORKS	LAURENS	SC	20000	100000	N	2	POWER DIST.
O222403A	1	6/17/2022	CALPINE CORPORATION	SACRAMENTO	CA	3750	13800	N	1	POWER DIST.
O222403C	1	6/17/2022	CALPINE CORPORATION	SACRAMENTO	CA	15800	138000	N	1	POWER DIST.
O222403D	1	6/17/2022	CALPINE CORPORATION	SACRAMENTO	CA	12000	18000	N	1	UNIT AUXILIARY TRANS
O222403E	1	6/17/2022	CALPINE CORPORATION	SACRAMENTO	CA	2500	13800	N	1	POWER DIST.
M222401A	1	6/15/2022	CITY OF ATHENS UTILITIES	ATHENS	TN	15000	46000	N	1	POWER DIST.
M222402A	1	6/15/2022	CITY OF HUNTSVILLE, SWDA	HUNTSVILLE	AL	12000	46000	N	1	GENERATOR STEP UP
M222403A	1	6/15/2022	HUNTSVILLE UTILITIES	HUNTSVILLE	AL	15000	43800	N	2	STEP UP
O222401A	2	6/15/2022	LOWER COLORADO RIVER AUTHORITY	BASTROP	TX	1000	69000	N	4	POWER DIST.
M222304A	1	6/10/2022	ORRVILLE UTILITIES	ORRVILLE	OH	50000	138000	N	2	POWER DIST.
M222304B	1	6/10/2022	ORRVILLE UTILITIES	ORRVILLE	OH	30000	138000	N	1	POWER DIST.
M222305A	1	6/10/2022	WEST MEMPHIS UTILITIES	MEMPHIS	AZ	30000	161000	Y	1	POWER DIST.
M222302A	1	6/9/2022	DUCK RIVER ELECTRIC MEMBERSHIP	SHELBYVILLE	TN	25000	161700	N	1	POWER DIST.
B222302A	1	6/7/2022	ELKHORN RURAL PPD	BATTLE CREEK	NE	10000	34500	N	1	POWER DIST.
B222301A	1	6/6/2022	MINNESOTA VALLEY COOPERATIVE	MONTEVIDEO	MN	10000	69000	N	1	POWER DIST.
G222202A	1	6/3/2022	CEE-US	WEST COLUMBIA	SC	15000	67000	N	1	POWER DIST.
G222202B	1	6/3/2022	CEE-US	WEST COLUMBIA	SC	15000	67000	N	1	POWER DIST.

G222202C	1	6/3/2022	CEE-US	WEST COLUMBIA	SC	15000	67000	N	1	POWER DIST.
B222201A	1	6/1/2022	GRAYS HARBOR PUD NO. 1	ABERDEEN	WA	15000	115000	N	1	POWER DIST.
G222201A	1	6/1/2022	NEW HAMPSHIRE ELECTRIC CO-OP	PLYMOUTH	NH	12000	34500	N	1	POWER DIST.
G222102A	1	5/27/2022	TARHEEL ELE. MEM. ASSOC.	RALEIGH	NC	20000	230000	N	2	POWER DIST.
M222101A	1	5/27/2022	SWEETWATER UTILITIES BOARD	SWEETWATER	TN	25000	161700	N	2	POWER DIST.
M222102A	1	5/27/2022	KNOXVILLE UTILITY BOARD	KNOXVILLE	TN	15000	66000	N	2	POWER DIST.
M222103A	1	5/27/2022	COLUMBIA POWER & WATER SYSTEMS	COLUMBIA	TN	30000	161700	N	2	POWER DIST.
G222101A	1	5/25/2022	GEORGIA TRANSMISSION CORP	TUCKER	GA	8000	115000	N	1	POWER DIST.
B222101A	1	5/24/2022	COPPER VALLEY ELE. ASSN.	GLENN ALLEN	AK	5000	24940	N	1	POWER DIST.
O221602A	1	5/18/2022	YAMPA VALLEY	STEAMBOAT SPRINGS	CO	15000	67000	N	1	POWER DIST.
B221904A	1	5/12/2022	FLATHEAD ELECTRIC CO-OP INC	KALISPELL	MT	10000	34500	N	1	POWER DIST.
M221902A	1	5/10/2022	VICTORY ELECTRIC COOP ASSOCIAT	DODGE CITY	KS	18000	115000	N	1	AUTOTRANSFORMER
B221901A	1	5/9/2022	ROCK ENERGY COOPERATIVE	JANESVILLE	WI	12000	69000	N	1	POWER DIST.
M221803A	1	5/4/2022	MUSCLE SHOALS ELECTRIC BOARD	MUSCLE SHOALS	AL	22500	161000	N	1	POWER DIST.
M221804A	1	5/4/2022	MIDWEST ENERGY COOPERATIVE	CASSOPOLIS	MI	10000	67000	N	1	POWER DIST.
B221801A	1	5/3/2022	EAST RIVER ELECT PWR COOP	MADISON	SD	8400	69000	N	1	POWER DIST.
G221802A	1	5/2/2022	CEE-US	WEST COLUMBIA	SC	15000	115000	N	1	POWER DIST.
G221803A	1	5/2/2022	MECKLENBURG ELECTRIC CO-OP	CHASE CITY	VA	15000	115000	N	1	POWER DIST.
B221703A	1	4/27/2022	MADELIA MUNICIPAL LIGHT&POWER	MADELIA	MN	15000	67000	N	1	POWER DIST.
B221703A	2	4/27/2022	MADELIA MUNICIPAL LIGHT&POWER	MADELIA	MN	10000	12470	N	1	POWER DIST.
B221701A	1	4/26/2022	COLUMBIA RIVER PUD	DEER ISLAND	OR	15000	115000	N	1	POWER DIST.
B221702A	1	4/26/2022	EAST RIVER ELECT PWR COOP	MADISON	SD	8400	115000	N	1	POWER DIST.
G221702A	1	4/26/2022	BOROUGH OF LEHIGHTON	LEHIGHTON	PA	12000	67000	N	1	POWER DIST.
M221701A	1	4/26/2022	NORTHEAST MISSOURI ELECTRIC	PALMYRA	MO	15000	67000	Y	1	POWER DIST.
M221702A	1	4/26/2022	GREENVILLE LIGHT & POWER SYSTE	GREENVILLE	TN	12000	68800	N	1	POWER DIST.
B221602A	1	4/20/2022	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	N	1	POWER DIST.
B221602B	1	4/20/2022	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	N	1	POWER DIST.
G221604A	1	4/20/2022	GEORGIA TRANSMISSION CORP	TUCKER	GA	15000	115500	N	1	POWER DIST.
G221604A	2	4/20/2022	GEORGIA TRANSMISSION CORP	TUCKER	GA	15000	115500	N	1	POWER DIST.
G221603A	1	4/19/2022	GREAT RIVER HYDRO	PORTSMOUTH	NH	7500	69000	N	1	GENERATOR STEP UP
M221602A	1	4/18/2022	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	10000	69000	N	2	POWER DIST.
M221602B	1	4/18/2022	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	12000	69000	N	1	POWER DIST.
M221602C	1	4/18/2022	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	5000	138000	N	1	POWER DIST.
M221603A	1	4/18/2022	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	7000	34500	N	1	GENERATOR STEP UP
M221603B	1	4/18/2022	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	7000	34500	N	1	GENERATOR STEP UP
O221601A	1	4/18/2022	PETRELLI ELECTRIC	AQUA DULCE	CA	33600	66000	N	2	POWER DIST.
O213201A	1	4/15/2022	GILA RIVER INDIAN AUTHORITY	CHANDLER	AZ	15000	69000	N	1	POWER DIST.
G221501A	1	4/14/2022	NORTHERN NECK ELECTRIC COOPERA	WARSAW	VA	10000	34500	N	1	POWER DIST.
G221501B	1	4/14/2022	NORTHERN NECK ELECTRIC COOPERA	WARSAW	VA	25000	230000	N	1	POWER DIST.
G221401A	1	4/8/2022	RAPPAHANNOCK ELEC COOPERATIVE	FREDERICKSBURG	VA	10000	34500	N	1	POWER DIST.
G221401B	1	4/8/2022	RAPPAHANNOCK ELEC COOPERATIVE	FREDERICKSBURG	VA	15000	34500	N	1	POWER DIST.
G221401C	1	4/8/2022	RAPPAHANNOCK ELEC COOPERATIVE	FREDERICKSBURG	VA	15000	34500	N	1	POWER DIST.
O221405A	1	4/8/2022	RITA BLANCA ELECTRIC CO-OP	DALHART	TX	15000	115000	N	1	POWER DIST.
G221302A	1	4/1/2022	CITY OF DANVILLE - PURCH. DEPT	DANVILLE	VA	15000	67000	Y	1	POWER DIST.
G221302B	1	4/1/2022	CITY OF DANVILLE - PURCH. DEPT	DANVILLE	VA	15000	67000	Y	1	POWER DIST.
B221303A	1	3/31/2022	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	N	1	POWER DIST.
B221303B	1	3/31/2022	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	N	1	POWER DIST.
B221304A	1	3/31/2022	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	N	1	POWER DIST.
B221305A	1	3/31/2022	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	30000	115000	N	1	POWER DIST.
B221301A	1	3/29/2022	HIGH WEST ENERGY	PINE BLUFFS	WY	10000	34500	N	1	POWER DIST.
M221301A	1	3/29/2022	GUERNSEY-MUSKINGUM ELEC. COOP	NEW CONCORD	OH	12000	69000	N	1	POWER DIST.
B221207A	1	3/25/2022	PAYSON CITY LTC POWER TRANS.	PAYSON	UT	12000	46000	N	1	POWER DIST.
B221206A	1	3/24/2022	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	15000	115000	N	1	POWER DIST.
B221206B	1	3/24/2022	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	15000	115000	N	1	POWER DIST.
G221201A	1	3/23/2022	CRISP COUNTY POWER COMMISSION	CORDELE	GA	12000	43800	N	1	POWER DIST.
B221202A	1	3/22/2022	MINNKOTA POWER COOP., INC	GRAND FORKS	ND	1000	68800	N	1	POWER DIST.
B221203A	1	3/22/2022	POWDER RIVER ENERGY CORP	GILLETTE	WY	15000	69000	N	1	POWER DIST.
B221204A	1	3/22/2022	LAKE REGION ELECTRIC CO-OP	PELICAN RAPIDS	MN	5000	43800	N	1	POWER DIST.
B221205A	1	3/22/2022	EAST RIVER ELECT PWR COOP	MADISON	SD	16800	115000	N	1	POWER DIST.
O221201A	1	3/22/2022	BLUEBONNET ELECTRIC COOP., INC	GIDDINGS	TX	18000	138000	N	1	POWER DIST.
M221101A	1	3/18/2022	HANCOCK-WOOD ELECTRIC CO-OP	FINDLAY	OH	12000	69000	N	1	POWER DIST.

B221104A	1	3/16/2022	NORTHWEST IOWA POWER COOP	LE MARS	IA	12000	67000	N	1	POWER DIST.
B221003A	1	3/11/2022	MISSOULA ELECTRIC COOP	SEELY LAKE	MT	15000	100000	N	1	POWER DIST.
B221004A	1	3/11/2022	YELLOWSTONE VALLEY ELECTRIC	HUNTLEY	MT	10000	69000	N	1	POWER DIST.
G221003A	1	3/11/2022	GLADES ELECTRIC COOPERATIAVE	MOORE HAVEN	FL	15000	69000	N	1	POWER DIST.
M221002A	1	3/11/2022	CARROLL-WHITE REMC	MONTICELLO	IN	12000	69000	N	1	POWER DIST.
B221001A	1	3/7/2022	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	100000	230000	N	1	POWER DIST.
G221001A	1	3/7/2022	CITY OF HIGH POINT	HIGH POINT	NC	22400	100000	N	1	POWER DIST.
M221001A	1	3/7/2022	CITY OF SOUTH HAVEN	SOUTH HAVEN	MI	15000	67000	N	1	POWER DIST.
B220901A	1	2/28/2022	CITY OF RICHLAND	RICHLAND	WA	15000	115000	N	2	POWER DIST.
G220901A	1	2/28/2022	RAPPAHANNOCK ELEC COOPERATIVE	FREDERICKSBURG	VA	20000	115000	N	2	POWER DIST.
G220901B	1	2/28/2022	RAPPAHANNOCK ELEC COOPERATIVE	FREDERICKSBURG	VA	30000	115000	N	3	POWER DIST.
B220802A	1	2/24/2022	EAST RIVER ELECT PWR COOP	MADISON	SD	8400	69000	N	1	POWER DIST.
B220802B	1	2/24/2022	EAST RIVER ELECT PWR COOP	MADISON	SD	8400	69000	N	1	POWER DIST.
M220802A	1	2/24/2022	FORKED DEER ELECTRIC COOPERATI	HALLS	TN	12000	68800	N	4	POWER DIST.
B220801A	1	2/22/2022	CITY OF SEWARD	SEWAARD	AK	4620	115000	N	1	POWER DIST.
B220702A	1	2/18/2022	NORTHWEST IOWA POWER COOP	LE MARS	IA	5600	67000	N	2	POWER DIST.
B220702B	1	2/18/2022	NORTHWEST IOWA POWER COOP	LE MARS	IA	5600	67000	N	1	POWER DIST.
O220702A	1	2/18/2022	BIG COUNTRY ELECTRIC COOP	ROBY	TX	12000	138000	N	1	POWER DIST.
O220702B	1	2/18/2022	BIG COUNTRY ELECTRIC COOP	ROBY	TX	12000	138000	N	1	POWER DIST.
O220702C	1	2/18/2022	BIG COUNTRY ELECTRIC COOP	ROBY	TX	12000	138000	N	1	POWER DIST.
M220701A	1	2/17/2022	SLEMCO	LAFAYETT	LA	20000	134000	Y	1	POWER DIST.
G220701A	1	2/16/2022	NEW HAMPSHIRE ELECTRIC CO-OP	PLYMOUTH	NH	11200	34500	N	1	POWER DIST.
O220701A	1	2/14/2022	CITY OF TONKAWA OKLAHOMA	TONKAWA	OK	12000	138000	N	1	POWER DIST.
B220604A	1	2/11/2022	EAST RIVER ELECT PWR COOP	MADISON	SD	8400	69000	N	1	POWER DIST.
B220601A	1	2/9/2022	CEDAR KNOX PUBLIC PWR DISTRICT	HARTINGTON	NE	5000	69000	N	1	POWER DIST.
B220603A	1	2/9/2022	CITY OF SEWARD	SEWAARD	AK	15000	69000	N	2	POWER DIST.
O220602B	1	2/9/2022	TEXAS ELECTRIC COOPERATIVES	AUSTIN	TX	10000	138000	N	1	POWER DIST.
G220602A	1	2/8/2022	TARHEEL ELE. MEM. ASSOC.	RALEIGH	NC	12000	34500	N	1	POWER DIST.
M220602A	1	2/8/2022	NORTHEAST MISSOURI ELECTRIC	PALMYRA	MO	5000	69000	N	2	POWER DIST.
M220603A	1	2/8/2022	MID-OHIO ENERGY COOP.	KENTON	OH	4000	69000	N	1	POWER DIST.
M220504A	1	2/2/2022	CENTRAL ALABAMA ELECTRIC CO-OP	PRATTVILLE	AL	15000	112750	N	1	POWER DIST.
M220505A	1	2/2/2022	CENTRAL ALABAMA ELECTRIC CO-OP	PRATTVILLE	AL	15000	112750	N	1	POWER DIST.
M220502A	1	1/31/2022	THE ENERGY COOPERATIVE, OH	UTICA	OH	12000	138000	N	1	POWER DIST.
M220503A	1	1/31/2022	VINTON PUBLIC POWER AUTHORITY	VINTON	LA	10000	138000	N	1	POWER DIST.
B220407A	1	1/28/2022	CITY OF GERING	GERING	NE	10000	34500	N	1	POWER DIST.
G220401A	1	1/28/2022	GEORGIA TRANSMISSION CORP	TUCKER	GA	12000	43800	N	1	POWER DIST.
B220406A	1	1/27/2022	CITY OF ST. GEORGE	ST. GEORGE	UT	15000	67000	N	2	POWER DIST.
B220404A	1	1/25/2022	SOUTHERN PUBLIC POWER DISTRICT	GRAND ISLAND	NE	7500	67000	N	8	POWER DIST.
M220402A	1	1/25/2022	VILLAGE OF PIONEER	PIONEER	OH	15000	67000	N	2	POWER DIST.
B220401A	1	1/24/2022	COOPERATIVE LIGHT & POWER ASSO	ALEXANDRIA	MN	10000	115000	N	1	POWER DIST.
B220402A	1	1/24/2022	MAQUOKETA VALLEY ELEC CO-OP	ANAMOSA	IA	10000	69000	N	1	POWER DIST.
B220403A	1	1/24/2022	ROUGHRIDER ELECTRIC COOP	DICKINSON	ND	12000	115000	N	1	POWER DIST.
M220401A	1	1/24/2022	CITIZENS ELECTRIC CORP	PERRYVILLE	MO	10000	67000	N	2	POWER DIST.
O220401A	1	1/24/2022	LYNTEGAR ELECTRIC COOP	TAHOKA	TX	10000	138000	N	1	POWER DIST.
B220301A	1	1/20/2022	BENTON PUD	KENNEWICK	WA	12000	115000	N	1	POWER DIST.
B220301A	2	1/20/2022	BENTON PUD	KENNEWICK	WA	10000	115000	N	1	POWER DIST.
M220301A	1	1/18/2022	CITY OF JACKSON	JACKSON	OH	20000	34500	N	1	POWER DIST.
G221804A	1	1/14/2022	OGLETHORPE POWER CORP	ROME	GA	835	18000	N	1	DRIVE DUTY
G220201A	1	1/13/2022	CENTRAL VIRGINIA ELECTRIC COOP	ARRINGTON	VA	5000	24940	N	2	POWER DIST.
M220201A	1	1/11/2022	CITY OF CALIFORNIA	CALIFORNIA	MO	5000	34500	N	2	POWER DIST.
O220201A	1	1/11/2022	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	21000	69000	N	1	POWER DIST.
M181402F	1	1/5/2022	CITY OF EDMOND	EDMOND	OK	15000	138000	Y	1	POWER DIST.
B220101A	1	1/4/2022	EAST RIVER ELECT PWR COOP	MADISON	SD	8400	69000	N	1	POWER DIST.
M215103A	1	12/22/2021	JACKSON PURCHASE ENERGY CORP.	PADUCAH	KY	15000	69000	N	1	POWER DIST.
M215101A	1	12/21/2021	LENOIR CITY UTILITIES BOARD	LENOIR CITY	TN	18000	69000	N	2	POWER DIST.
M215101A	2	12/21/2021	LENOIR CITY UTILITIES BOARD	LENOIR CITY	TN	18000	161700	N	1	POWER DIST.
M215101A	3	12/21/2021	LENOIR CITY UTILITIES BOARD	LENOIR CITY	TN	25000	161700	N	1	POWER DIST.
M215102A	1	12/21/2021	CITY OF HOLLAND BOARD OF PUBLI	HOLLAND	MI	25000	138000	N	3	POWER DIST.
G215101A	1	12/20/2021	AIKEN ELECTRIC COOPERATIVE, IN	AIKEN	SC	20000	115000	N	2	POWER DIST.
G215101B	1	12/20/2021	AIKEN ELECTRIC COOPERATIVE, IN	AIKEN	SC	20000	115000	N	1	POWER DIST.
O215101A	1	12/20/2021	TEXAS ELECTRIC COOPERATIVES	AUSTIN	TX	20000	115000	N	2	POWER DIST.

B215003A	1	12/15/2021	COPPER VALLEY ELE. ASSN.	GLENN ALLEN	AK	12000	24940	N	2	GENERATOR STEP UP
B215001A	1	12/14/2021	CITY OF ELLENSBURG	ELLENSBURG	WA	20000	115000	N	1	POWER DIST.
B215002A	1	12/14/2021	BENTON PUD	KENNEWICK	WA	2000	12470	Y	2	VOLTAGE REGULATOR
M214802A	1	12/2/2021	MOUNTAIN ELEC. COOP	MOUNTAIN CITY	TN	15000	161000	N	2	POWER DIST.
M214802A	2	12/2/2021	MOUNTAIN ELEC. COOP	MOUNTAIN CITY	TN	20000	161000	N	2	POWER DIST.
B214801A	1	11/30/2021	SHAKOPEE PUBLIC UTILITIES COMM	SHAKOPEE	MN	15000	115000	Y	1	POWER DIST.
B214802A	1	11/30/2021	BARRON ELECTRIC COOPERATIVE	BARRON	WI	10000	67000	N	1	POWER DIST.
M214801A	1	11/29/2021	CITY OF MARSHALL	MARSHALL	MI	20000	138000	N	2	POWER DIST.
M214701A	1	11/24/2021	BLACK WARRIOR ELECTRIC	DEMOPOLIS	AL	10000	43784	N	1	POWER DIST.
M214602A	1	11/19/2021	HOOSIER ENERGY REC,INC	BLOOMINGTON	IN	12000	69000	N	3	POWER DIST.
O214601A	1	11/19/2021	CITY OF COLLEGE STATION	COLLEGE STATION	TX	25000	134000	N	1	POWER DIST.
B214602A	1	11/17/2021	CENTRAL POWER ELEC. COOP. INC.	MINOT	ND	10000	43800	N	1	POWER DIST.
B214603A	1	11/17/2021	CENTRAL POWER ELEC. COOP. INC.	MINOT	ND	5000	43800	N	3	POWER DIST.
G214601B	1	11/17/2021	JOE WHEELER EMC	TRINITY	AL	15000	46000	N	2	POWER DIST.
B214506A	1	11/11/2021	NORTHWEST IOWA POWER COOP	LE MARS	IA	5600	67000	N	4	POWER DIST.
G214503A	1	11/11/2021	BOROUGH OF SCHUYLKILL HAVEN	SCHUYLKILL HAVEN	PA	12000	67000	N	1	POWER DIST.
G214504A	1	11/11/2021	JACKSON ENERGY AUTHORITY	JACKSON	TN	20000	46000	N	2	POWER DIST.
B214505A	1	11/10/2021	MOUNT HOREB UTILITIES	MOUNT HOREB	WI	10000	67000	N	1	POWER DIST.
B214501A	1	11/9/2021	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	N	1	POWER DIST.
B214502A	1	11/9/2021	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	100000	230000	N	2	POWER DIST.
B214503A	1	11/9/2021	MINNKOTA POWER COOP., INC	GRAND FORKS	ND	5000	43800	N	2	POWER DIST.
B214504A	1	11/9/2021	CORN BELT POWER COOPERATIVE	HUMBOLDT	IA	1667	67000	N	9	POWER DIST.
G214402A	1	11/5/2021	CITY OF HOMESTEAD	HOMESTEAD	FL	24000	138000	Y	2	POWER DIST.
B214402A	1	11/3/2021	MINNKOTA POWER COOP., INC	GRAND FORKS	ND	5000	68800	N	4	POWER DIST.
M214402A	1	11/3/2021	BLUEBONNET ELECTRIC COOP., INC	GIDDINGS	TX	30000	138000	N	1	POWER DIST.
B214304A	1	10/29/2021	GARKANE ENERGY COOPERATIVE	LOA	UT	10000	67000	N	1	POWER DIST.
B214301A	1	10/25/2021	NOBLES COOPERATIVE ELECTRIC	WORTHINGTON	MN	7500	69000	N	1	POWER DIST.
B214302A	1	10/25/2021	FEDERATED RURAL ELECTRIC ASSC	JACKSON	MN	7500	69000	N	1	POWER DIST.
M214204A	1	10/21/2021	MIDWEST ENERGY COOPERATIVE	CASSOPOLIS	MI	10000	138000	N	1	POWER DIST.
M214202A	1	10/20/2021	VILLAGE OF CLINTON	CLINTON	MI	10000	39490	N	1	POWER DIST.
O214202B	1	10/20/2021	CITY OF FORT MORGAN	FORT MORGAN	CO	20000	115000	N	1	POWER DIST.
O214201A	1	10/18/2021	GOLDEN VALLEY ELECTRIC ASSOC	FAIRBANKS	AK	2500	24940	N	1	AUTOTRANSFORMER
O214102A	1	10/12/2021	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	8200	69000	N	1	POWER DIST.
O214002A	1	10/5/2021	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	20000	69000	N	1	POWER DIST.
B213901A	1	10/1/2021	MINNKOTA POWER COOP., INC	GRAND FORKS	ND	10000	68800	N	1	POWER DIST.
G213902A	1	9/30/2021	CITY OF CONCORD, NC	CONCORD	NC	22400	101250	N	2	POWER DIST.
M213902A	1	9/28/2021	CITY OF MADISONVILLE ELEC DEPT	MADISONVILLE	KY	12000	67000	N	1	POWER DIST.
O213901A	1	9/27/2021	MODERN ELECTRIC WATER COMPANY	SPAKANE VALLEY	WA	15000	115000	N	1	POWER DIST.
B213805A	1	9/24/2021	VIRGINIA PUBLIC UTILITIES	VIRGINIA	MN	15000	22860	N	1	POWER DIST.
B213803A	1	9/22/2021	OCONTO ELECTRIC COOPERATIVE	OCONTO FALLS	WI	10000	34500	N	1	POWER DIST.
B213802A	1	9/21/2021	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	7500	34500	N	2	POWER DIST.
B213802B	1	9/21/2021	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	7500	34500	N	2	POWER DIST.
B213801A	1	9/20/2021	VALLEY CITY PUBLIC WORKS	VALLEY CITY	ND	15000	67000	N	1	POWER DIST.
G213801A	1	9/20/2021	TOWN OF HUNTERSVILLE	HUNTERSVILLE	NC	30000	100000	N	1	POWER DIST.
G213801A	2	9/20/2021	TOWN OF HUNTERSVILLE	HUNTERSVILLE	NC	30000	100000	N	1	POWER DIST.
G213701A	1	9/16/2021	DELAWARE ELECTRIC CO-OP INC	GREENWOOD	DE	20000	69000	N	1	POWER DIST.
O213701A	1	9/13/2021	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	10000	115000	N	1	POWER DIST.
O213701A	2	9/13/2021	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	10000	115000	N	1	POWER DIST.
O213701A	3	9/13/2021	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	10000	24940	N	1	STEP UP
O213601A	1	9/10/2021	EUGENE WATER & ELECTRIC BOARD	EUGENE	OR	1500	12470	Y	2	VOLTAGE REGULATOR
G213601A	1	9/8/2021	SMECO	BOSTON	MD	22400	67000	N	3	POWER DIST.
M213601A	1	9/7/2021	CITIZENS ELECTRIC CORP	PERRYVILLE	MO	5000	67000	N	1	POWER DIST.
M213601B	1	9/7/2021	CITIZENS ELECTRIC CORP	PERRYVILLE	MO	5000	67000	N	1	POWER DIST.
G213501A	1	9/3/2021	DELAWARE MUNI ELE CORP	SMYRNA	DE	60000	138000	Y	1	POWER DIST.
B213402A	1	8/24/2021	DURANT MUNICIPAL ELECT UTILITY	DURANT	IA	5000	69000	N	1	POWER DIST.
O213401A	1	8/23/2021	YAMPA VALLEY	STEAMBOAT SPRINGS	CO	15000	67000	N	1	POWER DIST.
G213301A	1	8/20/2021	HUNTSVILLE UTILITIES	HUNTSVILLE	AL	15000	43800	N	2	POWER DIST.
B213301A	1	8/18/2021	NOBLES COOPERATIVE ELECTRIC	WORTHINGTON	MN	3750	69000	N	1	POWER DIST.
B213301A	2	8/18/2021	NOBLES COOPERATIVE ELECTRIC	WORTHINGTON	MN	5000	69000	N	1	POWER DIST.
B213205A	1	8/13/2021	NEW GLARUS LIGHT & WATER	NEW GLARUS	WI	12000	138000	N	1	POWER DIST.
G213203A	1	8/12/2021	MECKLENBURG ELECTRIC CO-OP	CHASE CITY	VA	15000	115000	N	1	POWER DIST.

M213201A	1	8/12/2021	TAMMANY ELECTRIC CO-OP,INC.	FRANKLINTON	LA	20000	67000	N	1	POWER DIST.
B213201A	1	8/11/2021	GUTHRIE COUNTY REC	GUTHRIE COUNTY	IA	5000	69000	N	1	POWER DIST.
B213202A	1	8/11/2021	MILLE LACS ENERGY	AITKIN	MN	10000	69000	N	1	POWER DIST.
B213203B	1	8/11/2021	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	15000	24940	N	1	POWER DIST.
G213201A	1	8/10/2021	NORTHWESTERN RURAL ELECTRIC	CAMBRIDGE SPRINGS	PA	10000	34500	N	1	POWER DIST.
G213202A	1	8/10/2021	CENTRAL VIRGINIA ELECTRIC COOP	ARRINGTON	VA	15000	138000	N	4	POWER DIST.
B213101A	1	8/3/2021	IDAHO COUNTY LIGHT & POWER	GRANGEVILLE	ID	10000	115000	N	1	POWER DIST.
B213101A	2	8/3/2021	IDAHO COUNTY LIGHT & POWER	GRANGEVILLE	ID	12000	115000	N	1	POWER DIST.
G213101A	1	8/3/2021	NEW HAMPSHIRE ELECTRIC CO-OP	PLYMOUTH	NH	11200	34500	N	1	POWER DIST.
M213101A	1	8/2/2021	TEXAS ELECTRIC COOPERATIVES	AUSTIN	TX	10000	69000	N	1	POWER DIST.
G212403A	1	7/27/2021	BOROUGH OF LEHIGHTON	LEHIGHTON	PA	12000	67000	N	1	POWER DIST.
M213001A	1	7/26/2021	BIG COUNTRY ELECTRIC COOP	ROBY	TX	12000	138000	N	1	POWER DIST.
G212901A	1	7/20/2021	RAPPAHANNOCK ELEC COOPERATIVE	FREDERICKSBURG	VA	20000	138000	N	1	POWER DIST.
B212801A	1	7/14/2021	EAST RIVER ELECT PWR COOP	MADISON	SD	8400	115000	N	1	POWER DIST.
O212701B	1	7/6/2021	AMERICAN ELECTRICAL TESTING	FOXBORO	MA	10000	117800	N	1	POWER DIST.
M212301A	1	7/2/2021	TEXAS ELECTRIC COOPERATIVES	AUSTIN	TX	10000	138000	N	2	POWER DIST.
G212202A	1	7/1/2021	CITY OF LEXINGTON	LEXINGTON	NC	60000	101250	N	1	POWER DIST.
M212601A	1	6/30/2021	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	5000	69000	N	1	POWER DIST.
M212601A	2	6/30/2021	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	12000	69000	N	1	POWER DIST.
M212601B	1	6/30/2021	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	12000	69000	N	1	POWER DIST.
M212601C	1	6/30/2021	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	12000	69000	N	1	POWER DIST.
B212502A	1	6/25/2021	MOREAU-GRAND ELECTRIC COOP INC	TIMBER LAKE	SD	5000	69000	N	1	POWER DIST.
G212502A	1	6/25/2021	MOUNT PLEASANT POWER SYSTEM	MOUNT PLEASANT	TN	40000	161700	N	2	POWER DIST.
G212503A	1	6/25/2021	CITY OF CONCORD, NC	CONCORD	NC	20000	43800	N	1	POWER DIST.
G212503A	2	6/25/2021	CITY OF CONCORD, NC	CONCORD	NC	22400	101250	N	1	POWER DIST.
G212302A	1	6/21/2021	PARIS BOARD OF PUBLIC UTILITIE	PARIS	TN	15000	69000	N	1	POWER DIST.
M212501A	1	6/21/2021	BORDER STATES	PHOENIX	AZ	3750	34500	N	1	POWER DIST.
G212402A	1	6/18/2021	ALBERTVILLE UTILITY BOARD	ALBERTVILLE	AL	30000	46000	N	2	POWER DIST.
B212401A	1	6/17/2021	OMAHA PUBLIC POWER DISTRICT	ELKHORN	NE	30000	161000	N	1	POWER DIST.
B212401B	1	6/17/2021	OMAHA PUBLIC POWER DISTRICT	ELKHORN	NE	30000	161000	N	1	POWER DIST.
B212402A	1	6/17/2021	OMAHA PUBLIC POWER DISTRICT	ELKHORN	NE	40000	161000	N	1	POWER DIST.
M212401A	1	6/14/2021	CITIZENS ELECTRIC CORP	PERRYVILLE	MO	10000	67000	N	1	POWER DIST.
B212301A	1	6/9/2021	EAST RIVER ELECT PWR COOP	MADISON	SD	4200	69000	N	1	POWER DIST.
B212302A	1	6/9/2021	EAST RIVER ELECT PWR COOP	MADISON	SD	5600	69000	N	2	POWER DIST.
B212302B	1	6/9/2021	EAST RIVER ELECT PWR COOP	MADISON	SD	5600	69000	N	1	POWER DIST.
O212102A	1	5/28/2021	TEXAS ELECTRIC COOPERATIVES	AUSTIN	TX	60000	115000	N	2	AUTOTRANSFORMER
O212101A	1	5/27/2021	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	7500	69000	N	1	POWER DIST.
B212101A	1	5/26/2021	KEM ELECTRIC	LINTON	ND	5000	41600	N	1	POWER DIST.
G212101A	1	5/25/2021	KNOXVILLE UTILITY BOARD	KNOXVILLE	TN	15000	66000	N	1	POWER DIST.
M212102A	1	5/25/2021	HOOSIER ENERGY REC,INC	BLOOMINGTON	IN	10000	34500	N	1	POWER DIST.
B212003A	1	5/21/2021	SOUTH CENTRAL ELEC ASSOC (MN)	SAINT JAMES	MN	7500	69000	N	1	POWER DIST.
B212001A	1	5/17/2021	MORGAN CITY CORPORATION	MORGAN	UT	7500	43800	N	1	POWER DIST.
G211801A	1	5/5/2021	BLACKRIVER ELECTRIC COOP	WEST SUMTER	SC	15000	67000	N	1	POWER DIST.
M211801A	1	5/4/2021	BIG RIVERS ELECTRIC CORPORATIO	HENDERSON	KY	12000	6900	N	2	POWER DIST.
M211801B	1	5/4/2021	BIG RIVERS ELECTRIC CORPORATIO	HENDERSON	KY	1500	4160	N	2	POWER DIST.
G211402A	1	5/3/2021	BVU AUTHORITY	BRISTOL	VA	18000	69000	N	3	POWER DIST.
B211701A	1	4/28/2021	FALL RIVER ELECTRIC	ASHTON	ID	7500	115000	N	1	POWER DIST.
B211701A	2	4/28/2021	FALL RIVER ELECTRIC	ASHTON	ID	5000	115000	N	2	POWER DIST.
G211301A	1	4/27/2021	CITY OF DANVILLE - PURCH. DEPT	DANVILLE	VA	15000	67000	N	4	POWER DIST.
M211701A	1	4/26/2021	FRANKFORT MUNICIPAL UTILITIES	FRANKFORT	IN	25000	67000	N	2	POWER DIST.
B211601A	1	4/23/2021	ROSEBUD ELECTRIC CO-OP	GREGORY	SD	10000	115000	N	1	POWER DIST.
G211601A	1	4/22/2021	TARHEEL ELE. MEM. ASSOC.	RALEIGH	NC	20000	230000	N	1	POWER DIST.
G211201A	1	4/20/2021	BOLIVAR ENERGY AUTHORITY	BOLIVAR	TN	15000	46000	N	1	POWER DIST.
M211601A	1	4/19/2021	HOOSIER ENERGY REC,INC	BLOOMINGTON	IN	12000	69000	N	5	POWER DIST.
G211502A	1	4/16/2021	PLATEAU ELECTRIC COOPERATIVE	ONEIDA	TN	12000	69000	N	1	POWER DIST.
G211401A	1	4/5/2021	DUCK RIVER ELECTRIC MEMBERSHIP	SHELBYVILLE	TN	25000	161700	N	1	POWER DIST.
M211401A	1	4/5/2021	SIKESTON BOARD OF MUNICIPAL UT	SIKESTON	MO	15000	67000	N	1	POWER DIST.
M211401B	1	4/5/2021	SIKESTON BOARD OF MUNICIPAL UT	SIKESTON	MO	20000	67000	N	1	POWER DIST.
O211201A	1	3/25/2021	PETRELLI ELECTRIC	AQUA DULCE	CA	33600	66000	N	1	POWER DIST.
G211102A	1	3/18/2021	CITY OF CONCORD, NC	CONCORD	NC	22400	101250	N	2	POWER DIST.
O211101A	1	3/18/2021	BYRON BETHANY IRRIGATION	BYRON	CA	3000	69000	N	1	POWER DIST.

G211001A	1	3/10/2021	NEWBERRY ELECTRIC COOPERATIVE	NEWBERRY	SC	12000	69000	N	2	POWER DIST.
B210901A	1	3/4/2021	EAST RIVER ELECT PWR COOP	MADISON	SD	36000	230000	N	1	AUTOTRANSFORMER
G210901A	1	3/1/2021	BOROUGH OF SCHUYLKILL HAVEN	SCHUYLKILL HAVEN	PA	12000	67000	N	1	POWER DIST.
G210801A	1	2/24/2021	WESTFIELD GAS & ELECTRIC	WESTFIELD	MA	28000	110000	N	1	POWER DIST.
G210702A	1	2/17/2021	NEW RIVER LIGHT & POWER	BOONE	NC	15000	95000	N	1	POWER DIST.
G210703A	1	2/17/2021	STEUBEN REC	BATH	NY	5000	34400	N	1	POWER DIST.
G210701A	1	2/15/2021	TARHEEL ELE. MEM. ASSOC.	RALEIGH	NC	25000	34500	N	1	POWER DIST.
G210605A	1	2/12/2021	HOLDEN MUNICIPAL LIGHTING DEPT	HOLDEN	MA	24000	69000	Y	2	POWER DIST.
M210604A	1	2/10/2021	OKLAHOMA MUNICIPAL POWER	EDMOND	OK	7500	24900	N	1	POWER DIST.
G210604A	1	2/5/2021	SHEFFIELD UTILITIES, AL	SHEFFIELD	AL	10000	43800	N	1	POWER DIST.
B210602A	1	2/3/2021	MINNKOTA POWER COOP., INC	GRAND FORKS	ND	5000	68800	N	2	POWER DIST.
G210602A	1	2/2/2021	SANTEE COOPER	MONCKS CORNER	SC	18000	115000	N	1	GENERATOR STEP UP
O210301A	1	2/2/2021	CITY OF GUNNISON	GUNNISON	CO	12000	115000	N	2	POWER DIST.
O210301B	1	2/2/2021	CITY OF GUNNISON	GUNNISON	CO	12000	115000	N	2	POWER DIST.
M210602A	1	2/1/2021	VILLAGE OF GRAFTON	GRAFTON	OH	10000	67000	N	1	POWER DIST.
B210501A	1	1/27/2021	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	N	2	POWER DIST.
B210501B	1	1/27/2021	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	N	1	POWER DIST.
G210401A	1	1/20/2021	NEW HAMPSHIRE ELECTRIC CO-OP	PLYMOUTH	NH	5600	34500	N	1	POWER DIST.
M210402A	1	1/20/2021	PEOPLES ELECT COOPERATIVE	ADA	OK	12000	138000	N	1	POWER DIST.
M210401A	1	1/19/2021	COAST ELECTRIC PWR ASSOCIATION	KILN	MS	15000	115000	N	1	POWER DIST.
M210304A	1	1/15/2021	4 RIVERS ELECTRIC COOPERATIVE	LEBO	KS	3750	67000	N	1	POWER DIST.
B210301A	1	1/13/2021	NORTHEAST POWER	WAYNE	NE	7500	69000	N	1	POWER DIST.
M210303A	1	1/13/2021	UNION RURAL ELECTRIC COOP, INC	MARYSVILLE	OH	15000	138000	N	1	POWER DIST.
M210302A	1	1/12/2021	FRANKFORT PLANT BOARD	FRANKFORT	KY	12000	69000	N	1	POWER DIST.
B210203A	1	1/8/2021	MAQUOKETA VALLEY ELEC CO-OP	ANAMOSA	IA	7500	69000	N	1	POWER DIST.
B210201A	1	1/6/2021	EAST RIVER ELECT PWR COOP	MADISON	SD	8400	69000	N	2	POWER DIST.
B210201B	1	1/6/2021	EAST RIVER ELECT PWR COOP	MADISON	SD	8400	69000	N	1	POWER DIST.
G205301A	1	12/31/2020	CITY OF ROCKY MOUNT, NC	ROCKY MOUNT	NC	90000	230000	N	1	AUTOTRANSFORMER
G205201A	1	12/24/2020	CITY OF MORGANTON ELECTRIC DEP	MORGANTON	NC	30000	108000	N	1	POWER DIST.
G205101A	1	12/14/2020	CENTRAL ALABAMA ELECTRIC CO-OP	PRATTVILLE	AL	12000	112750	N	2	POWER DIST.
O205003A	1	12/11/2020	LATHROP IRRIGATION DISTRICT	LATHROP	CA	12000	115000	N	1	POWER DIST.
B205001A	1	12/9/2020	YELLOWSTONE VALLEY ELECTRIC	HUNTLEY	MT	10000	100000	N	1	POWER DIST.
M205001A	1	12/7/2020	TRI - COUNTY ELECTRIC CO-OP	MOUNT VERNON	IL	10000	138000	N	2	POWER DIST.
M205002A	1	12/7/2020	BRYAN MUNICIPAL UTILITIES	BRYAN	OH	5000	69000	N	2	POWER DIST.
O205001A	1	12/7/2020	ELECTRICAL DISTRICT #3	MARICOPA	AZ	18000	69000	Y	1	POWER DIST.
M204801A	1	11/25/2020	ALPENA POWER COMPANY	ALPENA	MI	5000	34500	N	2	POWER DIST.
G204702A	1	11/20/2020	SMECO	BOSTON	MD	11200	67000	N	2	POWER DIST.
O204701A	1	11/17/2020	GRAYS HARBOR PUD NO. 1	ABERDEEN	WA	15000	115000	N	1	POWER DIST.
M204701A	1	11/16/2020	BURNS & MCDONNELL	KANSAS CITY	MO	12000	115000	N	1	POWER DIST.
O204603A	1	11/13/2020	PUD NO 1 OKANOGAN COUNTY	OKANOGAN	WA	12000	115000	N	6	POWER DIST.
M204501A	1	11/3/2020	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	1500	69000	N	1	POWER DIST.
M204501A	2	11/3/2020	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	5000	69000	N	1	POWER DIST.
M204501A	3	11/3/2020	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	10000	69000	N	1	POWER DIST.
M204501A	4	11/3/2020	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	12000	69000	N	1	POWER DIST.
M204501A	5	11/3/2020	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	5000	138000	N	1	POWER DIST.
M204501A	6	11/3/2020	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	10000	138000	N	1	POWER DIST.
M204501A	7	11/3/2020	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	12000	138000	N	1	POWER DIST.
M204501B	1	11/3/2020	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	5000	69000	N	1	POWER DIST.
M204501C	1	11/3/2020	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	5000	69000	N	1	POWER DIST.
B204301A	1	10/21/2020	GRAND ELECTRIC CO-OP	BISON	SD	7500	115000	N	1	POWER DIST.
M204301A	1	10/19/2020	RITA BLANCA ELECTRIC CO-OP	DALHART	TX	15000	115000	N	2	POWER DIST.
M204201A	1	10/16/2020	NORRIS ELECTRIC COOP	NEWTON	IL	5000	69000	N	2	POWER DIST.
M204101A	1	10/7/2020	WASHINGTON ELECTRIC COOP.	MARIETTA	OH	10000	138000	N	1	POWER DIST.
G203901A	1	9/25/2020	GREENVILLE UTILITIES	GREENVILLE	NC	20000	115000	N	2	POWER DIST.
M203902A	1	9/24/2020	NORTHEAST MISSOURI ELECTRIC	PALMYRA	MO	5000	69000	N	3	POWER DIST.
B203901A	1	9/22/2020	STEARNS ELECTRIC ASSOC	NEAR SAUK CENTER	MN	10000	69000	N	1	POWER DIST.
B203601A	1	9/3/2020	MEEKER COOPERATIVE LIGHT & PWR	LITCHFIELD	MN	10000	69000	N	1	POWER DIST.
B203501A	1	8/27/2020	CENTRAL POWER ELEC. COOP. INC.	MINOT	ND	10000	115000	N	1	POWER DIST.
B203502A	1	8/27/2020	CENTRAL POWER ELEC. COOP. INC.	MINOT	ND	5000	43000	N	1	POWER DIST.
B203503A	1	8/27/2020	CENTRAL POWER ELEC. COOP. INC.	MINOT	ND	10000	43800	N	1	POWER DIST.
G203501A	1	8/27/2020	HUNTSVILLE UTILITIES	HUNTSVILLE	AL	15000	43800	N	2	POWER DIST.

M203503A	1	8/27/2020	NORRIS ELECTRIC COOP	NEWTON	IL	1250	67000	N	1	POWER DIST.
M203501A	1	8/25/2020	CORN BELT POWER COOPERATIVE	HUMBOLDT	IA	1667	67000	N	6	POWER DIST.
M203502A	1	8/25/2020	GEUS ELECTRIC	GREENVILLE	TX	30000	138000	N	1	POWER DIST.
B203401A	1	8/19/2020	BENCO ELECTRIC COOPERATIVE	MANKATO	MN	7500	69000	N	1	POWER DIST.
M203401A	1	8/19/2020	CITY OF COLUMBIA, MO	COLUMBIA	MO	12000	69000	N	1	POWER DIST.
G203401A	1	8/17/2020	FAYETTEVILLE PUBLIC UTILITIES	FAYETTEVILLE	TN	12000	45000	N	1	POWER DIST.
O203301A	1	8/12/2020	IMPERIAL IRRIGATION DISTRICT	IMPERIAL CA	CA	8333	90200	N	7	POWER DIST.
O203201B	1	8/7/2020	VALLEY ELECTRIC ASSOCIATION	PAHRUMP	NV	85715	230000	Y	1	AUTOTRANSFORMER
B203201A	1	8/6/2020	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	7500	24940	N	1	POWER DIST.
B203201A	2	8/6/2020	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	10000	24940	N	1	POWER DIST.
G203203A	1	8/4/2020	PWC/PUBLIC WORKS COMMISSION	FAYETTEVILLE	NC	24000	67000	N	2	POWER DIST.
M203202A	1	8/4/2020	ALPENA POWER COMPANY	ALPENA	MI	24000	138000	N	1	POWER DIST.
G203201A	1	8/3/2020	TOWN OF FRONT ROYAL	FRONT ROYAL	VA	10000	34400	N	1	POWER DIST.
G203002A	1	7/24/2020	CITY OF CONCORD, NC	CONCORD	NC	20000	43800	N	1	POWER DIST.
B203001A	1	7/21/2020	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	15000	115000	N	1	POWER DIST.
M202901A	1	7/13/2020	BORDER STATES	WAUKESHA	WI	5000	69000	N	1	POWER DIST.
M202801A	1	7/9/2020	CMS ELECTRIC COOPERATIVE	MEADE	KS	8400	34500	N	1	POWER DIST.
M202802A	1	7/9/2020	BLUEBONNET ELECTRIC COOP., INC	GIDDINGS	TX	18000	138000	N	1	POWER DIST.
B202702A	1	6/29/2020	SOUTH CENTRAL ELEC ASSOC (MN)	SAINT JAMES	MN	7500	69000	N	1	POWER DIST.
M202603A	1	6/24/2020	BRODHEAD WATER & LIGHT	BRODHEAD	WI	10000	69000	N	1	POWER DIST.
M202604A	1	6/24/2020	WATERLOO WATER & LIGHT	WATERLOO	WI	12000	138000	N	2	POWER DIST.
M202602A	1	6/23/2020	BROWNSVILLE PUBLIC UTL.	BROWNSVILLE	TX	15000	138000	N	3	POWER DIST.
G202601A	1	6/22/2020	MOUNTAIN ELEC. COOP	MOUNTAIN CITY	TN	15000	69000	N	2	POWER DIST.
G202502A	1	6/19/2020	EAST KENTUCKY POWER COOP	WINCHESTER	KY	780	1800	N	1	EXCITER DUTY
G202503A	1	6/19/2020	DUCK RIVER ELECTRIC MEMBERSHIP	SHELBYVILLE	TN	25000	161700	Y	1	POWER DIST.
M202503A	1	6/19/2020	MID-STATES ENERGY WORKS	SALINA	KS	5000	34500	N	1	POWER DIST.
M202502A	1	6/18/2020	FRONTIER POWER CO	COSHOCTON	OH	5000	69000	N	1	POWER DIST.
B202501A	1	6/16/2020	LAKE REGION ELECTRIC CO-OP	PELICAN RAPIDS	MN	10000	115000	N	1	POWER DIST.
B202403A	1	6/12/2020	EAST RIVER ELECT PWR COOP	MADISON	SD	8400	69000	N	1	POWER DIST.
O202501A	1	6/12/2020	CITY OF RICHLAND	RICHLAND	WA	15000	115000	Y	1	POWER DIST.
B202401A	1	6/11/2020	CITY OF ST. GEORGE	ST. GEORGE	UT	15000	67000	N	1	POWER DIST.
G202301A	1	6/5/2020	MUSCLE SHOALS ELECTRIC BOARD	MUSCLE SHOALS	AL	30000	161000	N	1	POWER DIST.
M202302A	1	6/4/2020	CITIZENS ELECTRIC CORP	PERRYVILLE	MO	10000	67000	N	1	POWER DIST.
M202301A	1	6/3/2020	ALPENA POWER COMPANY	ALPENA	MI	5000	34500	N	1	POWER DIST.
M202201A	1	5/29/2020	KBS ELECTRICAL DIST, INC	AUSTIN	TX	1447	24940	N	1	POWER DIST.
G202101A	1	5/18/2020	BIG RIVERS ELECTRIC CORPORATIO	HENDERSON	KY	10000	69000	N	1	POWER DIST.
G202001A	1	5/14/2020	CITY OF DANVILLE - PURCH. DEPT	DANVILLE	VA	15000	67000	N	2	POWER DIST.
M202001A	1	5/13/2020	FREESTATE ELECTRIC COOPERATIVE	TOPEKA	KS	12000	115000	N	1	POWER DIST.
G201901A	1	5/4/2020	FISHER & ARNOLD, INC.	MEMPHIS	TN	90000	161700	Y	1	AUTOTRANSFORMER
B201803A	1	4/30/2020	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	N	1	POWER DIST.
M201801A	1	4/29/2020	JO-CARROLL ELECTRIC	ELIZABETH	IL	10000	69000	N	1	POWER DIST.
M201801A	2	4/29/2020	JO-CARROLL ELECTRIC	ELIZABETH	IL	12000	69000	N	1	POWER DIST.
B201801A	1	4/27/2020	MINNESOTA VALLEY COOPERATIVE	MONTEVIDEO	MN	10000	69000	N	1	POWER DIST.
M201701A	1	4/22/2020	TEXAS ELECTRIC COOPERATIVES	AUSTIN	TX	12000	138000	N	1	POWER DIST.
M201601A	1	4/17/2020	REEDSBURG UTLITY COMMISSION	REEDSBURG	WI	15000	67000	N	1	POWER DIST.
G201601A	1	4/13/2020	AIKEN ELECTRIC COOPERATIVE, IN	AIKEN	SC	20000	115000	N	1	POWER DIST.
B201501A	1	4/6/2020	STEARNS ELECTRIC ASSOCIATION	MELROSE	MN	10000	115000	N	1	POWER DIST.
M201501A	1	4/6/2020	CITY OF COLLEGE STATION	COLLEGE STATION	TX	25000	134000	Y	1	POWER DIST.
M201502A	1	4/6/2020	TIPMONT RURAL ELECTRIC	LINDEN	IN	10000	67000	N	1	POWER DIST.
B201401A	1	3/30/2020	FARMERS ELECTRIC COOPERATIVE	CLOVIS	NM	12000	115000	N	1	POWER DIST.
B201401A	2	3/30/2020	FARMERS ELECTRIC COOPERATIVE	CLOVIS	NM	12000	69000	N	1	POWER DIST.
M201303A	1	3/26/2020	BLUEBONNET ELECTRIC COOP., INC	GIDDINGS	TX	18000	138000	N	1	POWER DIST.
M201302A	1	3/25/2020	BLUEBONNET ELECTRIC COOP., INC	GIDDINGS	TX	18000	138000	N	1	POWER DIST.
M201301A	1	3/24/2020	LYNTEGAR ELECTRIC COOP	TAHOKA	TX	10000	115000	N	1	POWER DIST.
B201203A	1	3/18/2020	POWDER RIVER ELECTRIC	SUNDANCE	WY	7500	69000	N	2	POWER DIST.
B201201B	1	3/17/2020	HUTCHINSON UTILITIES COMMISSIO	HUTCHINSON	MN	25000	69000	Y	1	POWER DIST.
B201202B	1	3/17/2020	HUTCHINSON UTILITIES COMMISSIO	HUTCHINSON	MN	4025	69000	N	1	GROUNDING TRANSFORME
G201201A	1	3/16/2020	FISHER & ARNOLD, INC.	MEMPHIS	TN	15000	69000	N	1	POWER DIST.
M201102A	1	3/13/2020	JEFFERSON DAVIS ELECTRIC COOP	JENNINGS	LA	10000	67000	N	1	POWER DIST.
G201101A	1	3/11/2020	CITY OF CONCORD	CONCORD	NH	20000	43800	N	2	POWER DIST.
M201101A	1	3/10/2020	DEAF SMITH ELEC COOP INC	HEREFORD	TX	12000	115000	N	1	POWER DIST.

M201002A	1	3/3/2020	MAQUOKETA VALLEY ELEC CO-OP	ANAMOSA	IA	5000	69000	N	1	POWER DIST.
G201001A	1	3/2/2020	ARAB ELECTRIC COOPERATIVE, INC	ARAB	AL	30000	16700	N	2	POWER DIST.
M201001A	1	3/2/2020	CITY OF WESTERVILLE, OH	WESTERVILLE	OH	18000	67000	N	2	POWER DIST.
B200902A	1	2/28/2020	BURKE-DIVIDE ELECTRIC COOP	COLUMBUS	ND	5000	57000	N	1	POWER DIST.
B200901A	1	2/27/2020	NORTH PLATTE MUNICIPAL LIGHT A	NORTH PLATE	NE	10000	34500	Y	1	POWER DIST.
G200801A	1	2/18/2020	CITY OF OCALA	OCALA	FL	25000	67000	Y	3	POWER DIST.
O200801A	1	2/18/2020	LEA COUNTY ELECTRIC CO-OP INC.	LOVINGTON	NM	15000	67000	Y	1	POWER DIST.
G200702A	1	2/14/2020	RAPPAHANNOCK ELEC COOPERATIVE	FREDERICKSBURG	VA	12000	34500	Y	1	POWER DIST.
G200703A	1	2/14/2020	SANTEE COOPER	MONCKS CORNER	SC	150000	230000	Y	1	AUTOTRANSFORMER
G200701A	1	2/12/2020	CITY OF TALLAHASSEE	TALLAHASSEE	FL	10000	13200	N	1	UNIT AUXILIARY TRANS
M200601A	1	2/6/2020	HANCOCK-WOOD ELECTRIC CO-OP	FINDLAY	OH	12000	69000	N	1	POWER DIST.
O200603A	1	2/6/2020	NEW BRAUNFELS UTILITIES	NEW BRAUNFELS	TX	20000	138000	Y	2	POWER DIST.
B200602A	1	2/5/2020	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	5000	24940	N	1	POWER DIST.
B200501A	1	1/27/2020	EAST RIVER ELECT PWR COOP	MADISON	SD	10000	115000	N	1	SUBSTATION
M200401A	1	1/23/2020	KANSAS POWER POOL - KPP	WICHITA	KS	16800	115000	Y	1	AUTOTRANSFORMER
G200402A	1	1/21/2020	GEORGIA TRANSMISSION CORP	BAINBRIDGE	GA	12000	26180	N	1	AUTOTRANSFORMER
B200401A	1	1/20/2020	FAIRFAX MUNICIPAL UTILITIES-MN	FAIRFAX	MN	3750	69000	Y	1	POWER DIST.
G200401A	1	1/20/2020	PEE DEE ELECTRIC COOPERATION,	DARLINGTON	SC	7500	67000	N	1	POWER DIST.
O200201B	1	1/7/2020	IMPERIAL IRRIGATION DISTRICT	IMPERIAL CA	CA	11000	92000	N	3	GENERATOR STEP UP
M195201A	1	12/24/2019	CITY OF MOUNDRIDGE	MOUNDRIDGE	KS	11200	115000	Y	1	POWER DIST.
B195201A	1	12/23/2019	ROUGHRIDER ELECTRIC COOP	DICKINSON	ND	10000	69000	N	1	POWER DIST.
M195101A	1	12/20/2019	CITY OF ANTHONY, KS	ANTHONY	KS	11200	138000	Y	1	POWER DIST.
B195101A	1	12/18/2019	EAST RIVER ELEC POWER COOP	MADISON	SD	8400	69000	N	4	POWER DIST.
B195101A	2	12/18/2019	EAST RIVER ELEC POWER COOP	MADISON	SD	8400	115000	N	1	POWER DIST.
B195101B	1	12/18/2019	EAST RIVER ELEC POWER COOP	MADISON	SD	8400	69000	N	1	POWER DIST.
B195101C	1	12/18/2019	EAST RIVER ELEC POWER COOP	MADISON	SD	8400	69000	N	1	POWER DIST.
B195101D	1	12/18/2019	EAST RIVER ELEC POWER COOP	MADISON	SD	8400	69000	N	1	POWER DIST.
B195101E	1	12/18/2019	EAST RIVER ELEC POWER COOP	MADISON	SD	8400	115000	N	1	POWER DIST.
B195102A	1	12/18/2019	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	12000	69000	Y	1	POWER DIST.
G195102A	1	12/18/2019	TARHEEL ELE. MEM. ASSOC.	RALEIGH	NC	15000	115000	N	3	POWER DIST.
G195102B	1	12/18/2019	TARHEEL ELE. MEM. ASSOC.	RALEIGH	NC	15000	115000	N	1	POWER DIST.
G195102C	1	12/18/2019	TARHEEL ELE. MEM. ASSOC.	RALEIGH	NC	15000	115000	N	1	POWER DIST.
M190501A	1	12/18/2019	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	5000	69000	N	1	POWER DIST.
B195003A	1	12/12/2019	SOUTHEAST ELECTRIC COOP	EKALAKA	MT	7500	57000	N	1	POWER DIST.
B195001A	1	12/9/2019	BENTON PUD	KENNEWICK	WA	15000	115000	Y	1	POWER DIST.
B194901A	1	12/5/2019	NOBLES COOPERATIVE ELECTRIC	WORTHINGTON	MN	7500	115000	N	1	POWER DIST.
B194701A	1	11/21/2019	ROUGHRIDER ELECTRIC COOP	DICKINSON	ND	12000	115000	N	2	POWER DIST.
B194702B	1	11/21/2019	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	10000	69000	N	2	POWER DIST.
B194702C	1	11/21/2019	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	10000	69000	N	2	POWER DIST.
M194703A	1	11/20/2019	CITY OF CUYAHOGA FALLS	AKRON	OH	5000	12470	N	2	GENERATOR STEP UP
M194701A	1	11/18/2019	CITY OF GARDEN CITY	GARDEN CITY	KS	40000	115000	N	1	AUTOTRANSFORMER
M194701A	2	11/18/2019	CITY OF GARDEN CITY	GARDEN CITY	KS	40000	115000	N	1	AUTOTRANSFORMER
M194702A	1	11/18/2019	BUCKEYE RURAL ELECTRIC COOPERA	RIO GRANDE	OH	10000	69000	N	1	POWER DIST.
G194602A	1	11/15/2019	SMECO	BOSTON	MD	20000	67000	N	2	POWER DIST.
B194401A	1	11/1/2019	HIGH WEST ENERGY	PINE BLUFFS	WY	10000	34500	N	1	POWER DIST.
O194401A	1	10/31/2019	MUNICIPALITY OF ANCHORAGE	ANCHORAGE	AK	16800	115000	Y	1	POWER DIST.
M194301A	1	10/25/2019	M&A ELECTRIC POWER COOPERATIVE	POPLAR BLUFF	MO	5000	34500	Y	1	POWER DIST.
M194301A	2	10/25/2019	M&A ELECTRIC POWER COOPERATIVE	POPLAR BLUFF	MO	5000	34500	N	1	POWER DIST.
M194301A	3	10/25/2019	M&A ELECTRIC POWER COOPERATIVE	POPLAR BLUFF	MO	7500	69000	N	1	POWER DIST.
M194301A	4	10/25/2019	M&A ELECTRIC POWER COOPERATIVE	POPLAR BLUFF	MO	10000	69000	N	1	POWER DIST.
G194202A	1	10/15/2019	CITY OF LEESBURG	LEESBURG	FL	18000	67000	Y	4	POWER DIST.
G194201A	1	10/14/2019	MASSENA ELECTRIC DEPT.	MASSENA	NY	27000	110000	N	1	POWER DIST.
G194201B	1	10/14/2019	MASSENA ELECTRIC DEPT.	MASSENA	NY	27000	110000	N	1	POWER DIST.
B194001A	1	10/2/2019	STEELE-WASECA COOP.ELECTRIC	OWATONNA	MN	15000	115000	N	1	POWER DIST.
B194001A	2	10/2/2019	STEELE-WASECA COOP.ELECTRIC	OWATONNA	MN	10000	115000	N	1	POWER DIST.
B194002A	1	10/2/2019	GLENWOOD SPRINGS ELECTRIC SYST	GLENWOOD SPRINGS	CO	10000	115000	Y	1	POWER DIST.
G194001A	1	10/2/2019	CITY OF SYLACAUGA	SYLACAUGA	AL	12000	44000	N	2	POWER DIST.
B193901A	1	9/27/2019	SOUTH UTAH VALLEY ELECTRIC SER	PAYSON	UT	12000	46000	N	1	POWER DIST.
B193801A	1	9/19/2019	SOUTHEAST ELECTRIC COOP	EKALAKA	MT	15000	115000	N	1	POWER DIST.
G193701A	1	9/10/2019	PWC/PUBLIC WORKS COMMISSION	FAYETTEVILLE	NC	24000	67000	N	1	POWER DIST.
M193601A	1	9/5/2019	SIOUXLAND ENERGY COOPERATIVE	SIOUX CENTER	IA	12000	67000	N	1	GENERATOR STEP UP

B193601A	1	9/4/2019	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	15000	115000	N	2	POWER DIST.
B193601B	1	9/4/2019	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	15000	115000	N	2	POWER DIST.
G193601A	1	9/4/2019	TARHEEL ELE. MEM. ASSOC.	RALEIGH	NC	15000	115000	N	1	POWER DIST.
B193501A	1	8/28/2019	MINNKOTA POWER COOP., INC	GRAND FORKS	ND	1000	68800	N	1	POWER DIST.
B193301A	1	8/16/2019	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	30000	115000	Y	2	POWER DIST.
O193301A	1	8/16/2019	CITY OF MESA	MESA	AZ	15000	69000	Y	1	POWER DIST.
G193301A	1	8/13/2019	CITY OF MARTINSVILLE	MARTINSVILLE	VA	20000	34500	Y	1	POWER DIST.
M193301A	1	8/13/2019	CLAY COUNTY ELECTRIC COOP.CORP	CORNING	AZ	18000	161000	N	1	POWER DIST.
B193201A	1	8/7/2019	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	15000	24940	N	3	POWER DIST.
B193201B	1	8/7/2019	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	15000	24940	N	1	POWER DIST.
B193201C	1	8/7/2019	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	15000	24940	N	1	POWER DIST.
G193202A	1	8/6/2019	HARTSELLE ELECTRIC BOARD	HARTSELLE	AL	10000	45000	N	1	POWER DIST.
B192901A	1	7/16/2019	WASHINGTON CITY	WASHINGTON	UT	12000	67000	N	1	POWER DIST.
G192901A	1	7/16/2019	CITY OF HIGH POINT	HIGH POINT	NC	22400	100000	Y	3	POWER DIST.
G192902A	1	7/16/2019	SEMINOLE ELEC COOP	TAMPA	FL	7400	23000	N	1	POWER DIST.
O192804A	1	7/11/2019	CITY OF FRESNO	FRESMO	CA	10000	70000	Y	1	POWER DIST.
G192703A	1	7/5/2019	CITY OF ATHENS UTILITIES	ATHENS	GA	30000	161000	Y	3	POWER DIST.
G192702A	1	7/3/2019	PEE DEE ELECTRIC COOP	DARLINGTON	SC	15000	230000	N	2	POWER DIST.
M192602A	1	6/25/2019	NORTHEAST MISSOURI ELECTRIC	PALMYRA	MO	5000	67000	N	2	POWER DIST.
M192602A	2	6/25/2019	NORTHEAST MISSOURI ELECTRIC	PALMYRA	MO	12000	67000	N	1	POWER DIST.
G192401A	1	6/14/2019	A & N ELECTRIC COOP	TASLEY	VA	18000	69000	Y	2	POWER DIST.
M192201A	1	5/29/2019	TIPPAH ELECTRIC POWER ASSOC	RIPLEY	MS	10000	46000	N	1	POWER DIST.
B192101B	1	5/23/2019	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	10000	69000	Y	1	POWER DIST.
M192101A	1	5/22/2019	NORRIS ELECTRIC COOP	NEWTON	IL	5000	69000	N	1	POWER DIST.
B192001A	1	5/16/2019	EAST RIVER ELECT PWR COOP	MADISON	SD	25000	115000	Y	1	AUTOTRANSFORMER
B192002A	1	5/16/2019	EAST RIVER ELECT PWR COOP	MADISON	SD	36000	115000	Y	1	AUTOTRANSFORMER
B192002B	1	5/16/2019	EAST RIVER ELECT PWR COOP	MADISON	SD	36000	115000	Y	1	AUTOTRANSFORMER
B192003A	1	5/16/2019	EAST RIVER ELECT PWR COOP	MADISON	SD	30000	115000	Y	2	AUTOTRANSFORMER
G192001A	1	5/13/2019	KNOXVILLE UTILITY BOARD	KNOXVILLE	TN	15000	66000	Y	1	POWER DIST.
O191802A	1	5/2/2019	TRINITY PUBLIC UTILITIES	WEAVERVILLE	CA	7000	69000	Y	1	POWER DIST.
B191801B	1	4/29/2019	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	10000	69000	N	1	POWER DIST.
M191701A	1	4/22/2019	MT. PLEASANT MUNICIPAL UTILITI	MT. PLEASANT	IA	15000	69000	Y	1	POWER DIST.
M191602A	1	4/18/2019	HOOSIER ENERGY REC,INC.	BLOOMINGTON	IN	10000	34500	N	3	POWER DIST.
M191601A	1	4/16/2019	EAGLE RIVER LIGHT & POWER	EAGLE RIVER	WI	12000	115000	N	1	POWER DIST.
M191601A	2	4/16/2019	EAGLE RIVER LIGHT & POWER	EAGLE RIVER	WI	10000	115000	N	1	POWER DIST.
B191601A	1	4/15/2019	CITY OF GOTHENBURG	GOTHENBURG	NE	7500	34500	Y	1	POWER DIST.
B191602A	1	4/15/2019	TODD-WADENA ELEC. CO-OP	WADENA	MN	3750	34500	N	1	POWER DIST.
B191602A	2	4/15/2019	TODD-WADENA ELEC. CO-OP	WADENA	MN	3750	34500	N	1	POWER DIST.
B191602A	3	4/15/2019	TODD-WADENA ELEC. CO-OP	WADENA	MN	5000	34500	N	1	POWER DIST.
G191601A	1	4/15/2019	CENTRAL ALABAMA ELECTRIC CO-OP	PRATTVILLE	AL	12000	112750	N	1	POWER DIST.
O191502A	1	4/12/2019	ELECTRICAL DISTRICT NO. TWO, P	CASA GRANDE	AZ	18000	115000	Y	2	POWER DIST.
B191302A	1	3/29/2019	NORRIS PUBLIC POWER DISTRICT	BEATRICE	NE	20000	115000	Y	1	POWER DIST.
O191302A	1	3/29/2019	JEFFERSON PUD	PORT HADLOCK	WA	12000	115000	N	1	POWER DIST.
B191301B	1	3/27/2019	MINNKOTA POWER COOP., INC	GRAND FORKS	ND	10000	68800	N	1	POWER DIST.
B191301C	1	3/27/2019	MINNKOTA POWER COOP., INC	GRAND FORKS	ND	10000	115000	N	1	POWER DIST.
M191204A	1	3/21/2019	CITY UTILITIES	SPRINGFIELD	MO	16800	161000	Y	1	POWER DIST.
B191102A	1	3/15/2019	CENTRAL POWER ELEC. COOP. INC.	MINOT	ND	5000	43800	N	3	POWER DIST.
B191102B	1	3/15/2019	CENTRAL POWER ELEC. COOP. INC.	MINOT	ND	10000	43800	N	1	POWER DIST.
B191102C	1	3/15/2019	CENTRAL POWER ELEC. COOP. INC.	MINOT	ND	5000	69000	N	1	POWER DIST.
B191102D	1	3/15/2019	CENTRAL POWER ELEC. COOP. INC.	MINOT	ND	10000	115000	N	1	POWER DIST.
B191103A	1	3/15/2019	CITY OF ST. GEORGE	ST. GEORGE	UT	5000	67000	N	1	POWER DIST.
G191103A	1	3/15/2019	BOROUGH OF CHAMBERSBURG	CHAMBERSBURG	PA	15000	68800	N	2	POWER DIST.
G191101A	1	3/12/2019	RIVIERA UTILITIES	FOLEY	AL	15000	115500	N	1	POWER DIST.
M191004A	1	3/8/2019	KAUKAUNA UTILITITES	KAUKAUNA	WI	15000	34500	Y	1	POWER DIST.
M191004B	1	3/8/2019	KAUKAUNA UTILITITES	KAUKAUNA	WI	45000	138000	Y	1	POWER DIST.
B185003C	1	3/6/2019	KANDIYOHI POWER COOPERERATIVE	SPENCER	MN	7500	69000	N	1	POWER DIST.
G190903A	1	3/1/2019	GEORGIA TRANSMISSION CORP	TUCKER	GA	8000	43800	N	2	POWER DIST.
M190903A	1	3/1/2019	MAQUOKETA VALLEY ELEC CO-OP	ANAMOSA	IA	5000	69000	N	1	POWER DIST.
M190902A	1	2/27/2019	GUTHRIE COUNTY REC	GUTHRIE COUNTY	IA	5000	69000	N	1	POWER DIST.
M190901A	1	2/26/2019	SIKESTON BOARD OF MUNICIPAL UT	SIKESTON	MO	15000	67000	Y	1	POWER DIST.
O190801A	1	2/19/2019	PLUMAS-SIERRA RURAL ELEC. COOP	PORTOLA	CA	7000	69000	N	1	POWER DIST.

B190603A	1	2/6/2019	AGRALITE ELECTRIC CO-OP	BENSON	MN	7500	115000	N	1	POWER DIST.
M190601A	1	2/4/2019	BROOKLYN MUNICIPAL UTILITIES	BROOKLYN	IA	3750	69000	N	1	POWER DIST.
M190602A	1	2/4/2019	THE ENERGY COOPERATIVE, OH	UTICA	OH	10000	34500	N	2	POWER DIST.
B190503A	1	1/31/2019	MCCONE ELECTRICAL COOP	CIRCLE	MT	20000	115000	Y	1	POWER DIST.
B190504A	1	1/31/2019	YELLOWSTONE VALLEY ELECTRIC	HUNTLEY	MT	10000	100000	N	1	POWER DIST.
O190501A	1	1/31/2019	CLALLAM PUD	PORT ANGELES	WA	12000	69000	N	1	POWER DIST.
O190502A	1	1/31/2019	NORTHERN WASCO COUNTY PUD	THE DALLES	OR	5000	69000	N	1	POWER DIST.
G190501A	1	1/30/2019	TARHEEL ELE. MEM. ASSOC.	RALEIGH	NC	18000	101750	N	2	POWER DIST.
B190501A	1	1/28/2019	BEARTOOTH ELECTRIC COOPERATIVE	RED LODGE	MT	5000	100000	N	1	POWER DIST.
G184302A	1	1/24/2019	CITY OF JACKSONVILLE BEACH	JACKSONVILLE BEACH	FL	150000	230000	Y	1	AUTOTRANSFORMER
M190401A	1	1/24/2019	HANCOCK-WOOD ELECTRIC CO-OP	FINDLAY	OH	12000	69000	N	2	POWER DIST.
M190401B	1	1/24/2019	HANCOCK-WOOD ELECTRIC CO-OP	FINDLAY	OH	12000	69000	N	2	POWER DIST.
O190302A	1	1/18/2019	CLARK PUBLIC UTILITIES RIVER R	VANCOUVER	WA	24000	69000	Y	2	SUBSTATION
O190303A	1	1/18/2019	NAVOPACHE ELECTRIC COOP, INC	LAKESIDE	AZ	7500	69000	N	1	SUBSTATION
O190303B	1	1/18/2019	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	7500	69000	N	1	SUBSTATION
G190301A	1	1/15/2019	STEUBEN REC	BATH	NY	5000	34400	N	1	POWER DIST.
O190301B	1	1/14/2019	KBS ELECTRICAL DIST. INC.	BRYAN	TX	12500	24940	N	2	POWER DIST.
B190201A	1	1/9/2019	MINNKOTA POWER COOP., INC	GRAND FORKS	ND	5000	68800	N	2	POWER DIST.
G190101A	1	1/4/2019	BLACK WARRIOR ELECTRIC	DEMOPOLIS	AL	12000	44000	N	1	POWER DIST.
M190101A	1	1/4/2019	VILLAGE OF BREWSTER	BREWSTER	OH	15000	67000	N	1	POWER DIST.
B185103A	1	12/21/2018	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	Y	2	POWER DIST.
B185103B	1	12/21/2018	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	Y	2	POWER DIST.
B185103B	2	12/21/2018	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	24940	N	2	POWER DIST.
B185103B	3	12/21/2018	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	N	2	POWER DIST.
B185103C	1	12/21/2018	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	N	1	POWER DIST.
B185103D	1	12/21/2018	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	N	1	POWER DIST.
B185103E	1	12/21/2018	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	24940	N	1	POWER DIST.
B185103F	1	12/21/2018	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	N	1	POWER DIST.
B185103G	1	12/21/2018	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	N	1	POWER DIST.
G185101A	1	12/20/2018	GEORGIA TRANSMISSION CORP	TUCKER	GA	8000	43800	N	1	POWER DIST.
G185101B	1	12/20/2018	GEORGIA TRANSMISSION CORP	TUCKER	GA	8000	43800	N	2	POWER DIST.
M185101A	1	12/18/2018	GRAND RIVER DAM AUTHORITY	VINITA	OK	10000	69000	Y	1	POWER DIST.
B185003B	1	12/12/2018	WRIGHT HENNEPIN COOPERATIVE EL	ROCKFORD	MN	10000	115000	N	1	POWER DIST.
B185001A	1	12/11/2018	TONGUE RIVER ELECTRIC COOP	ASHLAND	MT	20000	115000	Y	1	POWER DIST.
M185001A	1	12/11/2018	ROCK ENERGY COOPERATIVE	JANESVILLE	WI	5000	69000	N	1	POWER DIST.
M184901A	1	12/5/2018	WASHINGTON ELECTRIC COOP.	MARIETTA	OH	10000	138000	N	2	POWER DIST.
M184901B	1	12/5/2018	WASHINGTON ELECTRIC COOP.	MARIETTA	OH	10000	138000	N	1	POWER DIST.
G184803A	1	11/27/2018	GEORGIA TRANSMISSION CORP	TUCKER	GA	15000	67000	N	1	POWER DIST.
O184701A	1	11/20/2018	EMERALD PEOPLES UTILITY DIST.	EUGENE	OR	15000	116000	Y	1	POWER DIST.
B184602A	1	11/16/2018	LOWER VALLEY EC	JACKSON	WY	15000	115000	N	1	POWER DIST.
G184601A	1	11/14/2018	SMECO	BOSTON	MD	20000	67000	Y	1	POWER DIST.
G184601A	2	11/14/2018	SMECO	BOSTON	MD	10000	67000	N	2	POWER DIST.
B184405A	1	11/2/2018	GARKANE ENERGY COOPERATIVE	LOA	UT	3000	69000	N	1	GENERATOR STEP UP
B184403A	1	11/1/2018	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	N	1	POWER DIST.
M184303A	1	10/26/2018	CITY OF JACKSON	JACKSON	OH	25000	138000	N	2	POWER DIST.
O184302A	1	10/26/2018	CITY OF MESA	MESA	AZ	15000	69000	Y	1	POWER DIST.
M184302A	1	10/25/2018	MIDWEST ENERGY COOPERATIVE	CASSOPOLIS	MI	5000	44000	N	1	POWER DIST.
O184201A	1	10/17/2018	BENTON PUD	KENNEWICK	WA	15000	115000	Y	1	POWER DIST.
O184201A	2	10/17/2018	BENTON PUD	KENNEWICK	WA	20000	115000	N	1	POWER DIST.
B184101A	1	10/12/2018	EAST RIVER ELECT PWR COOP	MADISON	SD	7500	69000	N	5	POWER DIST.
B184101B	1	10/12/2018	EAST RIVER ELECT PWR COOP	MADISON	SD	7500	69000	N	1	POWER DIST.
B184101B	2	10/12/2018	EAST RIVER ELECT PWR COOP	MADISON	SD	5000	41600	N	1	POWER DIST.
B184101B	3	10/12/2018	EAST RIVER ELECT PWR COOP	MADISON	SD	15000	115000	N	1	POWER DIST.
G184101A	1	10/11/2018	CITY OF FAIRHOPE PUBLIC UTILIT	FAIRHOPE	AL	15000	43800	N	2	POWER DIST.
G184101B	1	10/11/2018	CITY OF FAIRHOPE PUBLIC UTILIT	FAIRHOPE	AL	15000	43800	N	1	POWER DIST.
G184101C	1	10/11/2018	CITY OF FAIRHOPE PUBLIC UTILIT	FAIRHOPE	AL	10000	43800	N	1	POWER DIST.
O184103A	1	10/11/2018	CITY OF FALLON	FALLON	NV	8000	63000	N	1	POWER DIST.
M184101A	1	10/9/2018	NEW LONDON UTILITIES, WI	NEW LONDON	WI	7500	34500	N	1	POWER DIST.
O184102A	1	10/9/2018	MUNICIPALITY OF ANCHORAGE	ANCHORAGE	AK	16800	115000	Y	1	POWER DIST.
O184101A	1	10/8/2018	CITY & BOROUGH OF SITKA	SITKA	AK	15000	69000	Y	1	POWER DIST.
O184003A	1	10/2/2018	NTUA	FORT DEFIANCE	AZ	2500	69000	N	1	POWER DIST.

G184001A	1	10/1/2018	ELECTRIC BOARD OF GUNTERSVILLE	GUNTERSVILLE	AL	12000	45000	N	3	POWER DIST.
G184002A	1	10/1/2018	CRAIG-BOTETOURT ELECTRIC CO-OP	NEW CASTLE	VA	7500	138000	N	1	POWER DIST.
O184002A	1	10/1/2018	NORA ELEC COOP	CHAMA	NM	5000	69000	N	1	POWER DIST.
O183901A	1	9/26/2018	IMPERIAL IRRIGATION DISTRICT	IMPERIAL CA	CA	8000	92000	N	1	POWER DIST.
B183701A	1	9/12/2018	ANIXTER POWER SOLUTIONS	BILLINGS	MT	7500	69000	N	1	POWER DIST.
B183702A	1	9/12/2018	MINNKOTA POWER COOP., INC	GRAND FORKS	ND	1000	68800	N	2	POWER DIST.
M183701A	1	9/10/2018	SEDGWICK CO ELECTRIC COOP	CHENEY	KS	7500	67000	N	1	POWER DIST.
B183402B	1	8/21/2018	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	10000	69000	Y	1	POWER DIST.
B183302A	1	8/16/2018	PAYSON CITY LTC POWER TRANS.	PAYSON	UT	12000	46000	Y	1	POWER DIST.
M183301A	1	8/15/2018	PRAIRIE POWER COOP	JACKKSONVILLE	IL	166	12470	N	1	GROUNDING TRANSFORME
M183301A	2	8/15/2018	PRAIRIE POWER COOP	JACKKSONVILLE	IL	166	12470	N	1	GROUNDING TRANSFORME
M183301A	3	8/15/2018	PRAIRIE POWER COOP	JACKKSONVILLE	IL	166	12470	N	1	GROUNDING TRANSFORME
B183301A	1	8/13/2018	ST. GEORGE CITY ENERGY	ST. GEORGE	UT	15000	67000	N	2	POWER DIST.
G183202A	1	8/10/2018	ALBERTVILLE UTILITY BOARD	ALBERTVILLE	AL	30000	46000	N	1	POWER DIST.
M183201A	1	8/10/2018	LANE-SCOTT ELECTRICAL COOP	DIGHTON	KS	7500	115000	N	1	POWER DIST.
M183201A	2	8/10/2018	LANE-SCOTT ELECTRICAL COOP	DIGHTON	KS	7500	115000	N	1	POWER DIST.
O183103A	1	8/3/2018	SPRINGFIELD UTILITY BOARD	SPRINGFIELD	OR	15000	116000	Y	1	POWER DIST.
O183102A	1	7/31/2018	LIGHTHOUSE ELE. COOP	FLOYDADA	TX	10000	67000	N	2	POWER DIST.
O183102B	1	7/31/2018	LIGHTHOUSE ELE. COOP	FLOYDADA	TX	10000	67000	N	1	POWER DIST.
M183101A	1	7/30/2018	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	5000	34500	N	1	POWER DIST.
O183101A	1	7/30/2018	LYNTEGAR ELECTRIC COOP	TAHOKA	TX	10000	115000	N	1	POWER DIST.
B183001B	1	7/27/2018	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	7500	34500	N	1	POWER DIST.
G183001A	1	7/25/2018	TARHEEL ELE. MEM. ASSOC.	RALEIGH	NC	18000	101750	N	2	POWER DIST.
G182801A	1	7/10/2018	MOUNTAIN ELEC. COOP	MOUNTAIN CITY	TN	20000	161000	Y	1	POWER DIST.
O182603A	1	6/27/2018	CITY OF VERNON	VERNON	CA	33600	66000	Y	1	POWER DIST.
O182601A	1	6/25/2018	RITA BLANCA ELECTRIC CO-OP	DALHART	TX	12000	115000	N	1	POWER DIST.
G182501A	1	6/21/2018	LENIOR CITY UTILITIES BOARD	LENOIR CITY	TN	12000	69000	N	1	POWER DIST.
G182502A	1	6/21/2018	JOHNSON CITY POWER BOARD	JOHNSON CITY	TN	30000	68800	Y	2	POWER DIST.
G182403A	1	6/15/2018	HUNTSVILLE UTILITIES	HUNTSVILLE	AL	7500	43800	Y	1	POWER DIST.
B182403A	1	6/14/2018	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	24940	N	1	POWER DIST.
O182402A	1	6/12/2018	GREENVILLE ELECTRIC ULTY SYSTE	GREENVILLE	TX	30000	69000	Y	1	POWER DIST.
O182403A	1	6/12/2018	GRAYS HARBOR PUD NO. 1	ABERDEEN	WA	15000	115000	Y	1	POWER DIST.
B182401A	1	6/11/2018	FERGUS ELECTRIC COOPERATIVE	LEWISTOWN	MT	2500	50000	N	2	POWER DIST.
B182402A	1	6/11/2018	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	30000	115000	Y	2	POWER DIST.
G182401A	1	6/11/2018	SANTEE COOPER	MONCKS CORNER	SC	12000	115000	N	1	POWER DIST.
G182401B	1	6/11/2018	SANTEE COOPER	MONCKS CORNER	SC	12000	115000	N	1	POWER DIST.
G182401C	1	6/11/2018	SANTEE COOPER	MONCKS CORNER	SC	12000	115000	N	1	POWER DIST.
O182401B	1	6/11/2018	TEXAS ELECTRIC COOPERATIVES	AUSTIN	TX	12000	138000	Y	1	POWER DIST.
O182401B	2	6/11/2018	TEXAS ELECTRIC COOPERATIVES	AUSTIN	TX	12000	138000	Y	1	POWER DIST.
M182202A	1	5/30/2018	M&A ELECTRIC POWER COOPERATIVE	POPLAR BLUFF	MO	7500	34500	N	1	POWER DIST.
B182201A	1	5/29/2018	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	15000	24940	N	1	POWER DIST.
M182201A	1	5/29/2018	REEDSBURG UTLITY COMMISSION	REEDSBURG	WI	12000	67000	N	1	POWER DIST.
AA182001A	1	5/14/2018	CITY OF JAMESTOWN BOARD OF PUB	JAMESTOWN	NY	7500	13800	Y	1	POWER DIST.
O181902A	1	5/11/2018	CITY OF MESA	MESA	AZ	15000	69000	Y	1	POWER DIST.
O181903A	1	5/11/2018	CITY OF RIVERSIDE PUBLIC UTILI	RIVERSIDE	CA	1000	12470	N	1	DOE SUBSTATION
G181901A	1	5/8/2018	SHEFFIELD UTILITIES, AL	SHEFFIELD	AL	20000	44000	Y	2	POWER DIST.
O181901A	1	5/8/2018	DOUGLAS CO. PUD	EAST WNATCHEE	WA	1500	14400	N	2	POWER DIST.
M181803A	1	5/4/2018	ADAMS COLUMBIA ELECTRIC COOP	FRIENDSHIP	WI	12000	69000	N	1	POWER DIST.
M181803B	1	5/4/2018	ADAMS COLUMBIA ELECTRIC COOP	FRIENDSHIP	WI	12000	69000	N	1	POWER DIST.
O181802A	1	5/4/2018	INLAND POWER & LIGHT	SPOKANE	WA	7500	115000	N	2	POWER DIST.
G181803A	1	5/3/2018	HUMBOLDT UTILITIES	HUMBOLDT	TN	25000	68800	Y	2	POWER DIST.
M181802A	1	5/2/2018	SUPERIOR EQUIPMENT & SUPPLY CO	IRON MOUNTAIN	MI	5000	34500	N	1	GENERATOR STEP UP
B181801A	1	5/1/2018	EAST RIVER ELECT PWR COOP	MADISON	SD	10000	69000	N	2	POWER DIST.
B181801A	2	5/1/2018	EAST RIVER ELECT PWR COOP	MADISON	SD	10000	115000	N	1	POWER DIST.
M181801A	1	5/1/2018	GRAND RIVER DAM AUTHORITY	VINITA	OK	1500	69000	N	1	POWER DIST.
O181801A	1	5/1/2018	RIO GRANDE ELECTRIC COOP	BRACKETTVILLE	TX	37500	138000	Y	1	POWER DIST.
O181701A	1	4/27/2018	ELECTRICAL DISTRICT #3	MARICOPA	AZ	18000	69000	Y	2	POWER DIST.
B181701B	1	4/23/2018	MOUNTRAIL-WILLIAMS ELECTRIC	WILLISTON	ND	15000	115000	N	1	POWER DIST.
G181501A	1	4/11/2018	JOE WHEELER EMC	TRINITY	AL	15000	46000	Y	1	POWER DIST.
B181501A	1	4/9/2018	PROVO CITY	PROVO	UT	12000	46000	Y	2	POWER DIST.
M181402B	1	4/5/2018	CITY OF EDMOND	EDMOND	OK	15000	138000	Y	1	POWER DIST.

M181402C	1	4/5/2018	CITY OF EDMOND	EDMOND	OK	15000	138000	Y	1	POWER DIST.
M181402D	1	4/5/2018	CITY OF EDMOND	EDMOND	OK	15000	138000	Y	1	POWER DIST.
M181402E	1	4/5/2018	CITY OF EDMOND	EDMOND	OK	15000	138000	Y	1	POWER DIST.
B181301A	1	3/29/2018	MARIAS RIVER COOP	SELBY	MT	15000	115000	Y	1	AUTOTRANSFORMER
M181301A	1	3/26/2018	CLAY ELECTRIC COOP, IL	LOUISVILLE	IL	5000	69000	N	1	POWER DIST.
G181201A	1	3/20/2018	GEORGIA TRANSMISSION CORP	TUCKER	GA	8000	43800	N	1	POWER DIST.
M181101A	1	3/13/2018	GUTHRIE COUNTY REC	GUTHRIE COUNTY	IA	5000	69000	N	1	POWER DIST.
O181002A	1	3/8/2018	RITA BLANCA ELECTRIC CO-OP	DALHART	TX	15000	115000	Y	2	POWER DIST.
M181002A	1	3/7/2018	CITY OF CELINA	CELINA	OH	10000	67000	N	1	POWER DIST.
M181001A	1	3/5/2018	PEOPLES ELECT COOPERATIVE	ADA	OK	25000	138000	Y	1	POWER DIST.
G180901A	1	3/1/2018	RIVIERA UTILITIES	FOLEY	AL	18000	115500	N	1	POWER DIST.
O180804A	1	2/20/2018	MERCED IRRIGATION DISTRICT	MERCED	CA	12500	20780	N	2	AUTOTRANSFORMER
G180801A	1	2/19/2018	CITY OF HOMESTEAD	HOMESTEAD	FL	24000	138000	Y	1	POWER DIST.
O180802A	1	2/19/2018	CITY OF REDDING	REDDING	CA	19200	115000	Y	1	POWER DIST.
M180701A	1	2/16/2018	STORY CITY MUNICIPAL ELECTRIC	STORY CITY	IA	12000	68800	Y	1	POWER DIST.
M180702A	1	2/16/2018	WISCONSIN RAPIDS	WISCONSIN RAPIDS	WI	10000	43800	Y	1	POWER DIST.
G180601A	1	2/5/2018	BLACK WARRIOR ELECTRIC	DEMOPOLIS	AL	10000	115000	N	1	POWER DIST.
B180501A	1	1/31/2018	NORTH CENTRAL PPD	CREIGHTON	NE	7500	69000	N	1	POWER DIST.
B180402A	1	1/26/2018	CENTRAL POWER ELEC. COOP. INC.	MINOT	ND	5000	60000	N	2	POWER DIST.
B180401A	1	1/25/2018	WESTERN UNITED ELECTRIC SUPPLY	BRIGHTON	CO	7500	69000	N	1	POWER DIST.
M180401A	1	1/25/2018	NORRIS ELECTRIC COOP	NEWTON	IL	5000	69000	N	1	POWER DIST.
G180401A	1	1/22/2018	JOE WHEELER EMC	TRINITY	AL	12000	161000	N	1	POWER DIST.
B180302A	1	1/17/2018	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	20000	115000	Y	2	POWER DIST.
B180302A	2	1/17/2018	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	15000	115000	Y	2	POWER DIST.
B180302A	3	1/17/2018	MCKENZIE ELECTRIC COOP	WATFORD CITY	ND	15000	115000	Y	2	POWER DIST.
M180301A	1	1/15/2018	KENNETT CITY LIGHT GAS & POWER	KENNETT	MO	12000	68800	N	1	POWER DIST.
M180102A	1	1/4/2018	SOUTHWESTERN ELECTRIC CO-OP	GREENVILLE	IL	10000	69000	N	1	POWER DIST.
M180103A	1	1/4/2018	GUERNSEY-MUSKINGUM ELEC. COOP	NEW CONCORD	OH	10000	69000	N	1	POWER DIST.
O180101A	1	1/3/2018	PLUMAS-SIERRA RURAL ELEC. COOP	PORTOLA	CA	12000	67000	N	1	POWER DIST.

VTC Utility Market References

1. Bluebonnet Electric Coop (TX)
    - Phillip Ellis – Manager of Technical Services
    - 979-219-1704 / phillip.ellis@bluebonnet.coop
2. Oklahoma Municipal Power Authority (OK)
    - Alex Dobson – Manager of Engineering Services
    - 405-359-2512
3. Grand River Dam Authority (OK)
    - Jeffery Tullis – VP T&D Engineering & Operations
    - 918-610-9717 / jeff.tullis@grda.com
4. People's Electric Cooperative (OK)
    - Matt Cooley – Director of Substation/Transmission Services
    - Office 580-559-8485
5. Sylacauga Utilities Board (AL)
    - Eric Carithers – Electrical Superintendent
    - 256-249-0372 / ecarither@sylacauga.net
6. Lyntegar Electric Coop (TX)
    - Ross Aten – Manager of Engineering
    - Office 806-561-4588 / RAten@lyntegar.coop
7. Northeast Missouri Electric Coop (MO)
    - Skyler Wiegmann – Engineering & NERC Compliance Manager
    - 573-769-2107 swiegmann@northeast-power.coop
8. City of Columbia (MO)
    - Roger Menke – City Utilities – Electric Substations
    - Roger.Menke@como.gov
9. Athens Utilities (AL)
    - Mr. Blair Davis – Electrical Department Manager
    - Office 256-232-1440 / bdavis@athens-utilities.com
10. Joe Wheeler EMC (AL)
    - Mr. Jeff Britnell – Director of Engineering
    - Office 256-552-2312 / jbritnell@jwemc.org
11. Huntsville Utilities (AL)
    - Mr. WM. KIM Hensley – Sr. Engineer
    - Office 256-535-1395 / Kim.Hensley@hsvutil.org
12. KCPL (MO)
    - Doug Lukenbill
    - Office 816-242-6432 / doug.lukenbill@evergy.com

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Virginia Transformer Corp

dba VA Transformer

NMSDC
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* Nationally certified by the: **CAROLINAS-VIRGINIA MINORITY SUPPLIER DEVELOPMENT COUNCIL**

*NAICS Code(s): 335311

* Description of their product/services as defined by the North American Industry Classification System (NAICS)

10/18/2021		CA01797
Issued Date		**Certificate Number**
	Ying McGuire **NMSDC CEO and President**	
10/31/2022		**Dominique Milton, President & CEO**
Expiration Date		

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Transformer design and construction

Virginia Transformer Corporation has 3 manufacturing facilities, each specializing in specific sizes of transformers. This delineation of manufacturing allows VTC to achieve maximum efficiency and short lead time for production, yet maintain technical and commercial continuity among the 3 locations. Our plant in Chihuahua, Mexico manufactures dry transformers and smaller oil-filled units. Our Roanoke, Virginia facility is our company headquarters, and manufactures the mid sized oil transformers, and large dry units. Large power transformers are manufactured in our Pocatello, Idaho plant, which also has repair and remanufacturing facilities.

Design practices: Transformer design at VTC utilizes a software program that was developed more than 18 years ago with Virginia Tech in Blacksburg, VA. Today's version of the program includes updates and modifications that reflect the latest developments in manufacturing techniques. This Visual Basic program also incorporates actual performance data which has been acquired by VTC over these many years.

Short circuit withstand: Every VTC facility designs transformers to the same exacting standards with respect to short circuit capability. Each unit is designed to tolerate the currents that occur during an imposed short circuit condition, and the blocking methods used to strengthen the coil have been repeatedly tested in certified testing laboratories (see list of transformers tested).

Transformer base: Virginia Transformer has two base designs, both of which have proven to have superior rigidity and flexibility to adapt to any foundation design. Our structural base uses strengthened members to carry the weight of the transformer at critical locations. Our solid, flat base is sized to distribute weight over the complete base assembly, while providing the same skidding, rolling and pulling capabilities as our structural base.

Core: The core is made from cold-rolled, grain-oriented silicon steel with a Carlite 3 coating to accommodate maximum volts-per-turn applications. These special steels are purchased from AK Steel, and are made to AISI and ASTM standards. Core segments are cut on our precision core-cutting line at the Roanoke, VA facility, where burr limit has been established at less than 5 ten thousandths of an inch (0.0005). The majority of our transformers use a 'Step-Lap', mitre-cut core design, which provides minimum core loss and reduced flux density.

Horizontal core members (yokes) are clamped using core brackets instead of thru bolts. The brackets are made from mild steel, and are tightened against the core yokes by a VTC-designed, pre-stressed tension bar. The tension bar is attached to the bracket, and as the tensioning bolts on the bracket are tightened, the bracket works as a bow to apply equalized surface pressure to the yokes.

Vertical members of the core (legs) are clamped using tie plates (sometime called flitch plates). The tie-plates are supported at either end by the brackets that brace the core yokes. As the yoke brackets are tightened, these tie plates snug against the core legs to maintain tension on the core's vertical members. Core laminations are insulated from the brackets and clamps by sheets of Nomex insulation. A single core ground is established by inserting a copper strip into the top yoke of the core. An insulated electrical cable is terminated on this copper strip, with the other end of the cable being connected to a feed-thru bushing. This design provides core ground access on the outside of the tank.

Coils: Electrical grade coil wire is purchased from Algonquin Wire and Cable, where the conductors have been insulated with wraps of Kraft paper. The kraft insulating paper is applied in multiple layers using half-lapping or over-lapping for thorough insulation. Coil winding takes place in an environmentally controlled winding room. This room is isolated from the other manufacturing processes to avoid contamination of the windings. Technicians wind the coils according to a design package from the engineering staff. Coil winding practices and procedures are described in the VTC winding manual, which details each step of the winding process.

HV and LV windings are wound on individual core tubes of Wiedmann insulation. The coils are sized using a hydraulic press to achieve appropriate electrical height. Windings are manufactured as circular disc for the high voltage winding and helical disc for the low voltage winding. Ducts between the high voltage and low voltage windings give the required electrical isolation and provides a channel for cooling. These ducts are formed with insulating wraps, adhesive kraft paper and dog-bone type spacers.

Coils are supported on the bottom yoke with a clamping ring. Blocks located above the clamping ring then support the coil in line with the key spacers. Additional clamping rings are used at the top of the coil. Coils are braced to 600 lbs per square inch (4.14 newtons per square mm).

Coil and core drying: Core and coil assemblies are placed inside a gas-fired drying oven. The drying process is continuously monitored to lower power factor levels to below 0.5%. When appropriately dried, assemblies are re-tightened and promptly tanked. Electrical connections are made and the tank is filled with insulating oil. Power factor levels are again measured during testing and at shipment to verify the power factor is below 0.5%. Our units are guaranteed to have a power factor below 0.5%, and regularly are below 0.3%.

Windings: The most popular winding design is the circular disc. Disc windings consist of a number of individual discs, wound from either a single conductor or with multiple conductors wound in parallel. The conductive turns are wound radially over each other, and the conductors pass uninterrupted from one disc segment to the next. Disc turns are isolated from the insulating cylinder by insulating strips that traverse the entire width of the coil. Wiedmann spacers, which are keyed to the vertical strips, separate the individual discs one from the other. These vertical

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and horizontal spacers provide a system of ducts which are critical in providing unrestricted circulation of cooling oil. With disc windings, the cooling oil is in contact with each turn of the winding. Keyed coil spacers prevent dislodging after winding, and provide a rigid assembly with sufficient strength to withstand short-circuit stresses.

Tank Fabrication: Virginia Transformer has tank fabrication or tank repair capabilities at each of it's facilities. In addition, each facility has a support fabricator, approved by VTC to insure meeting urgent schedule requirements. Each tank is leak tested prior to delivery, and is shot-blasted and primed to prevent rust. All tanks are cycled thru pressure and vacuum phases throughout the manufacturing process. Tank seams are continuously monitored after filling with oil to insure that no leaks are present.

Quality Assurance: Virginia Transformer has a rigid and well established quality assurance program, as attested by the ISO-9001 certification we have held since 1998. Virginia Transformer has one Quality Assurance Manager, with responsibility for the quality programs at all of our sites. The quality system incorporates inspections, measurements, and manufacturing-hold criteria to insure that manufacturing objectives are met. Non-conformities to acceptable practice are documented and sent to appropriate departments, where an analysis is made to determine the cause and prevention of recurring events. Emphasis on quality is also attested by our RUS listing for 5mva thru 30mva units to 138kv. All three of our facilities presently hold ISO certification, and have been successfully updated to the latest ISO-9001:2008 certification.

TESTS AND THEIR SIGNIFICANCE

Ratio and Phase Relationship Test

The function of a transformer is to transform power from one voltage level to another. The ratio test ensures that the transformer windings have the proper turns to produce the voltages required. The ratio is a measure of the RMS voltage applied to the primary terminals' to the RMS voltage measured at the secondary terminals.

The Standards state that when rated voltage is applied to one winding of the transformer, all other rated voltage(s) at no load shall be correct within 0.5% of the nameplate readings. It also states that all tap voltages shall be correct to the nearest turn if the volts per turn exceed the 0.5% of the desired voltage. The ratio test verifies that these conditions are met.

The primary and secondary windings in a three-phase transformer may be connected in a delta, wye or other configuration, and depending upon which of the individual windings are connected to each other the angular displacement between them. The phase relationship test verifies the delta, wye or other configuration and the angular displacement between the vectors.

Single phase transformers may have subtractive or additive polarity.

The polarity and phase relation tests are important when two or more transformers are to be paralleled. Paralleled transformers must have the same polarity and phase relation to avoid partial or complete short circuits.

Resistance Measurement

This is a measure of the resistance of the conductors in the transformer windings. The resistance measurements have two important functions:

(a) For calculation of the temperature of the windings during the temperature test.

(b) For calculation of the I^2R component of the winding losses.

The resistance measurement is corrected to either 75° C or 85°C depending on the average winding temperature rise of the transformer. The Standards have established 55°C and 65°C as standard temperature rises for liquid-filled transformers. Therefore, the corrected temperature is the winding's average temperature rise plus 20°C ambient temperature.

Insulation Resistance Test

The insulation-resistance test, which is commonly referred to as the megger test is used as an indication of the dryness of the insulation. This test although not classified as a routine test is done on a routine basis by many manufacturers to determine the condition of the insulation prior to testing.

In measuring insulation resistance it is the recommended practice to always be sure that the tank and the core iron are grounded, Short circuit each winding of the transformer at the terminals, Resistance measurements are then made between each winding and all other windings grounded, Windings are never left floating for insulation resistance measurements,

The insulation resistance varies with moisture content, cleanliness and temperature of the insulation parts, since the values vary with temperature, all measurements are corrected to 20° C for comparison purposes.

Insulation Power Factor

The insulation power factor test is another test that can be performed to determine the condition of the transformer insulation. The measurement is made with a capacitance bridge, measuring the capacitance between windings and between windings and ground, together with the power factor or loss angle of these capacitances.

This test is optional. The factory insulation power factor measurement can be of value for comparison purposes with field power factor tests. At this time there are no set standard for the acceptable power factor readings. Acceptable power factor readings are a matter of judgment and experience. Therefore by comparing the factory and field readings, changes in the insulation can possibly be detected.

No Load Loss and Exciting Current Test

The exciting current and the no-load losses are a function of the frequency, voltage and the wave shape of the voltage.

The exciting current and no-load losses are determined from the same test set-up. In which the transformer is energized open circuit. Any of the transformer winding is subjected to the rated voltage. Low Voltage side is preferred to be excited from power source, since that is easy from practical point of view. No Load Loss can be read directly from wattmeter

The no-load or excitation loss actually consists of mainly the iron loss of the core. The iron loss can be controlled to some degree by the quality of the core steel, the point on the performance curve where it is to be operated and the type of core used. Generally, a lower iron loss design will cost more initially, but the long range energy savings will usually more than offset that initial cost differential.

The exciting current test is one of the means used to verify that the core design and its satisfactory performance. The exciting current can be read directly from the ammeter.

The exciting current consists of a magnetizing and a loss component. The magnitude of the magnetizing component is determined by the shape of the performance curve of the core steel, its operating flux density and the number of turns in the primary winding. The loss component is determined by the losses in the core.

Load Loss and Impedance Measurement

The load loss and impedance are determined from what is sometimes referred to as the "short-circuit" test. The secondary of the transformer is shorted and sufficient voltage is applied to the primary terminal to circulate rated current through the primary winding.

The impedance is normally expressed in terms of percent of rated voltage. The impedance voltage is that voltage required to circulate the rated current through the primary winding with the secondary shorted.

The impedance test is made to verify the design impedance The impedance, due to manufacturing tolerance, tends to vary from design values. For this reason, the Standards have established impedance tolerances as follows:

1. For two winding transformers 7.5%

2. For three or more windings or Zig-Zag windings. 10%

The user and the designer are interested in the measured impedance primarily because it determines the amount of current which will flow in the windings during short circuit.

The magnitude of the short circuit current is important to the designer because it establishes

design criteria for the mechanical strength of the internal assemblies, and to the user in determining breaker capacities and selecting correct fuses and properly coordinating relaying schemes.

The impedance is also important when paralleling two or more transformers. The impedance of the paralleled transformers must be within the specified test tolerances. A transformer whose tested impedance is higher will cause the other transformers to carry more than its share of the load.

Dielectric Tests

The insulation in a transformer is probably the most important of its constructional materials. A transformer can function if the efficiency and regulation are poor, temperature rise is too high or if the mechanical strength is marginal. But if the insulation is inadequate and fails, the transformer is unusable. The effectiveness of the insulation in a transformer can be measured by its dielectric strength.

The purpose of the dielectric tests is to verify the dielectric strength of the insulation or in the case of the manufactured transformer to demonstrate the suitability of the insulation to withstand the test levels defined in the Standards. There are two dielectric withstand routine tests that can be performed on a transformer: (1) applied potential test, and (2) induced potential test. Each of these tests, as will be shown, has a specific purpose in verifying the major and minor insulation system of the transformer. The major insulation consists of the phase-to-phase and phase-to-ground insulation and the insulation separating the primary and secondary windings. The layer-to-layer, turn-to-turn and section-to-section insulation make up the minor insulation.

Applied Potential Test

This test is sometimes referred to as the "hypot" or the low-frequency test. The purpose of this test is to check the adequacy of the major insulation to ground and to all other windings being tested.

In this test all windings are short circuited and all windings except the one being tested and the tank are grounded. The voltage to be applied to the ungrounded winding has been established by ANSI C57.12.00. This test is made at 60 hertz and has duration of one minute.

Induced Potential Test

The purpose of this test is to check the minor insulation of the transformer. This test is accomplished by applying to one set of line terminals of the transformer with the other set open circuited. For Class I transformers, this test is conducted at double the rated voltage for 7200 cycles. Generally the source used for this test has frequency of 120 Hz or more.

Partial Discharge Test

Corona is the generic name for electrical discharges that occur in electrical insulation as a result of high velocity ionization under the influence of an electric field that exceeds the dielectric strength of the insulation.

Corona and the term partial discharge are used interchangeably when referring to this phenomenon in transformers. The partial discharge terminology is preferred since it most accurately describes the occurrence.

Much has been written concerning the cause of partial discharges. Some of the conditions that can initiate partial discharges are:

1. Improper processing or drying of the insulation.

2. Over stressed insulation due to a lack of proper recognition of the voltage limitation of the insulation.
3. High stress areas on conducting parts, which can be caused by sharp edges on either the conducting part or ground plane.

The effects of partial discharge in a transformer are twofold. One effect is that the ion and electron bombardment can be damaging to the insulation and shortens the life of the transformer. The other effect is that the transient currents produced due to partial discharges, may interfere with electrical communications,

Transformer manufacturers have been aware of the consequences of partial discharges in transformers for many years and have developed drying and processing procedures as well as insulation systems that virtually eliminate the presence of damaging partial discharges. For this reason the partial discharge test has been classified as optional. The test is performed periodically for quality control reasons, prototype testing or when specified by the user,

Several techniques have been developed to measure the intensity of partial discharges The most generally used is the Radio Influence Voltage (RIV) technique, The radio frequency voltage produced by the partial discharges can be measured at the transformer terminals with a coupled radio

VIRGINIA TRANSFORMER CORPORATION

LIST OF SHORT CIRCUIT TESTED TRANSFORMERS

As of 7/15/2004

PDF Filename	TEST REPORT#	DATE	PLACE OF TEST	SERIAL NO	DRY OR LIQUID	KVA	PRIMARY VOLTAGE	PRI BIL	SECONDARY VOLTAGE	SEC BIL
SC01	SCT2113	6/9/1983	GE PITTSFIELD,MA	340835B001-3034,2	DRY	835	12470	95KV	648 delta & wye	10KV
SC02	LTR8410482	6/11/1984	G.E PITTSFIELD,MA	442000A002-3389	LIQUID	2000	13800	95KV	480y/277	30KV
SC03	J90093C	5/7/1990	KEMA CHALFONT,PA	342233B502-5744B	DRY	2233	13800 Y	110KV	550 delta	10KV
SC04	J92001-C	1/7/1992	KEMA CHALFONT,PA	343257B501-6085	DRY	3257	13800	110KV	468 delta & wye	45KV
SC05	VIRG021892	2/27/1992	WESTINGHOUSE BELMONT,NC	342245A501-6560A	DRY	2245	13800	110KV	556 delta	10KV
SC06	VIRG021892	2/27/1992	WESTINGHOUSE BELMONT,NC	342245A502-6561A	DRY	2245	13800 Y	110KV	556 delta	10KV
SC07	T022121A	4/16/1992	PSM LAB PITTSBURGH,PA	447500A001-6520E	LIQUID	7500	12470	110KV	4160 Y	95KV
SC08	T022121B	5/22/1992	PSM LAB PITTSBURGH,PA	362245A504-6563C	DRY	2245	34500Y	150KV	556 DELTA	10KV
SC09	T022121B	5/22/1992	PSM LAB PITTSBURGH,PA	362245A5046562C	DRY	2245	34500	150KV	556 DELTA	10KV
SC10	T100921	11/20/1992	PSM LAB PITTSBURGH,PA	425000A006-6577B	LIQUID	5000	4160	60KV	2080 Delta & wye	45KV
SC11	T061823	7/28/1993	PSM LAB PITTSBURGH,PA	343292U501-6494C	DRY	3293	13200	95KV	490 Delta & wye	10KV
SC12	T011932	3/4/1993	PSM LAB PITTSBURGH,PA	354366U501-6494H	DRY	4366	26400	150KV	490 Delta & wye	10KV
SC13	VIRG051393	5/13/1993	WESTINGHOUSE BELMONT,NC	341110A501-6990	DRY	1110	13200	95KV	644 Delta & wye	20KV
SC14	VIRG100295	10/10/1995	CUTLER HAMMER BELMONT,NC	340835A001-8027A	DRY	835	13200	95KV	590 Delta & wye	45KV
SC15	VIRG 072798	7/27/1998	CUTLER HAMMER BELMONT,NC	M43476Q501-8944A Transformer Models 341738U001-8944A#A 341738U002-8944A#B	DRY	1738x2	13200	95KV	490	20KV
SC16	99067-B	4/19/1999	KEMA CHALFONT,PA	M43476Q502-9017B Transformer Models 341738U001-9017B#A 341738U002-9017B#B	DRY	1738x2	13200	95KV	490	20KV
SC17	00017-B	1/28/2000	KEMA CHALFONT,PA	M53476Q501-9343A Transformer Models 351813U501-9343A#A 351663U503-9343A#B	DRY	1813X1 1663X1	26400	150KV	490	20KV
SC18	00120-B	7/10/2000	KEMA CHALFONT,PA	47015MA012-9617A	LIQUID	15/20MVA	69000	350 KV	13800	110KV
SC19	0169-B	9/21/2000	KEMA	342130B04-9629G Transformer connected to Rectifier	DRY	2130	12500	95KV	466 delta & wye CKT31	10KV
SC20	01014-B	3/1/2001	KEMA CHALFONT,PA	44017MA002-9823	LIQUID	16.5/22/27.5 MVA	13800Y	110kV	13200	110kV
SC21	02107-B	8/22/2002	KEMA CHALFONT,PA	361087B502-A037N	DRY	1087	34500	150kV	587 Delta & wye CKT31	10kV
SC22	02205-B	11/5/2002	KEMA CHALFONT,PA	351663U001-A139B	DRY	1663	21000	125kV	627 Delta & wye CKT31	30kV

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Standard Warranty Statement

Virginia Transformer provides a standard warranty, as described in our Standard Terms and Conditions of Sale, dated October, 2002. This warranty is for (twelve) 12 months from date of equipment installation or (eighteen) 18 months from date of shipment, whichever occurs first. VTC warrants to repair or replace (FOB factory) any equipment we manufacture due to defective material or workmanship when failure occurs under normal and proper use. Buyer shall make the equipment available to VTC to perform work at the job site without interference or duress. No guarantee, warranty or liability for damage exists other than stated herein. VTC's warranty on purchased components is limited to the warranty provided by the component manufacturer. VTC will not assume any liability of expense for repairs or modifications to equipment unless previously authorized in writing by VTC. VTC will not accept consequential damages under any circumstances.

Warranty Options

Virginia Transformer offers Extended Warranties on the coils and core for time periods beyond the 12/18 months in the Standard Warranty. VTC also offers In/Out coverage on the transformer. The following paragraphs describe both of these added warranties.

Extended Warranty (Optional)

Virginia Transformer Corporation offers extension(s) to the standard warranty. The extended warranty covers only the coils and core against failure that occurs with respect to normal operation of the transformer, and within the parameters for which the transformer was designed. Extended Warranty is valid only if a technical representative of Virginia Transformer Corp. performs, as a minimum, supervision of field assembly and testing of the Transformer. This coverage excludes bolted electrical and mechanical connections, which are to be periodically checked and retightened, as necessary, by the Owner as part of their normal maintenance programs. Available (extended) warranty periods are as follows (equipment installation/shipment):

24/30 months; 36/36 months; 48/48 months; 60/60 months

Extended warranty option_____

In/Out Coverage (Optional)

In/Out coverage is a warranty enhancement available during the Standard Warranty and Extended Warranty period. For failures occurring within the stated warranty period, VTC will cover only the expenses to transport the transformer to a repair facility and return the transformer to customer's site. Buyer will make the transformer ready for shipment in the condition it was originally received from VTC (as per outline drawing), with clear and free access by our selected courier. Civil work, disconnect/reconnect, and crane cost are the responsibility of the buyer.

In/Out coverage_____

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C57.12 ANSI Standards

IMPEDANCES

HV BIL (kV)	LV Below 2400V	LV 2400V and above	LTC	Dry Type
10-60	5.75	5.75	--	5.75
60-110	5.75*	5.50*	--	**
150	6.75	6.50	7.00	**
200	7.25	7.00	7.50	--
250	7.25	7.50	8.00	--
350	--	8.00	8.50	--
450	--	8.50	9.00	--
550	--	9.00	9.50	--
650	--	9.50	10.00	--
750	--	10.00	10.50	--
900	--	10.50	11.00	--

* For transformers above 5000 KVA these values shall be the same as shown for 150 kV BIL.

** ANSI standards do not specify impedances for these ratings but industry is presently using the impedance values shown for the respective liquid/dry values as shown.

VOLTAGE BIL

kV	Liquid	Dry (VPI)	Encapsulated
1.2	30 (45)	10 (20, 30)	10 (30)
2.5	45 (60, 75)	20 (30, 45)	45 (60)
5.0	60 (75)	30 (45, 60)	60 (75)
8.7	75 (95)	45 (60, 95)	75 (95)
15	95 (110*)	60 (95, 110)	95 (110)
25	150 (200)	110 (125)	125 (150)
35	200	150 (200)	150
46	250	--	--
69	350 (250)	--	--
115	450 (550, 350)	--	--
138	550 (650, 450)	--	--
161	650 (750, 550)	--	--
230	750 (900, 650)	--	--

(BIL) in parenthesis is an optional BIL.

* Transformers 5000KVA and above should use this as standard BIL.

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FAN COOLING

Base KVA	Stage 1 Fans	Stage 2 Fans
<2500	115% capacity	--
2500 to <12MVA	125% capacity	--
12MVA and above	133% capacity	125% additional
Dry Type Transformers	133% capacity	--

TEMPERATURE RISE

Liquid Type Transformers with 55/65°C Temperature Rise:

Base KVA @55°C → 112% capacity @ 65°C

STANDARD RATINGS
Liquid Filled Transformers

55°C ONAN	65°C ONAN	55°C ONAF	65°C ONAF	55°C ONAF2	65°C ONAF2
300KVA	336KVA	345KVA	386KVA	--	--
500KVA	560KVA	575KVA	644KVA	--	--
750KVA	840KVA	863KVA	966KVA	--	--
1000KVA	1120KVA	1150KVA	1288KVA	--	--
1500KVA	1680KVA	1725KVA	1932KVA	--	--
2000KVA	2240KVA	2300KVA	2576KVA	--	--
2500KVA	2800KVA	3125KVA	3500KVA	--	--
3000KVA	3360KVA	3750KVA	4200KVA	--	--
3750KVA	4200KVA	4688KVA	5250KVA	--	--
5000KVA	5600KVA	6250KVA	7000KVA	--	--
7500KVA	8400KVA	9375KVA	10.5MVA	--	--
10MVA	11.2MVA	12.5MVA	14MVA	--	--
12MVA	13.44MVA	16MVA	17.92MVA	20MVA	22.4MVA
15MVA	16.8MVA	20MVA	22.4MVA	25MVA	28MVA
20MVA	22.4MVA	26.67MVA	29.86MVA	33.33MVA	37.33MVA
25MVA	28MVA	33.33MVA	37.33MVA	41.67MVA	46.67MVA
30MVA	33.6MVA	40MVA	44.8MVA	50MVA	56MVA
40MVA	44.8MVA	53.32MVA	59.72MVA	66.66MVA	74.65MVA
50MVA	56MVA	66.66MVA	74.65MVA	83.33MVA	93.33MVA

Note – VTC is a custom manufacturer; therefore, custom ratings can be chosen to suite your project needs.

Note on Temperature Rise – If specified transformer is single temperature rise only (55°C rise only or 65°C rise only): disregard the 65°C column and utilize the 55°C column as whichever single rise you are in need of.

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TRANSFORMER INSTALLATION DESCRIPTIONS

Described below are brief descriptions of VTC Field Service Installation Options; please consult your VTC Sales person for additional details and pricing.

Supervision only

VTC supplies an on-site field technician to supervise the assembly of the transformer by others and to verify the work is performed correctly. Others supply all crane, assembly and test equipment. Technician to be at site up to three days.

Installation (make-up oil for radiators only)

VTC supplies an installation crew to install bushings, radiators, arresters, etc. The unit will be shipped filled with oil so the only oil handling will be the oil required to fill the radiators after they are mounted. The oil is shipped from the plant with other detail parts. This operation will require the use of an oil pump and filter. Included in the cost is a small crane to handle the components to install plus the oil handling equipment. The following test will be performed TTR, DCR, DGA, CT Ratio, Core Ground Megger, and Transformer Megger. We will perform Power Factor on units above 69KV.

Installation (complete oil fill)

VTC supplies installation crew to install bushings, radiators, arresters, etc. The unit is shipped drained of oil so will require a complete filling in the field. The oil is usually delivered to the site in a tanker truck and filled from the truck. This operation will normally require the use of a vacuum pump, oil pump and filter, and if required oil heating capability for larger voltage class units. Included in the cost is a small crane to handle the components to install and the oil handling equipment. The following test will be performed TTR, DCR, DGA, CT Ratio, Core Ground Megger, and Transformer Megger. We will perform Power Factor on units above 69KV.

Crane Service

The crane cost is required if the scope of the work requires a crane to offload the transformer from the truck to the pad. This crane is seldom used to install the components on the job.

Transformer units with Conservator having Air Bladder

VTC supplies installation crew to install conservator, conservator, bracing, etc. If the unit is shipped drained of oil we will require a complete filling in the field. The oil is usually delivered to the site in a tanker truck and filled from the truck. This operation will normally require the use of a vacuum pump, oil pump and filter, and if required oil heating capability for larger voltage class units. Included in the cost are a small crane to handle the components to be install and the oil handling equipment.

Hot Oil & Vacuum Processing

VTC offers hot oil processing. Our hot oil processing consists of heating the oil going to the transformer. We offer this on new installs. During vacuum processing VTC will apply a vacuum to the transformer. This is on transformers designed for full vacuum only. The vacuum level will be approximately 1 torr. This vacuum will be for 24hrs prior to oil filling.

Notes:

1. Pricing assumes clear and unobstructed ingress and egress around the work location. VTC will not be responsible for additional costs incurred for delays caused by unimproved sites that are unable to support vehicles and cranes on the scheduled days. VTC will not be responsible for relocating any obstructions to the work site nor for any improvements to allow access to the work site.
2. Crane costs assume unobstructed access to placement area without interference from walls, dykes, fences or substation structures. If obstructions exist, additional cost will possibly be incurred that will be passed along.
3. The customer is responsible for all transformer grounding and connections to bushings and external alarm and control wiring entering junction box.
4. Pricing is based on performing the work with VTC technicians or contracted services at VTC's choice. VTC's on site personnel are to have full and complete access to work on the equipment regardless of union contract rules.

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FIELD SERVICE INSTALLATION AND SERVICE ENGINEERING

DOMESTIC
(US, CANADA & MEXICO)

Service Type	Straight-Time	Overtime & Saturdays	Sundays & Holidays	1-4 hours	5-8hours
Field Service Tech Hourly Rate	$175	$250	$300	4 hours Minimum	8 hours Minimum
Engineering Service Hourly Rate	$275	$415	$550	4 Hours Minimum	8 Hours Minimum

TRAVEL, LIVING AND INCIDENTIAL EXPENSES are not included in any of the hourly rates and shall be billed at cost plus a handling charge of 15%. Rates exclude special tools and equipment.

TERMS OF PAYMENT are on an estimated basis: 100% in advance. Adjustments will be made upon presentation of invoice (within 10 days of invoice date). Interest is payable for late payment.

CALCULATION OF TIME RATES

STRAIGHT-TIME is defined as time worked on a regular schedule 8 hours between 7:00 am and 6:00 pm, Monday through Friday; or for time worked on any other agreed to schedule of 8 hours per day, Monday through Friday. Each hour of straight –time shall be paid for at the straight-time rate.

OVERTIME is defined as time worked in excess of or at times other than the regular straight-time schedule. Each hour of overtime shall be paid for at one and one-half times the straight-time rate, except that hours worked in excess of 16 per day, Monday through Friday, or in excess of 8 hours on Saturday, and hours worked on Sunday and Holidays shall be paid at two times the straight-time rate. A Holiday is any day observed by the purchaser as a Holiday in the place where the work is being performed.

STANDBY TIME is defined as time, up to 8 hours per day, Monday through Friday, during which the SERVICE TECHNICIAN, during the course of this agreement, is available for work but is not working due to circumstances beyond the control of Virginia Transformer Corp. Each hour of Standby Time shall be paid at the Straight-Time rate.

TRAVEL TIME is defined as the time spent by the SERVICE TECHNICIAN in traveling to the job site and returning, including travel occurring on Saturday, Sunday or Holidays. Time is calculated portal to portal. The rate charged for Travel Time is the same as the work rate.

TIME WORKED, TRAVEL TIME AND STANDBY TIME occurring on the same day will each be charged at the rates and within the limitations as foresaid.

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VTC contracts with carriers to transport products from our factory to the customer's site. Transformers are delivered by truck to final destination. When customer acknowledges our delivery plan, we begin acquiring a vehicle for the load requirement. Height and shipping weight of the transformer determine the truck capacity.

Three types of truck-bed configurations are available:

- **Standard flat-bed** trucks have bed heights approximately 5 feet from truck bed to the ground
- **Single-drop** trucks, have bed heights 3 to 4 feet from truck bed to ground and carry taller units.
- **Double-drop** trucks, have bed heights 1.5 to 2 feet from truck bed to ground and carry tallest units.
  - Cannot travel certain roads due to low clearance.

Transformer weight can require a truck to have more wheels and axles than the standard 18 wheel configuration. The ICC determines maximum weight that can be legally transmitted to a truck's axle. An additional axle or two is often required to distribute the weight.

Trucking companies or their regulating agencies determine when a product can leave our factory:

- Availability of low-profile trucks may delay shipment. Delays of 2 or 3 days are common for double-drop bed.
- ICC regulations govern when a heavy or tall load can be transported over the highways. Weight and height may restrict driving hours, and holiday weekends impose additional restrictions on heavy loads.
- States limit load size during wet periods that soften highway lanes. Construction can detour large loads, adding to transport time. State permits for heavy loads may take several days to clear licensing bureaus.

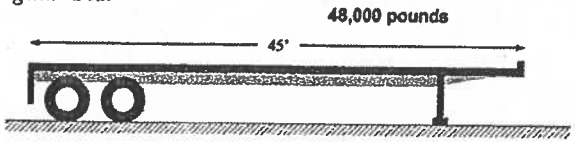
Parts trucks will not commit to direct delivery. These vehicles maximize loading by making accessory pickups and deliveries along their routes. Tarpaulin covers can be provided as a price adder for salt-laden winter highways.

Scheduling truck delivery
Transformers and components will be carried to all designated ship-to address. After scheduling, VTC will advise customer of expected delivery date. VTC instructs carrier to call customer as unit approaches delivery site (cell lines recommended).

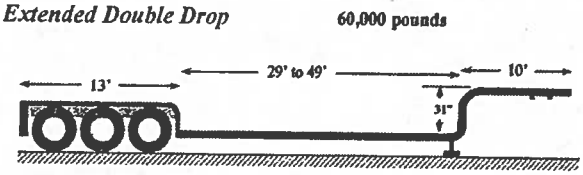
Placing transformer at site
Site conditions must be such that an effective delivery can occur. Truck must have negotiable path to transformer offload site, path must be close proximity to delivery site. The off-load area must accommodate simultaneous presence of the truck and a large crane, allowing crane access to both the transformer and the pad. Sufficient overhead clearance must allow the crane to lift the transformer, convey it to the site, and set it in place without hesitation or risk of harm. VTC is neither responsible for costs at inadequately prepared sites, nor re-location of obstructions or site improvements to facilitate offloading. Obstructions to the delivery process will incur additional costs to the customer.

Dress out at site
VTC can provide an installation crew to install bushings, radiators, arrestors and other ship-separate accessories, and oil filling for units shipped without oil (vacuum pump, oil pump, oil filter, and small crane). Oil will be delivered to site by tanker, and filling of the transformer will be made directly from the tank truck.

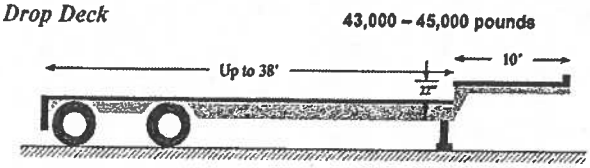
Regular Flat



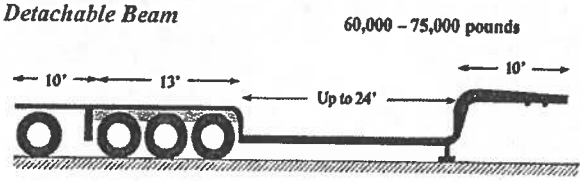
Extended Double Drop



Drop Deck

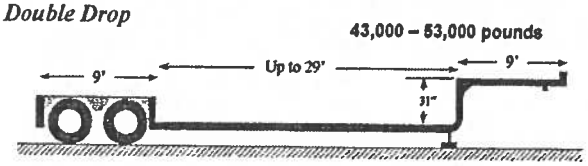


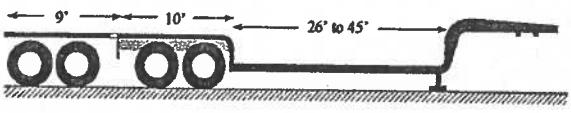
Detachable Beam



Each additional axel increases maximum load 20,000 pounds.

Double Drop





The Commitment Company
ISO 9001

VIRGINIA TRANSFORMER CORP.

220 GLADE VIEW DRIVE • ROANOKE, VA 24012
PHONE 540-345-9892 • FAX 540-342-7694
www.vatransformer.com

HISTORY

Virginia Transformer Corp was established and incorporated in the Commonwealth of Virginia in 1971 to supply Power Transformers to the underground mining industry in the nearby Appalachian Mountains. Low profile construction, tough environmental conditions, and other non-standard specifications required for both Dry-type and Liquid-filled Power Transformers in this application started VTC down the road of custom transformer designs and manufacturing excellence.

During the 70's, our customer base and product scope became more diversified, adding rectifier duty transformers and reactors for adjustable frequency drive and NEMA R19 extra heavy duty traction applications. Most major urban transit systems today employ transformers built by Virginia Transformer Corp. Later in this decade, VTC also established a predominate reputation for retrofitting the PCB market.

Beginning in the 80's, our current President took the helm at Virginia Transformer Corp. Our product range was further expanded to include Industrial and Commercial Power Transformers for distribution applications, including those with automatic load tap changing requirements, and our trademarked fully encapsulated coil UNICLAD® transformer. This decade saw the beginnings of the truly phenomenal 10% - 30% annual growth of VTC, which has been further exceeded in recent years with a continuation of product line expansion into the larger voltage class II sizes of Power Transformers.

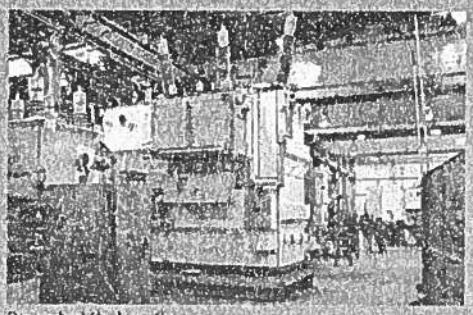
The 90's witnessed entry into the demanding Utility market, as customers sought to find additional suppliers for their requirements of high quality and lower cost units. During this decade VTC moved to a new facility and its current corporate headquarters – a 120,000 square foot custom designed facility for modern transformer manufacturing. Virginia Transformer Corp further expanded by adding a second custom manufacturing facility in Chihuahua, Mexico. This modern state-of-the-art 60,000 square foot operation, designed from the ground up as a transformer plant, has been ISO certified from the beginning. Visiting customers have proclaimed it to be one of the finest facilities for manufacturing transformers in North America.

During the 21st century, Virginia Transformer Corp continued to grow, acquiring the U S Transformer West facility in Pocatello, Idaho – providing yet another step toward world-class recognition. In addition to this facility building new Medium Voltage class Power Transformers, currently up to 100MVA top rated at 161kV, they also provide world-class reconditioning and repair services to both Utility and Industrial clients. Today, VTC stands at the top as a worldwide presence in the Power Transformer industry providing individualized solutions and custom designs with Dry-type and Liquid-filled transformers from its three manufacturing facilities in North America. All major components, core and coil assemblies, tanks, etc. are produced on-site with complete testing capabilities up to 950BIL for the complete range of Power Transformers – 300KVA to 300MVA, 230kV class for Utility, Industrial, Commercial, and Export markets. You won't find a more capable, full service company than Virginia Transformer Corp to meet your needs.

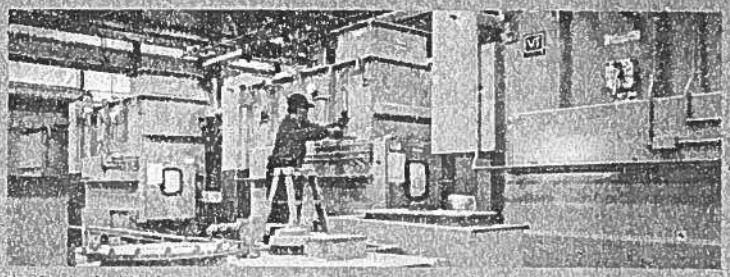
As we look forward to the next century, our focus on high quality, affordable, and best delivery of Power Transformers to meet the ever growing demand of our expanding client base drives and challenges Virginia Transformer Corp daily to provide the highest level of customer service and satisfaction. Although we, like everyone else, occasionally may have an issue with a transformer, VTC's commitment to respond rapidly and take responsibility will remain at the forefront of our obligations to clients.

OUR FACILITIES

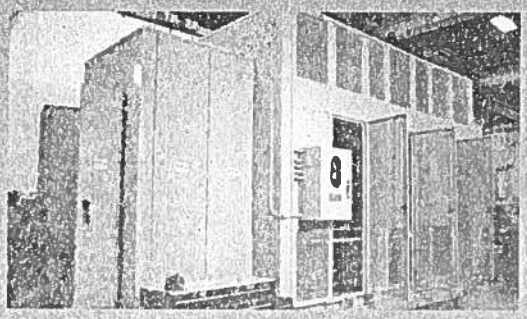
ROANOKE, VA



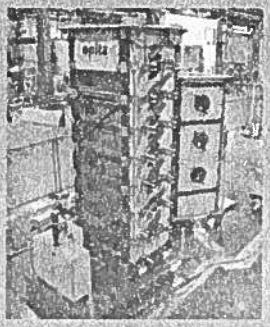
Roanoke VA shop floor



Worker in the Finishing department in Roanoke

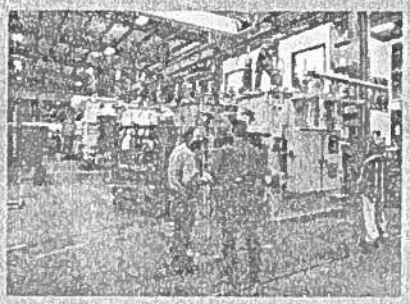


UNICast transformer in Roanoke



Roanoke test area

Soenen core-cutting machine in VTCR

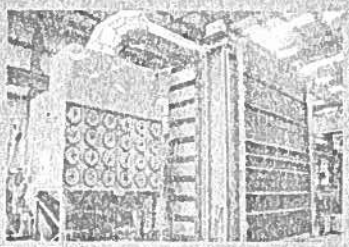


Stack table in Roanoke

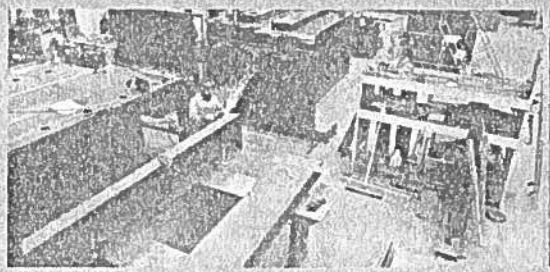
TROUTVILLE, VA

Troutville, VA

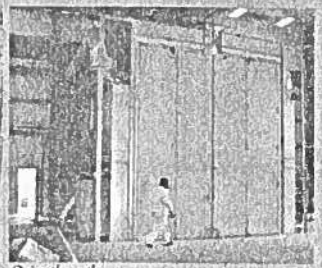
Metal fab



Sandblasting booth



Welding



Paint booth

ROANOKE, VA - HEADQUARTERS

The headquarters for our corporation is located a few miles away from the picturesque Blue Ridge Parkway. Designed and constructed specifically to produce power transformers, this 145,000-square-foot manufacturing facility is absolutely state-of-the-art.

- A vapor-phase drying (VPD) system executes optimum insulation dryness to achieve a 60-year life. Th automated VPD system is computer controlled; technicians can download the process parameters to their cell phones and two transformers can be processed simultaneously. The chamber maintains a vacuum level of 125 torr.
- A second core-cutting machine was also installed to increase capacity and eliminate a critical single point of failure. The machine cuts a 26-inch-wide core. The edge burr level on this Soenen core-cutting machine is measured with a laser and is typically less than 20 microns. The burr-free edges deliver the lowest losses and the transformer sound level is reduced by 2dB.
- Our instrumented, fully equipped test room with complete diagnostic capabilities has the ability to produce test reports automatically.
- All floors of the plant are sealed to eliminate floor dust.
- Four winding machines were added to increase the capacity to build larger coils. The plant is equipped to manufacture 50MVA, 138kV, 650kV BIL as well as manufacturing dry-type to 10MVA, 35kV, 150kV BIL.
- The flow of data to our Soenen core-cutting machine is seamless; it reduces human intervention and works virtually error-free. The Soenen software generates a file with cutting data that uploads the file onto a server. When the operators are ready to cut a particular job they simply pull up the file with the assigned job number using the machine interface, no modifications needed.

TROUTVILLE, VA

- In December 2013, an extension of the Roanoke facility was developed 11 miles from the main plant; tank fabrication, sand blasting and the paint process were relocated there. We strive for the highest quality and efficiency in production through increased computer-aided automation, our automatic paint system, robotic welder, and the barcoding of materials.
- The tank fabrication facility is equipped with a welding robot that delivers leak-free welds, a downdraft sandblasting booth for personnel safety, and an SP-10 finish per SSPC standards for premium paint adhesion.
- The paint system is an epoxy primer on an activated surface and a top coat of polyurethane baked to a hard finish to prevent rusting.
- The plasma table has been fitted with an etching gun to mark the location of all accessories thus eliminating missed parts.
- Machines and work stations are laid out in close proximity to material storage that feeds particular machines and workstations. This process-influenced layout reduces material movement, forklift traffic, and efficiently utilizes overhead cranes.

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Transformer design and construction

Virginia Transformer Corporation has 5 manufacturing facilities, each specializing in specific sizes of transformers. This delineation of manufacturing allows VTC to achieve maximum efficiency and short lead time for production, yet maintain technical and commercial continuity among the 5 locations. Our plant in Chihuahua, Mexico manufactures dry transformers and smaller oil filled units. Our Roanoke, Virginia facility is our company headquarters, and manufactures the mid-sized oil transformers, and large dry units. Large power transformers are manufactured in our Pocatello, Idaho plant, which also has repair and remanufacturing facilities.

Design practices: Transformer design at VTC utilizes a software program that was developed more than 18 years ago with Virginia Tech in Blacksburg, VA. Today's version of the program includes updates and modifications that reflect the latest developments in manufacturing techniques. This Visual Basic program also incorporates actual performance data which has been acquired by VTC over these many years.

Short circuit withstand: Every VTC facility designs transformers to the same exacting standards with respect to short circuit capability. Each unit is designed to tolerate the currents that occur during an imposed short circuit condition, and the blocking methods used to strengthen the coil have been repeatedly tested in certified testing laboratories (see list of transformers tested). Transformer base: Virginia Transformer has two base designs, both of which have proven to have superior rigidity and flexibility to adapt to any foundation design. Our structural base uses strengthened members to carry the weight of the transformer at critical locations. Our solid, flat base is sized to distribute weight over the complete base assembly, while providing the same skidding, rolling and pulling capabilities as our structural base.

Core: The core is made from cold-rolled, grain-oriented silicon steel with a Carlite 3 coating to accommodate maximum volts-per-turn applications. These special steels are purchased from AK Steel, and are made to AISI and ASTM standards. Core segments are cut on our precision core cutting line at the Roanoke, VA facility, where burr limit has been established at less than 5 ten thousandths of an inch (0.0005). The majority of our transformers use a 'Step-Lap', miter-cut core design, which provides minimum core loss and reduced flux density.

Horizontal core members (yokes) are clamped using core brackets instead of thru bolts. The brackets are made from mild steel, and are tightened against the core yokes by a VTC-designed, pre-stressed tension bar. The tension bar is attached to the bracket, and as the tensioning bolts on the bracket are tightened, the bracket works as a bow to apply equalized surface pressure to the yokes.

Vertical members of the core (legs) are clamped using tie plates (sometime called flitch plates). The tie-plates are supported at either end by the brackets that brace the core yokes. As the yoke brackets are tightened, these tie plates snug against the core legs to maintain tension on the core's vertical members. Core laminations are insulated from the brackets and clamps by sheets of Nomex insulation. A single core ground is established by inserting a copper strip into the top yoke of the core. An insulated electrical cable is terminated on this copper strip, with the other end of the cable being connected to a feed-thru bushing. This design provides core ground access on the outside of the tank.

Coils: Electrical grade coil wire is purchased from Algonquin Wire and Cable, where the conductors have been insulated with wraps of Kraft paper. The kraft insulating paper is applied in multiple layers using half-lapping or over-lapping for thorough insulation. Coil winding takes place in an environmentally controlled winding room. This room is isolated from the other manufacturing processes to avoid contamination of the windings. Technicians wind the coils according to a design package from the engineering staff. Coil winding practices and procedures are described in the VTC winding manual, which details each step of the winding process. HV and LV windings are wound on individual core tubes of Wiedmann insulation. The coils are sized using a hydraulic press to achieve appropriate electrical height. Windings are manufactured as circular disc for the high voltage winding and helical disc for the low voltage winding. Ducts between the high voltage and low voltage windings give the required electrical isolation and provides a channel for cooling. These ducts are formed with insulating wraps, adhesive kraft paper and dog-bone type spacers. Coils are supported on the bottom yoke with a clamping ring. Blocks located above the clamping ring then support the coil in line with the key spacers. Additional clamping rings are used at the top of the coil. Coils are braced to 600 lbs. per square inch (4.14 newtons per square mm).

Coil and core drying: Core and coil assemblies are placed inside a gas-fired drying oven. The drying process is continuously monitored to lower power factor levels to below 0.5%. When appropriately dried, assemblies are re-tightened and promptly tanked. Electrical connections are made and the tank is filled with insulating oil. Power factor levels are again measured during testing and at shipment to verify the power factor is below 0.5%. Our units are guaranteed to have a power factor below 0.5%, and regularly are below 0.3%.

Windings: The most popular winding design is the circular disc. Disc windings consist of a number of individual discs, wound from either a single conductor or with multiple conductors wound in parallel. The conductive turns are wound radially over each other, and the conductors pass uninterrupted from one disc segment to the next. Disc turns are isolated from the insulating cylinder by insulating strips that traverse the entire width of the coil. Wiedmann spacers, which are keyed to the vertical strips, separate the individual discs one from the other. These vertical and horizontal spacers provide a system of ducts which are critical in providing unrestricted circulation of cooling oil. With disc windings, the cooling oil is in contact with each turn of the winding. Keyed coil spacers prevent dislodging after winding, and provide a rigid assembly with sufficient strength to withstand short-circuit stresses.

Tank Fabrication: Virginia Transformer has tank fabrication or tank repair capabilities at each of its facilities. In addition, each facility has a support fabricator, approved by VTC to insure meeting urgent schedule requirements. Each tank is leak tested prior to delivery and is shotblasted and primed to prevent rust. All tanks are cycled thru pressure and vacuum phases throughout the manufacturing process. Tank seams are continuously monitored after filling with oil to ensure that no leaks are present.

Quality Assurance: Virginia Transformer has a rigid and well-established quality assurance program, as attested by the ISO-9001 certification we have held since 1998. Virginia Transformer has one Quality Assurance Manager, with responsibility for the quality programs at all of our sites. The quality system incorporates inspections, measurements, and manufacturing hold criteria to ensure that manufacturing objectives are met. Non-conformities to acceptable practice are documented and sent to appropriate departments, where an analysis is made to determine the cause and prevention of recurring events. Emphasis on quality is also attested by our RUS listing for 5mva thru 30mva units to 138kv. All three of our facilities presently hold ISO certification and have been successfully updated to the latest ISO-9001:2008 certification.

TESTS AND THEIR SIGNIFICANCE

Ratio and Phase Relationship Test

The function of a transformer is to transform power from one voltage level to another. The ratio test ensures that the transformer windings have the proper turns to produce the voltages required. The ratio is a measure of the RMS voltage applied to the primary terminals' to the RMS voltage measured at the secondary terminals.

The Standards state that when rated voltage is applied to one winding of the transformer, all other rated voltage(s) at no load shall be correct within 0.5% of the nameplate readings. It also states that all tap voltages shall be correct to the nearest turn if the volts per turn exceed the 0.5% of the desired voltage. The ratio test verifies that these conditions are met.

The primary and secondary windings in a three-phase transformer may be connected in a delta, wye or other configuration, and depending upon which of the individual windings are connected to each other the angular displacement between them. The phase relationship test verifies the delta, wye or other configuration and the angular displacement between the vectors.

Single phase transformers may have subtractive or additive polarity.

The polarity and phase relation tests are important when two or more transformers are to be paralleled. Paralleled transformers must have the same polarity and phase relation to avoid partial or complete short circuits.

Resistance Measurement

This is a measure of the resistance of the conductors in the transformer windings. The resistance measurements have two important functions:

(a) For calculation of the temperature of the windings during the temperature test.
(b) For calculation of the I2R component of the winding losses.

The resistance measurement is corrected to either 75° C or 85°C depending on the average winding temperature rise of the transformer. The Standards have established 55°C and 65°C as standard temperature rises for liquid-filled transformers. Therefore, the corrected temperature is the winding's average temperature rise plus 20°C ambient temperature.

Insulation Resistance Test

The insulation-resistance test, which is commonly referred to as the megger test is used as an indication of the dryness of the insulation. This test although not classified as a routine test is done on a routine basis by many manufacturers to determine the condition of the insulation prior to testing.

In measuring insulation resistance it is the recommended practice to always be sure that the tank and the core iron are grounded, Short circuit each winding of the transformer at the terminals, Resistance measurements are then made between each winding and all other windings grounded, Windings are never left floating for insulation resistance measurements,

The insulation resistance varies with moisture content, cleanliness and temperature of the insulation parts, since the values vary with temperature, all measurements are corrected to 20° C for comparison purposes.

Insulation Power Factor

The insulation power factor test is another test that can be performed to determine the condition of the transformer insulation. The measurement is made with a capacitance bridge, measuring the capacitance between windings and between windings and ground, together with the power factor or loss angle of these capacitances.

This test is optional. The factory insulation power factor measurement can be of value for comparison purposes with field power factor tests. At this time there are no set standard for the acceptable power factor readings. Acceptable power factor readings are a matter of judgment and experience. Therefore by comparing the factory and field readings, changes in the insulation can possibly be detected.

No Load Loss and Exciting Current Test

The exciting current and the no-load losses are a function of the frequency, voltage and the wave shape of the voltage.

The exciting current and no-load losses are determined from the same test set-up. In which the transformer is energized open circuit. Any of the transformer winding is subjected to the rated voltage. Low Voltage side is preferred to be excited from power source, since that is easy from practical point of view. No Load Loss can be read directly from wattmeter

The no-load or excitation loss actually consists of mainly the iron loss of the core. The iron loss can be controlled to some degree by the quality of the core steel, the point on the performance curve where it is to be operated and the type of core used. Generally, a lower iron loss design will cost more initially, but the long range energy savings will usually more than offset that initial cost differential.

The exciting current test is one of the means used to verify that the core design and its satisfactory performance. The exciting current can be read directly from the ammeter.

The exciting current consists of a magnetizing and a loss component. The magnitude of the magnetizing component is determined by the shape of the performance curve of the core steel, its operating flux density and the number of turns in the primary winding. The loss component is determined by the losses in the core.

Load Loss and Impedance Measurement

The load loss and impedance are determined from what is sometimes referred to as the "short-circuit" test. The secondary of the transformer is shorted and sufficient voltage is applied to the primary terminal to circulate rated current through the primary winding.

The impedance is normally expressed in terms of percent of rated voltage. The impedance voltage is that voltage required to circulate the rated current through the primary winding with the secondary shorted.

The impedance test is made to verify the design impedance The impedance, due to manufacturing tolerance, tends to vary from design values. For this reason, the Standards have established impedance tolerances as follows:

1. For two winding transformers 7.5%
2. For three or more windings or Zig-Zag windings. 10%

The user and the designer are interested in the measured impedance primarily because it determines the amount of current which will flow in the windings during short circuit.

The magnitude of the short circuit current is important to the designer because it establishes design criteria for the mechanical strength of the internal assemblies, and to the user in determining breaker capacities and selecting correct fuses and properly coordinating relaying schemes.

The impedance is also important when paralleling two or more transformers. The impedance of the paralleled transformers must be within the specified test tolerances. A transformer whose tested impedance is higher will cause the other transformers to carry more than its share of the load.

Dielectric Tests

The insulation in a transformer is probably the most important of its constructional materials. A transformer can function if the efficiency and regulation are poor, temperature rise is too high or if the mechanical strength is marginal. But if the insulation is inadequate and fails, the transformer is unusable. The effectiveness of the insulation in a transformer can be measured by its dielectric strength.

The purpose of the dielectric tests is to verify the dielectric strength of the insulation or in the case of the manufactured transformer to demonstrate the suitability of the insulation to withstand the test levels defined in the Standards. There are two dielectric withstand routine tests that can be performed on a transformer: (1) applied potential test, and (2) induced potential test. Each of these tests, as will be shown, has a specific purpose in verifying the major and minor insulation system of the transformer. The major insulation consists of the phase-to-phase and phase-to-ground insulation and the insulation separating the primary and secondary windings. The layer-to-layer, turn-to-turn and section-to-section insulation make up the minor insulation.

Applied Potential Test

This test is sometimes referred to as the "hypot" or the low-frequency test. The purpose of this test is to check the adequacy of the major insulation to ground and to all other windings being tested.

In this test all windings are short circuited and all windings except the one being tested and the tank are grounded. The voltage to be applied to the ungrounded winding has been established by ANSI C57.12.00. This test is made at 60 hertz and has duration of one minute.

Induced Potential Test

The purpose of this test is to check the minor insulation of the transformer. This test is accomplished by applying to one set of line terminals of the transformer with the other set open circuited. For Class I transformers, this test is conducted at double the rated voltage for 7200 cycles. Generally the source used for this test has frequency of 120 Hz or more.

Partial Discharge Test

Corona is the generic name for electrical discharges that occur in electrical insulation as a result of high velocity ionization under the influence of an electric field that exceeds the dielectric strength of the insulation.

Corona and the term partial discharge are used interchangeably when referring to this phenomenon in transformers. The partial discharge terminology is preferred since it most accurately describes the occurrence.

Much has been written concerning the cause of partial discharges. Some of the conditions that can initiate partial discharges are:

1. Improper processing or drying of the insulation.
2. Over stressed insulation due to a lack of proper recognition of the voltage limitation of the insulation.
3. High stress areas on conducting parts, which can be caused by sharp edges on either the conducting part or ground plane.

The effects of partial discharge in a transformer are twofold. One effect is that the ion and electron bombardment can be damaging to the insulation and shortens the life of the transformer. The other effect is that the transient currents produced due to partial discharges, may interfere with electrical communications,

Transformer manufacturers have been aware of the consequences of partial discharges in transformers for many years and have developed drying and processing procedures as well as insulation systems that virtually eliminate the presence of damaging partial discharges. For this reason the partial discharge test has been classified as optional. The test is performed periodically for quality control reasons, prototype testing or when specified by the user,

Several techniques have been developed to measure the intensity of partial discharges The most generally used is the Radio Influence Voltage (RIV) technique, The radio frequency voltage produced by the partial discharges can be measured at the transformer terminals with a coupled radio.

VTC Short Circuit Tested Jobs

TEST NUMBER	TEST REPORT #	DATE	PLACE OF TEST	SERIAL NO	DRY OR LIQUID	kVA	PRIMARY VOLTAGE	PRI BIL	SECONDARY VOLTAGE	SEC BIL
SC01	SCT2113	6/9/1983	GE PITTSFIELD, MA	340835B001-3034.2	DRY	835	12470	95KV	648 delta & wye	10KV
SC02	LTR8410482	6/11/1984	GE PITTSFIELD, MA	442000A002-3389	LIQUID	2000	13800	95KV	480y/277	30KV
SC03	J90093C	5/7/1990	KEMA CHALFONT, PA	342233B502-5744B	DRY	2233	13800 Y	110KV	550 delta	10KV
SC04	J92001-C	1/7/1992	KEMA CHALFONT, PA	343257B501-6085	DRY	3257	13800	110KV	468 delta & wye	45KV
SC05	VIRG021892	2/27/1992	WESTINGHOUSE BELMONT, NC	342245A501-6560A	DRY	2245	13800	110KV	556 delta	10KV
SC06	VIRG021892	2/27/1992	WESTINGHOUSE BELMONT, NC	342245A502-6561A	DRY	2245	13800 Y	110KV	556 delta	10KV
SC07	T022121A	4/16/1992	PSM LAB PITTSBURGH,PA	447500A001-6520E	LIQUID	7500	12470	110KV	4160 Y	95KV
SC08	T022121B	5/22/1992	PSM LAB PITTSBURGH,PA	36224A504-6563C	DRY	2245	34500Y	150KV	556 delta	10KV
SC09	T022121B	5/22/1992	PSM LAB PITTSBURGH,PA	362245A504-6562C	DRY	2245	34500	150KV	556 delta	10KV
SC10	T100921	11/20/1992	PSM LAB PITTSBURGH,PA	425000A006-6577B	LIQUID	5000	4160	60KV	2080 Delta & wye	45KV
SC11	T061823	7/28/1993	PSM LAB PITTSBURGH,PA	343292U501-6494C	DRY	3293	13200	95KV	490 Delta & wye	10KV
SC12	T011932	3/4/1993	PSM LAB PITTSBURGH,PA	354366U501-6494H	DRY	4366	26400	150KV	490 Delta & wye	10KV
SC13	VIRG051393	5/13/1993	WESTINGHOUSE BELMONT, NC	341110A501-6990	DRY	1110	13200	95KV	644 Delta & wye	20KV
SC14	VIRG100295	10/10/1995	CUTLER HAMMER BELMONT, NC	340835A001-8027A	DRY	835	13200	95KV	590 Delta & wye	45KV
SC15	VIRG072798	7/27/1998	CUTLER HAMMER BELMONT, NC	M43476Q501-8944A Transformer Models 341738U001-8944A#A 341738U002-8944A#B	DRY	1738x2	13200	95KV	490	20KV
SC16	99067-B	4/19/1999	KEMA CHALFONT, PA	M43476Q502-9017B Transformer Models 341738U001-9017B#A 341738U002-9017B#B	DRY	1738x2	13200	95KV	490	20KV
SC17	00017-B	1/28/2000	KEMA CHALFONT, PA	M53476Q501-9343A Transformer Models 351813U501-9343A#A 351663U503-9343A#B	DRY	1813X1 1663X1	26400	150KV	490	20KV
SC18	00120-B	7/10/2000	KEMA CHALFONT, PA	47015MA012-9617A	LIQUID	15/20MVA	69000	350KV	13800	110KV
SC19	0169-B	9/21/2000	KEMA	342130B04-9629G Transformer connected to rectifier	DRY	2130	12500	95KV	466 delta & wye CKT31	10KV
SC20	01014-B	3/1/2001	KEMA CHALFONT, PA	44017MA002-9823	LIQUID	16.5/22/27.5 MVA	13800Y	110KV	13200	110KV
SC21	02107-B	8/22/2002	KEMA CHALFONT, PA	361087B502-A037N	DRY	1087	34500	150KV	587 Delta & wye CKT31	10KV
SC22	02205-B	11/5/2002	KEMA CHALFONT, PA	351663U001-A139B	DRY	1663	21000	125KV	627 Delta & wye CKT31	30KV
SC23	20109-26	7/23/2010	POWERTECH VANCOUVER, BC	463230A001 - B307B	LIQUID	3300	34.5kV	200KV	549 Delta & Wye CKT31	30KV
SC24	10175-B	8/2/2010	KEMA CHALFONT, PA	453196A001 - B377B	LIQUID BETA	3196	23kV	200KV	507 Delta & Wye CKT31	30KV
SC25	10264-B	11/9/2010	KEMA CHALFONT, PA	464274A001 - B451A	LIQUID FR3	4274	34.5 kV	200 kV	785 Delta & Wye CKT31	45 kV
SC26	10261-B	12/13/2010	KEMA CHALFONT, PA	361638B001 - B450A	DRY	1638	34.5 kV	170 kV	617 Delta & Wye CKT31	45 kV
SC27	15019-B	1/27/2015	KEMA CHALFONT, PA	463220A001 - C252A	LIQUID FR3	3220	34.5 kV	200 kV	785 Delta & Wye CKT31	45 kV
SC28	15110 - B	5/27/2015	KEMA CHALFONT, PA	341000U529W - WB247B	DRY	1000	13.2 kV	95 kV	480 Wye Dyn1	10 kV
SC29	15143-B	7/9/2015	KEMA CHALFONT, PA	M53476Q001-C326A Two C&C in one Tank 451813A001-C326A#A 451663A001-C326A#B	LIQUID FR3	1813X1 1663X1	26400 Delta & Wye	150KV	490 Delta & Delta	30kV
SC30	15175-B	8/25/2015	KEMA CHALFONT, PA	443450A001 - C336A	LIQUID FR3	3450	13.2 kV	110 kV	490 Delta & Wye CKT31	30 kV

Standard Warranty Statement

Virginia Transformer provides a standard warranty, as described in our Standard Terms and Conditions of Sale, dated March, 2023. This warranty is for twelve (12) months from date of equipment installation or eighteen (18) months from date of shipment, whichever occurs first. The warranty period for repaired/refurbished articles shall extend for the unexpired warranty period of the item repaired or replaced or for 90 days, whichever is longer. VTC warrants to, at Seller's exclusive option, repair or replace a failure or warranty nonconformance, substantiated by Seller's authorized personnel, or with Seller's return authorization and Buyer making available product (FOB factory) Seller's plant, for any equipment we manufacture during this period which has become defective exclusively due to defective material or workmanship, when failure occurs under normal and proper use. Buyer shall make the equipment available to VTC to perform work at the job site without interference or duress. No guarantee, warranty or liability for damage exists other than stated herein. VTC's warranty on purchased components is limited to the warranty provided by the component manufacturer. VTC will not assume any liability of expense for repairs or modifications to equipment unless previously authorized in writing by VTC. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND SELLER DISCLAIMS IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

VTC will not accept consequential damages under any circumstances. Before replacement or repairs take place, VTC shall first perform an examination upon the equipment in question to confirm that the warranty remains valid and has not been voided. Please note conditions which may void your warranty, present and detailed in VTC's proposal, under Section 16 of Virginia Transformer Corporation's Standard Terms and Conditions.

Warranty Options

Virginia Transformer offers Extended Warranties for time periods beyond the 12/18 months in the Standard Warranty. VTC also offers In/Out coverage on the transformer. The following paragraphs describe all of these added warranties.

Extended Warranty for Core and Coil (Optional)

Virginia Transformer Corporation offers extension(s) to the standard warranty. The extended warranty covers only the coils and core against failure that occurs with respect to normal operation of the transformer, and within the parameters for which the transformer was designed. Extended Warranty is valid only if a technical representative of Virginia Transformer Corp. performs, as a minimum, supervision of field assembly and testing of the Transformer. This coverage excludes bolted electrical and mechanical connections, which are to be periodically checked and retightened, as necessary, by the Owner as part of their normal

maintenance programs. Please consult with your VTC representative for quotes of extended warranty coverage. Available (extended) warranty periods are as follows (equipment installation/shipment):

24/30 months; 36/36 months; 48/48 months; 60/60 months

Extended warranty_____

option

Extended Bumper to Bumper Warranty (Optional)

Virginia Transformer Corporation offers extension(s) to the standard warranty. The bumper-to-bumper extended warranty will cover the entire Transformer including the core and coils and all associated transformer accessories against failure occurring with respect to normal operation and within the parameters for which the transformer was designed. Bumper to Bumper Warranty does not cover normal wear and tear including paint and gaskets beyond five years. For extended Warranty period, to ensure validity of Extended Warranty period coverage, Virginia Transformer requires Dissolved Gas Analysis (DGA) reports of the supplied unit to be provided every year for the period of extended warranty coverage, and the additional data as stated in Section 16(A) The annual DGA's should be emailed to: FieldService@vatransformer.com. Failure to conduct annual DGAs and provide the reports to Seller may void the purchased extended warranty. Except for the extended time all other provisions, terms, conditions, and limitations set forth above shall apply to the extended warranty period. Please consult with your VTC representative for quotes of extended warranty coverage.

Extended warranty_____

In/Out Coverage (Optional)

In/Out coverage is a warranty enhancement available during the Standard Warranty and Extended Warranty period. For failures occurring within the stated warranty period, if In/Out coverage is purchased, VTC will cover only the expenses to transport the transformer to a repair facility and return the transformer to customer's site for warranty failures within the period defined. Buyer will make the transformer ready for shipment in the condition it was originally received from VTC (as per outline drawing), with clear and free access by our selected courier. Civil work, disconnection, and reconnection, etc. are the responsibility of the Buyer. Please consult with your VTC representative for quotes of in/out coverage

In/Out coverage_____

C57.12 ANSI Standards

IMPEDANCES

HV BIL (kV)	LV Below 2400V	LV 2400 and above	LTC	Dry Type
10-60	5.75	5.75	--	5.75
60-110	5.75*	5.50*	--	**
150	6.75	6.50	7.00	**
200	7.25	7.00	7.50	--
250	7.25	7.50	8.00	--
350	--	8.00	8.50	--
450	--	8.50	9.00	--
550	--	9.00	9.50	--
650	--	9.50	10.00	--
750	--	10.00	10.50	--
900	--	10.50	11.00	--

* For transformers above 5000 KVA these values shall be the same as shown for 150 kV BIL.

** ANSI standards do not specify impedances for these ratings but industry is presently using the impedance values shown for the respective liquid/dry values as shown.

VOLTAGE BIL

kV	Liquid	Dry (VPI)	Encapsulated
1.2	30 (45)	10 (20, 30)	10 (30)
2.5	45 (60, 75)	20 (30, 45)	45 (60)
5.0	60 (75)	30 (45, 60)	60 (75)
8.7	75 (95)	45 (60, 95)	75 (95)
15	95 (110*)	60 (95, 110)	95 (110)
25	150 (200)	110 (125)	125 (150)
35	200	150 (200)	150
46	250	--	--
69	350 (250)	--	--
115	450 (550, 350)	--	--
138	550 (650, 450)	--	--
161	650 (750, 550)	--	--
230	750 (900, 650)	--	--

(BIL) in parenthesis is an optional BIL.

* Transformers 5000KVA and above should use this as standard BIL

C57.12 ANSI Standards

FAN COOLING

Base KVA	Stage 1 Fans	Stage 2 Fans
<2500	115% capacity	--
2500 to <12 MVA	125% capacity	--
12 MVA and above	133% capacity	125% additional
Dry Type Transformers	133% capacity	--

TEMPERATURE RISE

Liquid Type Transformers with 55/65°C Temperature Rise:

Base KVA @55°C → 112% capacity @ 65°C

STANDARD RATINGS
Liquid Filled Transformers

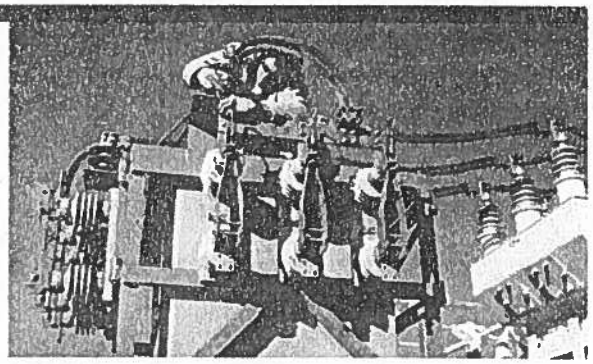
55°C ONAN	65°C ONAN	55°C ONAF	65°C ONAF	55°C ONAF2	65°C ONAF2
300KVA	336KVA	345KVA	386KVA	--	--
500KVA	560KVA	575KVA	644KVA	--	--
750KVA	840KVA	863KVA	966KVA	--	--
1000KVA	1120KVA	1150KVA	1288KVA	--	--
1500KVA	1680KVA	1725KVA	1932KVA	--	--
2000KVA	2240KVA	2300KVA	2576KVA	--	--
2500KVA	2800KVA	3125KVA	3500KVA	--	--
3000KVA	3360KVA	3750KVA	4200KVA	--	--
3750KVA	4200KVA	4688KVA	5250KVA	--	--
5000KVA	5600KVA	6250KVA	7000KVA	--	--
7500KVA	8400KVA	9375KVA	10.5MVA	--	--
10MVA	11.2MVA	12.5MVA	14MVA	--	--
12MVA	13.44MVA	16MVA	17.92MVA	20MVA	22.4MVA
15MVA	16.8MVA	20MVA	22.4MVA	25MVA	28MVA
20MVA	22.4MVA	26.67MVA	29.86MVA	33.33MVA	37.33MVA
25MVA	28MVA	33.33MVA	37.33MVA	41.67MVA	46.67MVA
30MVA	33.6MVA	40MVA	44.8MVA	50MVA	56MVA
40MVA	44.8MVA	53.32MVA	59.72MVA	66.66MVA	74.65MVA
50MVA	56MVA	66.66MVA	74.65MVA	83.33MVA	93.33MVA

Note – VTC is a custom manufacturer; therefore, custom ratings can be chosen to suit your project needs.

Note on Temperature Rise – If specified transformer is single temperature rise only (55°C rise only or 65°C rise only): disregard the 65°C column and use the 55°C column as whichever single rise you are in need of.

Transformer Service Solutions

ONE SOURCE – ONE COMMITMENT



Virginia Transformer Corp (VTC) has the capabilities for complete transformer support. From installations, replacements or scheduled maintenance VTC has the trained personnel and equipment for all of your transformer service needs.

VTC maintains a fleet of mobile vacuum dehyddrator/oil processing trucks designed to be anywhere in the US, Canada and Mexico with minimum notice.
These trucks are equipped with a full set of tools, safety equipment and generators allowing self-sufficiency in remote areas where site power may not be available.

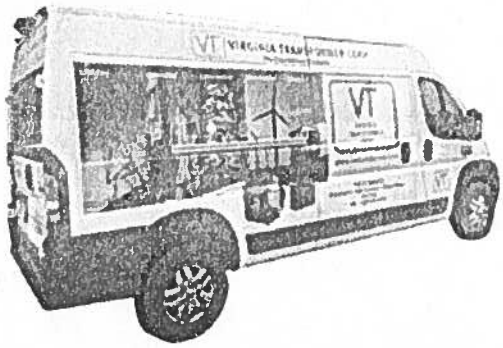
Transformer Experience up to 500 kV

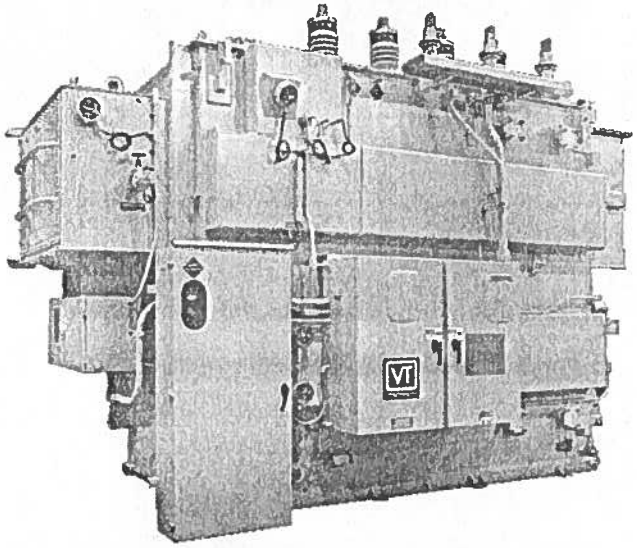
- Assembly (New or Used)
- Oil Dehydration/Degassing
- Removal/Relocation
- Vacuum/Oil Filling
- Testing – Acceptance
- Transformer Dry Out
- Repairs - Leaks, Gaskets, Bushings
- New and Used Equipment
- Inspection/Maintenance
- Training
- Regasket Complete Transformer

Electrical Testing & Services

- Insulation Power Factor
- SFRA
- Excitation Current
- Transformer Turns Ratio (TTR)
- Winding Resistance
- CT (Ratio, Polarity, Saturation)
- Capacitance Measurement
- Insulation Resistance (Megger)
- Infrared Inspection Analysis
- Controls Troubleshooting

Emergency Service Available
24/7/365
1-800-882-3994





For more information or to request a quote for your transformer requirements, please contact VTC Field Services at 1.800.882.3994 or email: Field_Service@vatransformer.com

FSLINECARD 5-16

TRANSFORMER INSTALLATION DESCRIPTIONS

Described below are brief descriptions of VTC Field Service Installation Options; please consult your VTC Salesperson for additional details and pricing.

Supervision only

VTC supplies an on-site field technician to supervise the assembly of the transformer by others and to verify the work is performed correctly. Others supply all crane, assembly and test equipment. Technician to be at site up to three days.

Installation (make-up oil for radiators only)

VTC supplies an installation crew to install bushings, radiators, arresters, etc. The unit will be shipped filled with oil so the only oil handling will be the oil required to fill the radiators after they are mounted. The oil is shipped from the plant with other detail parts. This operation will require the use of an oil pump and filter. Included in the cost is a small crane to handle the components to install plus the oil handling equipment. The following test will be performed TTR, DCR, DGA, CT Ratio, Core Ground Megger, and Transformer Megger. We will perform Power Factor on units above 69KV.

Installation (complete oil fill)

VTC supplies installation crew to install bushings, radiators, arresters, etc. The unit is shipped drained of oil so will require a complete filling in the field. The oil is usually delivered to the site in a tanker truck and filled from the truck. This operation will normally require the use of a vacuum pump, oil pump and filter, and if required oil heating capability for larger voltage class units. Included in the cost is a small crane to handle the components to install and the oil handling equipment. The following test will be performed TTR, DCR, DGA, CT Ratio, Core Ground Megger, and Transformer Megger. We will perform Power Factor on units above 69KV.

Crane Service

The crane cost is required if the scope of the work requires a crane to offload the transformer from the truck to the pad. This crane is seldom used to install the components on the job.

Transformer units with Conservator having Air Bladder

VTC supplies installation crew to install conservator, conservator, bracing, etc. If the unit is shipped drained of oil we will require a complete filling in the field. The oil is usually delivered to the site in a tanker truck and filled from the truck. This operation will normally require the use of a vacuum pump, oil pump and filter, and if required oil heating capability for larger voltage class units. Included in the cost are a small crane to handle the components to be install and the oil handling equipment.

Hot Oil & Vacuum Processing

VTC offers hot oil processing. Our hot oil processing consists of heating the oil going to the transformer. We offer this on new installs. During vacuum processing VTC will apply a vacuum to the transformer.

This is on transformers designed for full vacuum only. The vacuum level will be approximately 1 torr. This vacuum will be for 24hrs prior to oil filling.

Notes:

1. Pricing assumes clear and unobstructed ingress and egress around the work location. VTC will not be responsible for additional costs incurred for delays caused by unimproved sites that are unable to support vehicles and cranes on the scheduled days. VTC will not be responsible for relocating any obstructions to the work site nor for any improvements to allow access to the work site.
2. Crane costs assume unobstructed access to placement area without interference from walls, dykes, fences or substation structures. If obstructions exist, additional cost will possibly be incurred that will be passed along.
3. The customer is responsible for all transformer grounding and connections to bushings and external alarm and control wiring entering junction box.
4. Pricing is based on performing the work with VTC technicians or contracted services at VTC's choice. VTC's on site personnel are to have full and complete access to work on the equipment regardless of union contract rules.

VIRGINIA TRANSFORMER CORP.
220 GLADE VIEW DRIVE • ROANOKE, VA 24012
PHONE 540-345-9892 • FAX 540-342-7694
www.vatransformer.com
The Commitment Company
ISO 9001

VTC contracts with carriers to transport products from our factory to our customer's site. Transformers are delivered by truck to their final destination. Once the customer acknowledges our delivery plan, we begin acquiring a vehicle for the load requirement. Height and shipping weight of the transformer determine the truck capacity.

Three types of truck-bed configurations are available:

- **Standard flat-bed** trucks have bed heights approximately 5 feet from the truck bed to the ground.
- **Single-drop** trucks have bed heights 3 to 4 feet from the truck bed to the ground and carry taller units.
- **Double-drop** trucks have bed heights 1.5 to 2 feet from the ground and carry our tallest units.
    - These trucks cannot travel certain roads due to clearance.

Transformer weight can require a truck to have more wheels and axles than the standard 18 wheel configuration. The ICC determines the maximum weight that can be legally transmitted to a truck's axle. An additional axle or two is often required to distribute the weight.

Trucking companies or their regulating agencies determine when a product can leave our factory:

- Availability of low-profile trucks may delay shipment. Delays of 2 or 3 days are common for a double-drop bed.
- ICC regulations govern when a heavy or tall load can be transported over the highways. Weight and height may restrict driving hours, and holiday weekends impose additional restrictions on heavy loads.
- States limit load size during wet periods that soften highway lanes. Construction can detour large loads, adding to transport time. State permits for heavy loads may take several days to clear licensing bureaus.

Parts trucks will not commit to direct delivery. These vehicles maximize loading by making accessory pickups and deliveries along their routes. Tarpaulin covers can be provided as a price adder for salt-laden winter highways.

Scheduling truck delivery

Transformers and their components will be carried to all designated ship-to address. After scheduling, VTC will advise customer of expected delivery date. VTC instructs carriers to call the customer as the unit approaches the delivery site (cell lines recommended)

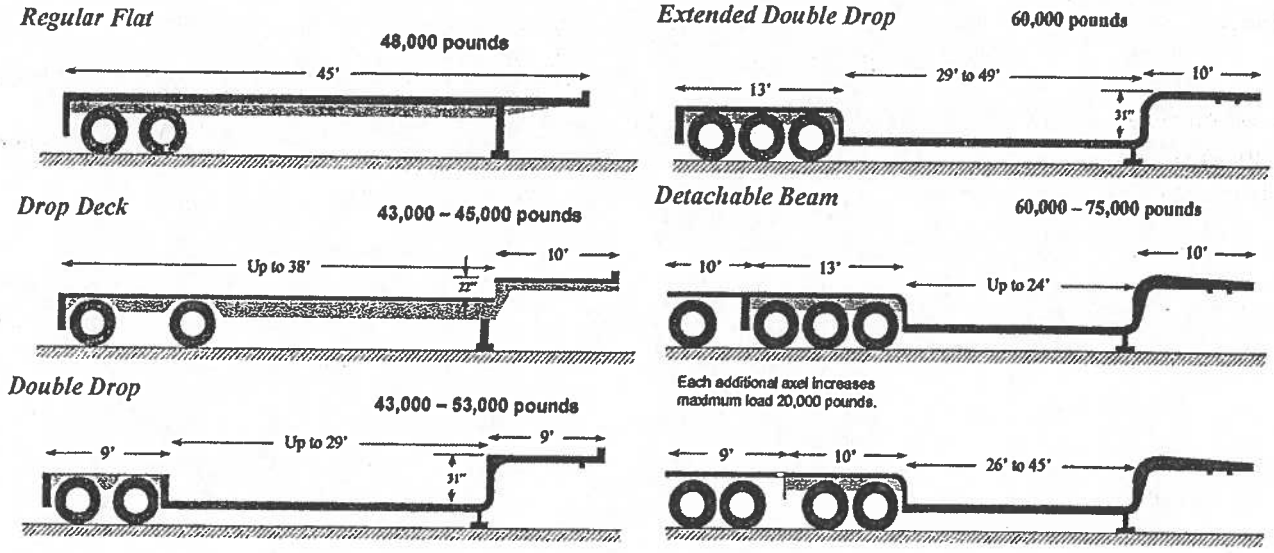
Placing transformer at site

Site conditions must be such that an effective delivery can occur. Trucks must have a negotiable path to the transformer offload site, and the path must be in close proximity to the delivery site. The off-load area must accommodate the simultaneous presence of the truck and a large crane, allowing the crane access to both the transformer and the pad. Sufficient overhead clearance must allow the crane to lift

the transformer, convey it to the site, and set it in place without hesitation or risk of harm. VTC is neither responsible for costs at inadequately prepared sites, nor re-location of obstructions or site improvements to facilitate offloading. Obstructions to the delivery process will incur additional costs to the customer.

Dress out at site

VTC can provide an installation crew to install bushings, radiators, arrestors, and other ship-separate accessories, and oil filling for units shipped without oil (vacuum pump, oil pump, oil filter, and small crane). Oil will be delivered to site by tanker, and filling of the transformer will be made directly from the tank truck.



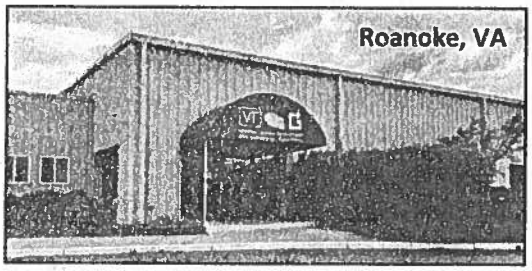
The Commitment Company
ISO 9001

VIRGINIA TRANSFORMER CORP.

220 GLADE VIEW DRIVE • ROANOKE, VA 24012
PHONE 540-345-9892 • FAX 540-342-7694
www.vatransformer.com

HISTORY

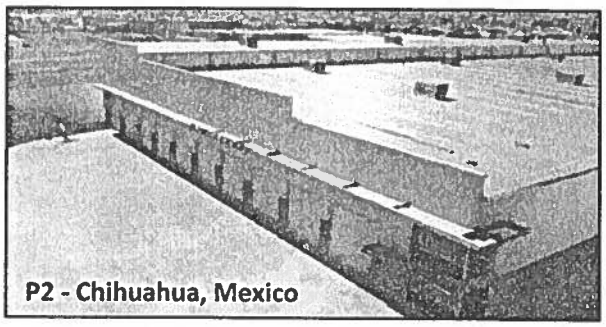
Virginia Transformer Corp was established and incorporated in the Commonwealth of Virginia in 1971 to supply Power Transformers to the underground mining industry in the nearby Appalachian Mountains. Low profile construction, tough environmental conditions, and other non-standard specifications required for both Dry-type and Liquid-filled Power Transformers in this application started VTC down the road of custom transformer designs and manufacturing excellence.


Roanoke, VA

During the 70's, our customer base and product scope became more diversified, adding rectifier duty transformers and reactors for adjustable frequency drive and NEMA R19 extra heavy-duty traction applications. Most major urban transit systems today employ transformers built by Virginia Transformer Corp. Later in this decade, VTC also established a predominate reputation for retrofitting the PCB market.

Beginning in the 80's, our current President took the helm at Virginia Transformer Corp. Our product range was further expanded to include Industrial and Commercial Power Transformers for distribution applications, including those with automatic load tap changing requirements, and our trademarked fully encapsulated coil UNICLAD® transformer. This decade saw the beginnings of the truly phenomenal 10% - 30% annual growth of VTC, which has been further exceeded in recent years with a continuation of product line expansion into the larger voltage class II sizes of Power Transformers.

The 90's witnessed entry into the demanding Utility market, as customers sought to find additional suppliers for their requirements of high quality and lower cost units. During this decade VTC moved to a new facility and its current corporate headquarters – a custom designed facility for modern transformer manufacturing. Virginia Transformer Corp further expanded in 1995 by adding a second custom manufacturing facility in Chihuahua, Mexico. This modern state-of-the-art operation, designed from the ground up as a transformer plant, has been ISO certified from the beginning. Visiting customers have proclaimed it to be one of the finest facilities for manufacturing transformers in North America.


P2 - Chihuahua, Mexico

During the 21st century, Virginia Transformer Corp continued to grow, acquiring the U S Transformer West facility in Pocatello, Idaho in 2003 – providing yet another step toward world-class recognition. In addition to this facility building new Medium Voltage class Power Transformers, currently up to 100 MVA top rated at 161 kV, they also provide world-class reconditioning and repair services to both Utility and Industrial clients. Virginia Transformer Corp further expanded in 2013, adding a separate metal fabrication facility in Troutville, Virginia, 11 miles from its Roanoke location. This state of the art

facility handles tank fabrication, sand blasting, and paint process for the Roanoke plant. Additionally, the facility is equipped with a welding robot that delivers leak free welds. In 2014 VTC purchased a plant in Rincon, Georgia. This facility greatly boosted production and allowed for the creation of Large Voltage class Power Transformers, currently up to 500 MVA and 525 kV with a total capacity of 24,000 MVA. These transformers have a 60-year service life. Finally, Virginia Transformer Corp opened its fifth facility in Chihuahua, Mexico in late 2022. This facility is near the original Chihuahua plant and manufactures pad-mounted transformers, integrated power modules (IPM's), and other transformers under the E2X brand for the company's end markets.

Today, VTC stands at the top as a worldwide presence in the Power Transformer industry providing individualized solutions and custom designs with Dry-type and Liquid-filled transformers from its five manufacturing facilities in North America. All major components, core and coil assemblies, tanks, etc. are produced on-site with complete testing capabilities up to 950BIL for the complete range of Power Transformers – 300KVA to 300MVA, 230kV class for Utility, Industrial, Commercial, and Export markets. You won't find a more capable, full service company than Virginia Transformer Corp to meet your needs.

As we look forward to the next century, our focus on high quality, affordable, and best delivery of Power Transformers to meet the ever growing demand of our expanding client base drives and challenges Virginia Transformer Corp daily to provide the highest level of customer service and satisfaction. Although we, like everyone else, occasionally may have an issue with a transformer, VTC's commitment to respond rapidly and take responsibility will remain at the forefront of our obligations to clients.

220 Glade View Dr. Roanoke, VA 24012 USA Phone: 540.345.9892 Fax: 540.342.7694 http://www.vatransformer.com

SMITHERS
QUALITY ASSESSMENTS

CERTIFICATE OF APPROVAL

This is to Certify that the Quality Management System of:

Virginia Transformer Corporation
220 Glade View Drive
Roanoke, VA 24012

(Page 1 of 2; see Appendix)

has been assessed and approved by Smithers Quality Assessments, Inc., to the following quality management system standards and requirements:

ISO 9001:2015 with Design

The Quality Management System is Applicable to:

Design, Manufacture and Commercialization of Transformers and Associated Equipment and Services for Electrical Power Systems.

Approval Certificate Number: 21.204.1

Original Approval: July 25, 2021

Current Certificate: July 25, 2021

Certificate Expires: July 24, 2024

The use of the accreditation mark indicates accreditation in respect of those activities covered by the above certificate number

on behalf of SQA - J. Michael Hochschwender, CEO

The approval is subject to the company maintaining its system to the required standards which will be monitored by Smithers Quality Assessments, Inc., 121 S. Main St., Akron, Ohio 44308, USA

ANAB
ACCREDITED
MANAGEMENT SYSTEMS
CERTIFICATION BODY

APPENDIX A
TO THE CERTIFICATE
OF REGISTRATION NO.: 21.204.1

SMITHERS QUALITY ASSESSMENTS, INC.

Site:

Virginia Transformer Corporation
220 Glade View Drive
Roanoke, VA 24012
Scope of activities: Design, Manufacture and Commercialization of Transformers and Associated Equipment and Services for Electrical Power Systems.

The above site is certified by Smithers Quality Assessments, Inc. with regard to ISO 9001:2015 with Design. The following locations are included utilizing a Multi-site (with no Sampling) approach.

Location(s):

Virginia Transformer-Troutville
100 Smorgon Way
Troutville, VA 24175
Scope of activities: Manufacture and Commercialization of Transformers and Associated Equipment and Services for Electrical Power Systems. Includes Tank Fabrication.

Caravels, LLC dba Georgia Transformer Corp.
2769 Highway 21 South
Rincon, GA 31326
Scope of activities: Manufacture and Commercialization of Transformers and Associated Equipment and Services for Electrical Power Systems.

VTC West S.A. de C.V.
Ave. Homero #3307
Complejo Industrial Chihuahua
Chihuahua, Chihuahua 31136 Mexico
Scope of activities: Manufacture and Commercialization of Transformers and Associated Equipment.

VTCU Corp (a subsidiary of Virginia Transformer Corp.)
3770 Pole Line Road # 37
Pocatello, ID 83201
Scope of activities: Manufacture, Sale Service and Repair of Transformers.

Applicable Standard: ISO 9001:2015 with Design

This appendix applies only to those sites listed above. As other sites are assessed and approved, or as sites already approved are removed from active services, this appendix will be amended to show the current status.
Sites not listed on this appendix shall not be viewed as approved.

ANAB ACCREDITED
MANAGEMENT SYSTEMS CERTIFICATION BODY

THIS CERTIFIES THAT

Virginia Transformer Corp

dba VA Transformer

NMSDC
National Minority Supplier
Development Council

* Nationally certified by the: **CAROLINAS-VIRGINIA MINORITY SUPPLIER DEVELOPMENT COUNCIL**

*NAICS Code(s): 335311

* Description of their product/services as defined by the North American Industry Classification System (NAICS)

10/17/2022		CA01797
Issued Date		**Certificate Number**
10/31/2023	**Ying McGuire** **NMSDC CEO and President**	
Expiration Date		**Dominique Milton, President & CEO**

By using your password (NMSDC issued only), authorized users may log into NMSDC Central to view the entire profile: http://nmsdc.org

Certify, Develop, Connect, Advocate.

* MBEs certified by an Affiliate of the National Minority Supplier Development Council, Inc.®

SUPPLIER CLEARINGHOUSE

CERTIFICATE OF ELIGIBILITY

CERTIFICATION EXPIRATION DATE: **October 31, 2023**

The Supplier Clearinghouse for the Utility Supplier Diversity Program of the California Public Utilities Commission hereby certifies that it has audited and verified the eligibility of:

Virginia Transformer Corporation

Minority Business Enterprise (MBE)

pursuant to Commission General Order 156, and the terms and conditions stipulated in the Verification Application Package. This Certificate shall be valid only with the Clearinghouse seal affixed hereto.

Eligibility must be maintained at all times, and renewed within 30 days of any changes in ownership or control. Failure to comply may result in a denial of eligibility. The Clearinghouse may reconsider certification if it is determined that such status was obtained by false, misleading or incorrect information. Decertification may occur if any verification criterion under which eligibility was awarded later becomes invalid due to Commission ruling. The Clearinghouse may request additional information or conduct on- site visits during the term of verification to verify eligibility.

This certification is valid only for the period that the above firm remains eligible as determined by the Clearinghouse. Utility companies may direct inquiries concerning this Certificate to the Clearinghouse at (800) 359-7998.

VON: 14020124

DETERMINATION DATE: October 20, 2022