

City of Tacoma, WA

# Tacoma Power / Transmission and Distribution REQUEST FOR PROPOSALS 15kV Vault and Network Style Transformers SPECIFICATION NO. PT22-0026F

100





#### City of Tacoma Tacoma Power / Transmission and Distribution

#### **REQUEST FOR PROPOSALS PT22-0026F 15kV Vault and Network Style Transformers**

#### Submittal Deadline: 11:00 a.m., Pacific Time, Tuesday, April 5, 2022

Submittals must be received by the City's Procurement and Payables Division prior to 11:00 a.m. Pacific Time. For electronic submittals, the City of Tacoma will designate the time of receipt recorded by our email, <u>bids@cityoftacoma.org</u>, as the official time of receipt. This clock will be used as the official time of receipt of all parts of electronic bid submittals.

**Submittal Delivery:** Sealed submittals will be received as follows:

# By Email:

bids@cityoftacoma.org Maximum file size: 35 MB. Multiple emails may be sent for each submittal.

**Bid Opening:** Held virtually each Tuesday at 11AM. Attend <u>via this link</u> or call 1 (253) 215 8782. Submittals in response to a RFP will be recorded as received. As soon as possible, after 1:00 PM, on the day of submittal deadline, preliminary results will be posted to <u>www.TacomaPurchasing.org.</u>

**Solicitation Documents:** An electronic copy of the complete solicitation documents may be viewed and obtained by accessing the City of Tacoma Purchasing website at <u>www.TacomaPurchasing.org</u>.

- <u>Register for the Bid Holders List</u> to receive notices of addenda, questions and answers and related updates.
- Click here to see a list of vendors registered for this solicitation.

**Pre-Proposal Meeting:** A pre-proposal meeting will not be held.

Project Scope: Supply of 15kV vault and network style transformers on an as-needed basis.

Estimate: \$3,950,000 (initial three-year term)

**Paid Sick Leave:** The City of Tacoma requires all employers to provide paid sick leave as set forth in Title 18 of the Tacoma Municipal Code. For more information, visit <u>our Minimum Employment Standards Paid Sick Leave webpage</u>.

**Americans with Disabilities Act (ADA Information:** The City of Tacoma, in accordance with Section 504 of the Rehabilitation Act (Section 504) and the Americans with Disabilities Act (ADA), commits to nondiscrimination on the basis of disability, in all of its programs and activities. Specification materials can be made available in an alternate format by emailing Gail Himes at <u>ghimes@cityoftacoma.org</u>, or by calling her collect at 253-591-5785.

#### Title VI Information:

"The City of Tacoma" in accordance with provisions of Title VI of the Civil Rights Act of 1964, (78 Stat. 252, 42 U.S.C. sections 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, national origin in consideration of award.

**Additional Information:** Requests for information regarding the specifications may be obtained by contacting Tisha Rico, Senior Buyer by email to trico@cityoftacoma.org

**Protest Policy:** City of Tacoma <u>protest policy</u>, located at <u>www.tacomapurchasing.org</u>, specifies procedures for protests submitted prior to and after submittal deadline.



Meeting sites are accessible to persons with disabilities. Reasonable accommodations for persons with disabilities can be arranged with 48 hours advance notice by calling 253-502-8468.



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# SUBMITTAL CHECKLIST

This checklist identifies items to be included with your submittal. Any submittal received without these required items may be deemed non-responsive and may not be considered for award. <u>*Please do not include the entire specification document with your submittal.*</u>

Submittals must be received by the City of Tacoma Purchasing Division by the date and time specified in the Request for Proposals page at the front of this Specification or subsequent addenda.

The fo	bllowing items, in this order, make up your submittal package:						
1	<b>One electronic copy</b> of your complete submittal package in PDF format.						
2	Signature Page with <u>signature</u> , including acknowledgement of any addenda. This form is intended to serve as the first page of your submittal after the Title Page. Do not alter it in any way or add it to letterhead paper or present cover letters or blank pages ahead of it.						
3	Proposal Sheets						
4	Supplemental Information - Section 1.09 >   Product Data Sheets and Drawings >   Manufacturer's Quality Assurance Policy >   DOE Compliance Certification >   Bolting Provisions >   Painting System >   PCB Content >						



# **SUBMITTAL INSTRUCTIONS**

# PRE-SUBMITTAL QUESTIONS

- A. Questions and requests for clarification of these Specifications may be submitted in writing by 3:00 p.m., Pacific Time, March 24, 2022, via email addressed to the Purchasing contact below. Questions received after this date and time may not be answered.
  - 1. Please indicate the specification number and title in the email subject line.
  - 2. Present your questions in MS Word format or directly in the body of the email message. If applicable, cross reference the specific section of the RFB.
  - 3. Questions will not be accepted by telephone or fax.
  - 4. Questions marked confidential will not be answered.
  - 5. Individual answers will not be provided directly to Respondents.
  - 6. The City reserves the discretion to group similar questions to provide a single answer or not to respond when the requested information is confidential.
  - 7. The City will not be responsible for unsuccessful submittal of questions.
- B. Written answers to all questions will be posted on the Purchasing website at <u>www.TacomaPurchasing.org</u> on or about March 29, 2022. Navigate to *Contracting Opportunities* / *Supplies*, and scroll to this RFB. A notice will not be posted with the Specification if no questions are received.
- C. The answers are not typically considered an addendum.
- D. To receive notice of the posted answers, you must register as "bid holder" for this solicitation.

Communication	Addressee
For all questions regarding Specification PT22-0026F	<b>Tisha Rico</b> Senior Buyer <u>trico@cityoftacoma.org</u> - email



# SUBSTITUTION REQUESTS

A. All If the Respondent elects to bid alternative equipment, materials, or processes where allowed, a Substitution Request Form must be submitted by email to Tisha Rico, <u>trico@cityoftacoma.org</u>, a minimum of **seven (7) business days** prior to the submittal deadline. Substitution Request Forms received after this time will not be accepted. Respondents will be notified of an approved or rejected Substitution Request Form no later than **five (5) business days** prior to the submittal deadline. See Sections 1.08.2B and 1.08.2C.

# **REVISIONS TO SPECIFICATION**

B. All revisions to this specification will be in the form of written addenda, and no oral revision should be relied upon for any purpose. In the event it becomes necessary to revise any part of this RFP, addenda will be issued to registered planholders and posted on the Purchasing website at <u>www.TacomaPurchasing.org</u>: Navigate to Current Contracting Opportunities / Supplies Solicitations, and scroll to this RFP. Failure to acknowledge addenda may result in a submittal being deemed non-responsive.

# SIGNATURE PAGE

#### CITY OF TACOMA TACOMA POWER / TRANSMISSION AND DISTRIBUTION

All submittals must be in ink or typewritten, executed by a duly authorized officer or representative of the bidding/proposing entity, and received and time stamped as directed in the **Request for Proposals page near the beginning of the specification**. If the bidder/proposer is a subsidiary or doing business on behalf of another entity, so state, and provide the firm name under which business is hereby transacted.

#### REQUEST FOR PROPOSALS SPECIFICATION NO. PT22-0026F 15kV Vault and Network Style Transformers

The undersigned bidder/proposer hereby agrees to execute the proposed contract and furnish all materials, labor, tools, equipment and all other facilities and services in accordance with these specifications.

The bidder/proposer agrees, by submitting a bid/proposal under these specifications, that in the event any litigation should arise concerning the submission of bids/proposals or the award of contract under this specification, Request for Bids, Request for Proposals or Request for Qualifications, the venue of such action or litigation shall be in the Superior Court of the State of Washington, in and for the County of Pierce.

#### Non-Collusion Declaration

The undersigned bidder/proposer hereby certifies under penalty of perjury that this bid/proposal is genuine and not a sham or collusive bid/proposal, or made in the interests or on behalf of any person or entity not herein named; and that said bidder/proposer has not directly or indirectly induced or solicited any contractor or supplier on the above work to put in a sham bid/proposal or any person or entity to refrain from submitting a bid/proposal; and that said bidder/proposer has not, in any manner, sought by collusion to secure to itself an advantage over any other contractor(s) or person(s).

Bidder/Proposer's Registered Name		Signature of Perso into Contracts for I	n Authorized Bidder/Propo	l to Enter ser	Date
Address					
		Printed Name and	Title		
City, State, Zip					
		(Area Code) Telep	hone Numbe	er / Fax Numb	er
Authorized Signatory E-Mail Address					
		State Business Lic	ense Numbe	er siness Identifier) N	lumber
E.I.No. / Federal Social Security Number Used on Quarterly Federal Tax Return, U.S. Treasury Dept. Form 941					tambol
		State Contractor's (See Ch. 18.27, R.	License Nur C.W.)	nber	
E-Mail Address for Communications					
ddendum acknowledgement #1	#2_	#3	#4	#5	

THIS PAGE MUST BE SIGNED AND RETURNED WITH SUBMITTAL.



# PROPOSAL PRICING SHEETS – LOW PROFILE VAULT STYLE ESTER OIL FILLED 12470 GRDY PRIMARY 3-PHASE

ltem	MID #	kVA	Secondary Voltage	Est. Qty 3 Years	Unit Price	Total Price FOB Destination (Quantity x Unit Price)
1	46669	500	208/120	6	\$	\$
2	46702	1000	208/120	10	\$	\$
3	46700	500	480/277	3	\$	\$
4	46703	1000	480/277	3	\$	\$
5	46704	1500	480/277	2	\$	\$
					Sub-Total	\$

ltem	kVA	Height (in.)	Width (in.)	Length (in.)	Weight Incl. Oil (Ib.)	Gallons of Oil	%Z	Represented Efficiency per DOE 10 CFR Part 431
1	500						%	%
2	1000						%	%
3	500						%	%
4	1000						%	%
5	1500						%	%



# PROPOSAL PRICING SHEETS – STANDARD VAULT STYLE ESTER OIL FILLED 12470 GRNDY PRIMARY 3-PHASE

ltem	MID #	kVA	Secondary Voltage	Est. Qty 3 Years	Unit Price	Total Price FOB Destination (Quantity x Unit Price)
6	46668	500	208/120	2	\$	\$
7	40627	1000	208/120	2	\$	\$
8	TBD	500	480/277	2	\$	\$
9	35638	1000	480/277	2	\$	\$
10	35689	1500	480/277	2		
					Sub-Total	\$

ltem	kVA	Height (in.)	Width (in.)	Length (in.)	Weight Incl. Oil (Ib.)	Gallons of Oil	%Z	Represented Efficiency per DOE 10 CFR Part 431
1	500						%	%
2	1000						%	%
3	500						%	%
4	1000						%	%
5	1500						%	%



# PROPOSAL PRICING SHEETS – NETWORK VAULT STYLE ESTER OIL FILLED 12470 GRNDY PRIMARY 3-PHASE

ltem	MID #	kVA	Secondary Voltage	Est. Qty 3 Years	Unit Price	Total Price FOB Destination (Quantity x Unit Price)
11	35771	500	216/125	4	\$	\$
12	35881	750	216/125	21	\$	\$
13	35635	1000	216/125	2	\$	\$
14	35636	750	480/277	4	\$	\$
15	35687	1000	480/277	2	\$	\$
16	TBD	1500	480/277	2	\$	\$
					Sub-Total	\$

ltem	kVA	Height (in.)	Width (in.)	Length (in.)	Weight Incl. Oil (Ib.)	Gallons of Oil	%Z	Represented Efficiency per DOE 10 CFR Part 431
1	500						%	%
2	1000						%	%
3	500						%	%
4	1000						%	%
5	1500						%	%



# PROPOSAL PRICING – TOTAL SHEET

	Mineral Oil Units							
ltem No.	Description	Delivery Time (in weeks)	Sub-Totals					
1-5	Low Profile Vault Style Transformers	Wks	\$					
6-10	Standard Vault Style Transformers	Wks	\$					
11-16	Network Vault Style Transformers	Wks	\$					
Sub-	Total for Items 1-16		\$					
Sales T (Note P	ax @ 10.3%, Location Tax Collected: Ta aragraph 1.41 of Standard Terms and Co	\$						
Total	for All Items with Tax	\$						

#### NOTES:

- 1. Quantities listed on the Proposal Pricing Sheets are an estimate only. Actual quantities will be according to purchase order on an as-needed basis.
- 2. Price adjustments will be made per section <u>1.06.4 Monthly Pricing Adjustment.</u>
- 3. All prices shall be submitted as F.O.B. Destination, freight prepaid and allowed (included in the unit price).

## VENDOR INQUIRY

- Does your firm accept payment by EFT/ACH? \_\_Y \_\_\_N (Electronic Funds Transfer (EFT) by Automated Clearing House (ACH))
- Does your firm accept payment by credit card (Visa)? \_\_\_\_Y \_\_\_N <u>NOTE</u>: The City of Tacoma will not accept price changes or pay additional fees when a credit card is used.
- 3. **Prompt Payment discount offered** \_\_\_\_%, \_\_\_\_ **days**. Only discounts offered of 20 days or more will be considered for bid evaluation purposes.



# **PROPOSAL CONDITIONS SHEET**

The City requires that Respondents determine the cost of compliance with the City's terms and conditions, and include such costs into the unit prices of the items in the Respondent's submittal. Unless a bid responds to the specification in all material respects, it is not a responsive bid. Acknowledge each question with a checkmark ☑ to indicate your response.

- 1. Does your submittal make any restrictions or take any exceptions to the conditions or provisions outlined in this Specification?
- 2. Do all items submitted per this Specification meet and/or exceed the requirements of the Technical Provisions (Section 2)?

YES	
NO	

YES	
NO	

Identify below any factors that do not meet the requirements of the Technical Provisions Section 2 of this Specification. Bids/Proposals containing any substantial deviation will receive a score of zero (0) in Adherence to Technical Provisions. If you state exception "IS NOT" taken to this Specification, but include statements or attach materials deviating from the standards established by the Specification, it is agreed that you will perform according to the highest standard indicated. Alternate offers shall be submitted as identified per section 1.08.2.



# **PROPOSAL - VENDOR QUALIFICATION**

- 1. State the number of years your firm has been manufacturing products of a similar scope to those outlined in this Specification. See Section 1.01.3 for minimum qualifications allowed.
- 2. Does your firm have a third party certified quality assurance program that conforms to ISO 9001, ISO 9002, ANSI/ASQC Q91, or ANSI/ASQC Q92?

List the standard used by your firm:

3. Can your firm provide "Manufacturer Representation" as described in section 1.01.3C of this Specification?

YES	
NO	

YES

NO

Years
-------



# **PROPOSAL - REFERENCES DATA SHEET**

(AS DESCRIBED IN SECTION 1.01.3A)

Seven (7) Utility references are the absolute minimum allowed

UTILITY NAME AND ADDRESS	YEAR PRODUCT SOLD	CONTACT NAME	TELEPHONE NUMBER

# SUB-VENDOR DATA SHEET

(AS DESCRIBED IN SECTION 1.01.4)

SUB-VENDOR NAME AND ADDRESS	CONTACT NAME	TELEPHONE NUMBER	DESCRIPTION OF WORK PROVIDED



# PROPOSAL – EQUITY IN CONTRACTING

Is your firm, or the firm you are partnering with, certified with Washington State for any of the below categories (select all that apply)? Selecting any item below will award all points for this category.

- □ Combination Business Enterprise (CBE)
- □ Disadvanteged Business Enterprise (DBE)
- □ Minority Business Enterprise (MBE)
- □ Minority/Women Business Enterprise (MWBE)
- □ Small Business Enterprise (SBE)
- □ Socially and Economically Disadvantaged Business Enterprise(SEDBE)
- □ Women Business Enterprise (WBE)



# **SECTION I – SPECIAL PROVISIONS**

# 1.01 - SCOPE OF BID

## 1.01.1 - PURPOSE

The purpose of these Specifications is to define the scope of supply for 15kV Vault and Network Style Transformers that meet the minimum requirements as to quality, function, and capacity as outlined in the Special and Technical Provisions that follow.

## 1.01.1A - AWARD OF CONTRACT

With this solicitation, the City intends to award a single contract and does not anticipate award to multiple Suppliers. Regardless, the City reserves the right to award to one or more Suppliers, or make no award, in the best interest of the City.

## 1.01.2 - DEFINITIONS

For the purposes of this Specification, the following definitions shall apply:

Term	Definition
RESPONDENT	A potential Supplier offering a submittal to supply equipment in accordance with these Specifications.
SPECIFICATION	This document, detailing the scope of supply.
SUPPLIER/CONTRACTOR	The Respondent(s) awarded a contract pursuant to these Specifications.
SUB-VENDOR	Any Supplier providing parts, materials, and/or services to the Supplier under these Specifications.
EQUIPMENT/ MATERIAL	A fully functional piece of equipment/material supplied and tested in accordance with these Specifications.
MANUFACTURER	The original manufacturer of the equipment/material.
ENGINEER	The project engineer and/or contract administrator.
СІТҮ	The City of Tacoma, Tacoma Power.
DELIVERY TIME	The length of time starting at the date of Supplier receipt of a purchase order or notice to proceed and ending at the time that the item(s) are received at Tacoma Power.



# 1.01.3 - EXPERIENCE AND QUALIFICATIONS

To further detail the requirements of Section 1.18.A.6 of the City Standard Terms and Conditions, only submittals which offer products from manufacturers experienced in the supply of materials as detailed within this Specification over a period of <u>ten (10) years</u> or more will be considered responsive. A responsive submittal will demonstrate a record of successful completion of contracts similar in scope and size to that outlined in this Specification.

## 1.01.3A - REFERENCES

Each Respondent shall complete the "References Data Sheet" as required in the proposal section. A minimum of seven (7) references over the past five (5) years is required.

#### 1.01.3A.1 - CHANGE OF OWNERSHIP

References are intended to be for material/equipment currently supplied under the proposed manufacturer's name. References for material/equipment that has been previously supplied under a different Company's name shall be clearly noted on the reference list.

#### 1.01.3A.2 - DEFINITION OF REFERENCED UTILITIES

The Respondent shall list as references, only those utilities that have purchased material/equipment as the Respondent proposes to offer to the City, from these Specifications.

#### <u>1.01.3B - RESPONDENTS ORIGINATING FROM OUTSIDE THE UNITED</u> <u>STATES</u>

Respondents that originate bids from outside the legal jurisdiction of the United States of America will be subject to the City of Tacoma's Legal Department opinion as to the viability of possible litigation pursuant to a supply contract resulting from this Specification. If it is the opinion of the City of Tacoma's Legal Department that any possible litigation would be beyond reasonable cost and/or enforcement the bid may be excluded from evaluation.

## **1.01.3C - MANUFACTURER REPRESENTATION**

The Supplier shall have available to Tacoma Power a representative or agent who will provide field and technical support. The agent shall be authorized to coordinate returns and repairs as well as provide support for any matter pertaining to non-compliance with the terms of the Specification.

#### 1.01.4 - SUB-VENDORS

The Respondent shall list, on the form provided, all sub-vendors it intends to use to fulfill requirements in any part of this Specification. Included in the listing shall be the sub-vendor's name, address, and telephone number; contact name; and description of work they will perform. It shall be the responsibility of the awarded Supplier to police, enforce, and ensure that all work performed by any sub-vendor shall be in accordance with this Specification.

## 1.02 - CONTACT PERSON

## 1.02.1 - BID INQUIRIES

Respondent inquiries pertaining to this Specification shall be submitted as directed on the Submittal Instructions Page.



# **1.03 - PREBID CONFERENCE**

A pre-bid conference shall not be required for the acquisition of the material contained in this Specification.

## **1.04 - POST-AWARD MEETING**

A post-award meeting is not scheduled for this bid.

## 1.05 - CONTRACT

## 1.05.1 - CONTRACT PERIOD

The contract is intended for a minimum of *three (3) years* from the award date of the contract.

#### **1.05.2 - CONTRACT EXTENSIONS**

Two contract extensions of up to one year per occurrence may be considered upon mutual agreement of both parties to extend the contract under the same terms and conditions of the original contract.

## 1.05.3 - AWARD DATE OF CONTRACT

The <u>Award Date of Contract</u> is the date that the contract is fully executed between the City and the Contractor.

#### **1.05.4 - TERMINATION OF CONTRACT**

The City reserves the right to cancel the Contract at any time upon prior notice to the Supplier (refer to Section 1.27 of the Standard Terms and Conditions).

#### **1.06 - PRICING AND PURCHASE ORDERS**

## 1.06.1 - PRICES QUOTED

Per City of Tacoma Standard Terms and Conditions Section 1.16, the prices quoted on the Proposal Pricing Sheets shall remain open for acceptance by the City for a minimum of 60 days from the submittal deadline. The prices quoted on the proposal sheets shall be firm for the first month of the contract.

#### 1.06.2 - FREIGHT ALLOWANCES

The Respondent shall provide prices including delivery F.O.B. Destination, Pre-Paid and Allowed (included in unit price), as noted on the Proposal Pricing Sheets.

#### **1.06.3 - QUANTITIES AND PURCHASE ORDERS**

The quantities listed on the Proposal Pricing Sheets are an estimate only using historical data gathered from the previous eight (8) years. Delivery will be according to purchase order issued on an as-needed basis throughout the contract. The City reserves the right to increase or decrease quantities under this contract (refer to Section 1.35 of the Standard Terms and Conditions). The purchase order will be delivered to the Supplier by email.

## 1.06.3A - WORKING DAYS

Working days are weekly Monday through Friday. City observed holidays as listed in City Standard Terms and Conditions Section 1.24 would not be included.

#### 1.06.4 - MONTHLY PRICING ADJUSTMENT

On a monthly basis, the Supplier may submit unit price adjustment requests, by email to the Engineer, no later than seven (7) days prior to the following month after contract award. Any proposed increase/decrease in price to contract items must be beyond control of the Supplier and supported by written documentation from the manufacturer and/or wholesale distributor



indicating new higher/lower price in effect and/or for raw materials used in the manufacturing of the equipment/material. The City reserves the right to accept or reject all such increases/decreases.

#### 1.06.5 - PROMOTIONAL PRICING

City is entitled to any promotional pricing during contract period that is lower than the Supplier's pricing as provided in bid. This promotional pricing shall include, but not be limited to: sale prices, price lowering, and/or lump-sum rebates.

#### 1.07 - PERFORMANCE BOND/BID BOND

The Performance and Bid Bonds have been waived for this contract.

#### 1.08 - RESPONDENT'S PROPOSAL

#### **1.08.1 - RESPONDENT REQUIREMENTS**

Submittals must be emailed with the Specification number, Specification title, and Respondent name in the subject line, and received by the City of Tacoma Purchasing Division by the date and time specified in the Request for Bids page or subsequent addenda.

The proposal package submitted must be returned with the Respondent's proposal filled in as directed, including all data requested by the Provisions of these Specifications. All blank spaces on the Proposal forms will be properly filled in, printed in ink or typewritten.

## 1.08.1A - SIGNATURE PAGE

The "Signature Page" included with the original submittal shall be **signed** by the responsible company official and include printed or typewritten designation of the office they hold in the company.

## **1.08.1B - PROPOSAL SHEET DATA REQUIREMENTS**

The Proposal Pricing Sheets request the following information to be included with the Respondent's submittal. Submittals that do not include the requested information may be considered non-responsive.

<b>Required Values</b>	Specific Requirement
Height (in.)	The height of a typical unit in inches
Width (in.)	The width of a typical unit in inches
Lenth (in.)	The length of a typical unit in inches
Weight Including Oil (lbs)	The weight of a typical unit in pounds.
Oil Capacity (gal.)	The quantity of oil in a typical unit in gallons.
Impedance	Measured at 85°C per IEEE C57.12.00.
Represented Efficiency	The represented transformer efficiency certified by the manufacturer per DOE 10 CFR Part 431

<sup>[1]</sup> Each individual unit shipped to the City shall be less than or equal to these quoted maximum guaranteed losses or may be returned to the factory for replacement at the manufacturer's expense.



## 1.08.2 - ALTERNATE BIDS

All bids including alternates shall include an original Signature Page. Each bid package submitted must be returned with the Respondent's proposal completed as directed, including all data requested.

# 1.08.2A - ALTERNATE BID PROPOSALS

Alternate bid proposals must be submitted as a separate bid package and identified as "ALTERNATE".

## **1.08.2B - ALTERNATE MATERIALS**

If the Respondent elects to bid alternative equipment a Substitution Request Form must be submitted by email to Tisha Rico, <u>trico@cityoftacoma.org</u>, a minimum of **seven (7) business days** prior to the submittal deadline. Respondents will be notified of an approved or rejected Substitution Request Form no later than **five (5) business days prior to the submittal deadline.** 

An approved Substitution Request Form shall not indicate acceptance of the alternate by the City. Complete data must be submitted with the bid, including the information as requested in Section 1.13.1A "Required Materials". The data shall demonstrate that the alternative item is of a quality equal to or better than that specified and has the required characteristics for the intended use. Failure to submit such data will render the bid **non-responsive**.

## 1.08.2C - ALTERNATE EVALUATION

Upon request, the Respondent shall furnish to the City, within five (5) working days, additional information relating to such alternative items as the City may require. In the event that the equivalency is not readily ascertained from the information supplied by the Respondent, the City may test the material/equipment or have it tested. The Respondent shall bear all expenses of the City's determination of whether or not alternative equipment, materials, or processes are equal to those designated.

## **1.08.3 - ENGLISH LANGUAGE REQUIREMENTS**

All drawings, correspondence, catalogs, submittals, nameplates, etc., shall be in the English language as used in the U.S. Dimensions and tolerances shall conform to ANSI Y14.5M and shall be in the U.S. customary units. If units are fabricated utilizing SI units (metric system), both units shall be shown on the drawings, nameplate, etc. U.S. units shall be shown above the SI units. Conversion tolerances shall have a maximum tolerance of 1/32-inch (2.70 mm) and/or one ounce (28.4 grams).

## 1.08.4 - COSTS TO PREPARE SUBMITTAL

The City is not liable for any costs incurred by the Respondent for the preparation of materials or a proposal submitted in response to this RFB, conducting presentations to the City, or any other activities related to responding to this RFB.

## 1.08.5 - EXPANSION CLAUSE

Any resultant contract from this RFB may be further expanded in writing to include other related services or products normally offered by the Contractor, as long as the price of such additional services or products have a profit margin equal to or less than that in place at the time of original submittal. Such additions and prices will be established in writing. New items not meeting these criteria will not be added to the contract. Contractor profit margins are not



to increase as a result of contract additions.

Any new products or services accepted by the City may be added to this contract and/or substituted for discontinued products or services. New products and services shall meet or exceed all Specifications of original award.

# 1.09 - ITEMS TO BE INCLUDED WITH BID

# 1.09.1 - PRODUCT DATA SHEET AND DRAWINGS

The Respondent shall include <u>with</u> their submittal manufacturer product data sheets (cut sheets) and drawings of the transformers to be supplied. Drawings shall include overall dimensions, bushings and ground connections, top view, profile view of each end, profile view of each side, and low voltage throat on network transformers (front and side profiles). Drawings will be accepted for bid evaluation purposes that do not contain extensive details of construction.

# 1.09.1A - CERTIFIED DRAWINGS

Following evaluation of the bid submittals and prior to final approval of a contract, the firm(s) identified for award will be required to provide certified manufacturer drawings consistent with the Technical Provisions of this Specification. A detailed one-page drawing of each unit (MID #) shall be submitted. The drawings shall include the following;

- Tacoma Power MID # (N/A for TBD items)
- Primary and Secondary Voltages
- kVA
- Taps and % per Tap
- Dimensions
- Weights
- Insulating Fluid
- Standard features (especially Tacoma Power requirements not included in the IEEE Standards, etc.)

Information furnished **shall be sufficient in detail and clarity** to enable making a complete and positive check with the requirements listed in this Specification. Approval of a certified drawing by Tacoma Power does not relieve the manufacturer of any requirements of this Specification, unless previously documented by written agreement. Regardless of the content of the drawings the manufacturer is required to supply transformers to Tacoma Power meeting the Technical Provisions of this Specification or be subject to rejection per Section 1.19.1.

# 1.09.1B - NAMEPLATE DRAWING

A legible copy of the proposed nameplate drawing shall be submitted for each item.

# 1.09.2 - MANUFACTURER'S QUALITY ASSURANCE POLICY

One (1) copy of the manufacturer's internal "Quality Assurance" policy for the equipment to be supplied shall be included with the submittal. The documentation shall include third party certification of ISO or ANSI/ASQC series qualifications. The policy documents shall include examples of inspection processes and quality control measures utilized to insure supply of a reliable product. Submitted information will be referenced during the bid evaluation.



# **1.09.3 - DOE COMPLIANCE CERTIFICATION**

Respondents shall provide a copy of their latest on-line compliance certification done through the U.S. Department of Energy's on-line Compliance Certification Management System (CCMS).

## **1.09.4 - BOLTING PROVISIONS**

A legible copy of a drawing showing the proposed bolting provisions as required in Section 2.02.5D of this document.

# 1.09.5 - PAINTING SYSTEM

#### 1.09.5A - DESCRIPTION

Each bidder shall supply a complete description of the proposed painting system as described in Section 2.02.12 of this document.

#### 1.09.5B - CERTIFIEFD TEST REPORTS

Each bidder shall submit certified test reports demonstrating compliance with IEEE C57.12.32-2019.

#### **1.09.6 - PCB CONTENT**

Submittals will be evaluated on the following criteria:

Ethe manufacturer shall provide a certified laboratory test report indicating the dielectric fluid, as supplied, contains no detectable PCB.

#### **1.10 - EVALUATION CRITERIA**

A Selection Advisory Committee (SAC) will review and evaluate submittals. After evaluation, the SAC may conduct interviews of the most qualified Repondents before final selection.

Criteria	Maximum Points
Experience and Qualifications (Section 1.01.3)	10
Pricing (Proposal Pricing Sheets)	60
Adherence to Technical Provisions (Section 2)	20
Delivery Time (Section 1.14)	5
Equity In Contracting (Proposal – Equity In Contracting)	5
Total	100

The SAC may use references to clarify information in the submittals and interviews, if conducted, which may affect the rating. The City reserves the right to contact references other than those included in the submittal.

## 1.10.1 - INTERVIEWS / ORAL PRESENTATIONS

An invitation to interview may be extended to Respondents based on the Selection Advisory



Committee's (SAC) review of the written submittals. The SAC reserves the right to adjust scoring based on additional information and/or clarifications provided during the interviews. Furthermore, it may determine scoring criteria for the interviews following evaluation of written submittals.

Respondents must be available to interview within five (5) business days notice, which are anticipated to be conducted virtually.

The City reserves all rights to begin contract negotiations without conducting interviews.

If interviews are conducted, the SAC will schedule the interviews with the contact person provided in the SOQs. Additional interview information will be provided at the time of invitation. At this time, it is anticipated that the main objective of the interview will be for the SAC to meet the project manager and key personnel that will have direct involvement with the project and hear about their relevant experience and expertise. The City does not intend to meet with firm officials unless they are to be directly involved with the project.

Following interviews, submittals may be rescored using the same criteria as in Section 1.10 above.

## **1.11 - SAFETY AND STANDARDS**

The Items supplied shall meet appropriate ANSI, OSHA, WISHA, and all federal, state, and local standards for its intended use. Refer to Section 2.00.1 for specific industry standards that apply to the Specifications of this bid.

#### 1.12 - MATERIALS, DESIGN, WORKMANSHIP, AND TRADE NAMES

Unless otherwise noted in this Specification, all materials and equipment incorporated into any item covered by the Specifications shall be new and of the most suited of their respective kinds for their intended use. All workmanship shall be in accordance with accepted industry practices.

#### 1.12.1 - MANUFACTURING REQUIREMENTS

All major components of the material/equipment must be manufactured or distributed by the original equipment manufacturer and advertised on a factory brochure as a standard or optional component.

#### 1.13 - APPROVED EQUAL

The term "approved equal" shall mean that the quality and characteristics of equipment or materials intended for use must be equal to the listed items.

## 1.13.1 - DETERMINATION OF EQUALITY

The City or its designee will determine the suitability, reliability, and serviceability of a proposed substitute. Refer to Section 1.36 of the City Terms and Conditions.

#### 1.13.1A - REQUIRED MATERIALS

To be considered by the City, the request for substitution shall be accompanied with the complete physical data, technical data, certified test results, manufacturer's catalog data, photographs, user's lists, failure data, samples, and the address of the nearest authorized service representative. Any other information, as required by the Engineer, shall be promptly provided upon request. The City shall be the sole arbiter in the determination of equality.



## 1.14 - DELIVERY DATE

Respondents must guarantee delivery times as stated on their Proposal Pricing Summary Sheet. The delivery time will be enforced for all releases of this contract and any contract renewals.

# 1.14.1 - NOTIFICATION

Notification to deliver product will be by the issuance of a City of Tacoma purchase order (per Section 1.06.3) for the materials described in this Specification. Should delivery not be completed within the time specified in the Respondent's submittal, the Supplier may be subject to liquidated damages (Section 1.15).

# 1.14.1A - DELAYS BEYOND THE CONTROL OF THE SUPPLIER

Delays caused by problems beyond the control of the Supplier, if fully documented and submitted to the city, may be excused. This allowance shall in no way be construed to apply to or excuse delays caused by negligence on the part of the Supplier. (For additional information, refer to the Force Majeure section below).

## 1.15 – FORCE MAJEURE

Unavoidable delays in the prosecution of the work shall include only delays from causes beyond the control of the Supplier and which he/she could not have avoided by the exercise of due care, prudence, foresight and diligence.

The Supplier shall not, be responsible for delays in delivery due to acts beyond his/her or manufacturer's reasonable control, or due to act of god, fire, strikes, epidemics, war, riot, unavoidable delay in transportation or rail car/transport shortages, or documented unavoidable material shortages, provided the City is notified in writing by the Supplier of such pending or actual delay and the reasons therefore. If deemed excusable, the City shall authorize an extension of time. In the event of such an excusable delay, the date of delivery shall be extended for a period equal to the time lost due to the reason for delay. Any damage assessment or extensions of time are to be authorized by written purchase order changes issued by the City of Tacoma.

# 1.15.1 - TERMINATION OF PURCHASE ORDER RELEASE(S)

If the delay will extend beyond 10 working days, the City may exercise the right to terminate any and all purchase order releases that are affected by the delay and obtain the items required materials from other sources.

## **1.15.2 - TERMINATION OF CONTRACT**

If the delay will extend beyond 60 working days the City may exercise the right to terminate the contract and obtain the items required from other sources.

## 1.15.3 - CONTRACT EXTENSION

Any contract extension shall be limited to a period of time equal in length to the period of such prevention and/or delay.

## 1.15.4 - DUE DILIGENCE

It shall be the responsibility of the Supplier to supply the City with adequate documentation to demonstrate that the Supplier exercised due diligence in endeavoring to avoid the delay.

## **1.16 - PACKING AND SHIPPING**

The Supplier shall be responsible for industry standard packing that conforms to the requirements of the carrier's tariffs and the ICC regulations.



# **1.16.1 - PACKING REQUIREMENTS**

The material/equipment must be clearly marked as to lot number, destination, address, and purchase order number.

# 1.16.1A - PALLETS

All transformers will be delivered using one (1) pallet per transformer. **DO NOT STACK or Ship on Racks.** 

Pallets shall be designed for movement by pallet jack or forklift with a minimum of 3 rails @  $3 \frac{1}{2}$ " inches of vertical clearance for forks.

## 1.16.1A.1 - ATTACHMENT TO PALLETS AND TRAILER FRAME

Each transformer shall be bolted to the pallet and strapped down to the trailer bed. Nonmetallic banding material shall be used to protect the painted surfaces of the transformer.

## 1.16.1B - BAR CODING

A bar code label shall be provided with each transformer that meets the requirements of IEEE Standard C57.12.35.

## **1.16.1C - TRANSFORMER TRANSPORT & CONDITION**

Transformers shall be shipped year round within enclosed Calistoga style trailers in a condition that will guard against paint damage and prevent the necessity for makeready work or cleaning prior to testing and acceptance. Transformers shipped on flatbed trucks, even if tarped or otherwise protected may be refused and returned to Supplier.

## 1.17 - DELIVERY

Notice of Shipment is required and shall be received by the City at least 10 working days prior to delivery.

# 1.17.1 - TRANSFORMER DELIVERY LOCATION

The shipper shall notify the Tacoma Power Transformer Shop Supervisor, to obtain final delivery information, a maximum of 72 hours and a minimum of 12 hours, prior to delivery.

The completed transformers shall be delivered F.O.B. between 9:00 a.m. and 3:00 p.m., Monday through Friday excluding City observed holidays (refer to section 1.24 of the Standard Terms and Conditions)	Tacoma Power T&D Transformer Shop 3628 South 35th Street (rear) Tacoma, Washington 98409 Attention: Transformer Shop
Phone Number	253-502-8671

# **1.17.2 - ALTERNATE DELIVERY LOCATIONS**

The City retains the option to have the merchandise delivered to an alternate facility or onsite within a 35-mile radius of the Tacoma Power Warehouse. Notification of any change will be on the purchase order release.



# 1.17.3 - SHIPPING NOTICES

Shipping notices shall be emailed to:

Shipping Notices shall include City of Tacoma Purchase Order Number.

TransformerDesk@cityoftacoma.org

# 1.17.4 - SUBCONTRATOR (SHIPPING COMPANY)

Tacoma Power reserves the right to request and require a change in shipping company utilized by the Supplier based upon history of damaged goods delivered to Tacoma Power and/or evidence of unsafe work practices by the shipping company.

## **1.18 - DOCUMENTATION REQUIRED FOR DELIVERY OF EQUIPMENT**

The successful Respondent will furnish a data report for each Tacoma Power transformer. The data shall be submitted to the Tacoma Power contract manager prior to or at the time of shipment from the factory.

## 1.18.1 - TEST PROCEDURES

All units supplied shall be tested at the manufacturer's factory per the routine production tests for vault and network style transformers as defined in IEEE C57.12.00 and IEEE C57.12.90, latest revisions. Production test results are required for the data report.

## 1.18.2 - DATA REPORT CONTENT

The following information is required to be included with the report:

- Serial Number
- Year of Manufacture
- Month of Manufacture
- Weight Including Oil (lbs)
- Oil Capacity (gal)
- Oil Type
- PCB Content
- % Z at 85°C
- Maximum L.V. Short Circuit Current (kA)
- Maximum L.V. Short Circuit Current is at: (Specify L-L or L-N)
- % Efficiency (per DOE 10 CFR Part 431, the represented efficiency determined by testing or AEDM)

# 1.18.3 - DELIVERY OF DATA REPORT

The steps identified in the table below will be followed concerning the delivery of the data report.

Step	Action
1	Upon issuance of a purchase order the Tacoma Power contract manager will email the appropriate representative of the Supplier and/or manufacturer a Microsoft Excel spreadsheet that includes the number of transformers and their pre-assigned Tacoma SAP Equipment numbers.
2	The manufacturer ties individual serial numbers with SAP Equipment numbers.



3	The manufacturer tests assembled units and paints the SAP Equipment numbers onto the units as required by Section 2.07.2 of the Technical Provisions.
4	The manufacturer will populate the spreadsheet with the data content per Section 1.18.2 and email to the contract manager prior to delivery of the units.

# **1.18.3A - DISTRIBUTION OF DATA REPORT**

Data reports shall be submitted via email to:	Rich Barrutia rbarruti@cityoftacoma.org
	······································

# 1.18.4 - MATERIAL SAFETY DATA SHEETS (MSDS)

The successful Respondent must submit a manufacturer's Material Safety Data Sheet (MSDS) that complies with OSHA and WISHA guidelines for Hazard Communications Standard WAC 296-62-054 requirement for items identified as hazardous materials or items in whose normal use produces a hazardous material.

#### **1.19 - INSPECTION & WARRANTY**

All goods are subject to final inspection and acceptance by the Tacoma Power engineer and the appropriate shop foreman.

## 1.19.1 - FAILURE OF INSPECTION

Upon delivery, transformers will be inspected for defects and conformance to this Specification. The Supplier will be notified of all compliance issues and mutual arrangements shall be made for correcting the defects at no expense to the City. The City reserves the right to reject and return transformers failing to pass inspection. If so returned, the cost of transportation, unpacking, inspection, repacking, reshipping, or other like expenses are the responsibility of the Supplier.

Charges for dismantling and reinstallation of materials furnished pursuant to this Contract will be the responsibility of the Supplier only when a change out or replacement is required because of a suspected or known design defect or large scale failure of manufacturer's quality control system.

## 1.19.2 - WARRANTY

Unless a longer period is specified, the Supplier and/or manufacturer of the supplies, materials and/or equipment furnished pursuant to this Contract agrees to correct any defect or failure of the supplies, materials and/or equipment which occurs within **one year** from the date of commencement of use, however, said warranty period shall not extend beyond **eighteen months** after date of receipt by the City.

When the Supplier is not the manufacturer of the item of equipment, Supplier agrees to be responsible for this warranty and Supplier is not relieved by a manufacturer's warranty.



## **1.19.2A - WARRANTY PERIOD EXTENSION**

The Contract warranty period shall be suspended from the time a significant defect is first documented by the City until the work or equipment is repaired or replaced by Supplier and accepted by the City. In addition, in the event less than ninety (90) days remain on the warranty period (after recalculating), the warranty period shall be extended to allow for at least ninety (90) days from the date the work or equipment is repaired or replaced and accepted by the City.

## 1.19.2B - WARRANTY WORK

The City has determined that the repair of material/equipment, under warranty, can best be done at the manufacturer's facility that makes this style or similar material/equipment, or at a mutually agreeable local repair facility. All material/equipment requiring warranty work will be returned to the Supplier at the Supplier's expense, or the manufacturer may replace the defective material/equipment(s) with new units.

#### 1.19.2B.1 - MINOR WARRANTY WORK

Minor warranty work may be done on Tacoma Power's property if, in the opinion of Tacoma Power and in agreement with the Supplier, the useful life of the transformer is not affected by doing this work on site.

#### 1.19.2B.2 - RETURN TIME FRAME

All warranty repair work on returned material/equipment shall be accomplished within the specified lead-time for delivery listed in the Supplier's bid submittal. Warranty repair time will be calculated from the time the material/equipment defect or failure is reported to the Supplier.

Should delivery not be completed on or before the date stipulated, the Supplier shall be subject to liquidated damages. Liquidated damages will be assessed per transformer for units not returned within the repair time per Section 1.15.1 "Liquidated Damages".

#### **1.20 - INVOICES & PAYMENT**

All items called for in these Specifications, including, but not limited to, the necessary drawings and test results, must be supplied to the City before the final invoice can be processed.

## 1.20.1 - INVOICES

Invoices shall be emailed, per Section 1.39 of the Standard Terms and Conditions, to

AccountsPayable@cityoftacoma.org

#### 1.20.2 - PAYMENT

Upon certification by the Engineer and/or appropriate warehouse personnel that the items have been received in accordance with the Specifications and are in satisfactory condition, a 100 percent payment will be made. Payment methods include:

- A. Credit card. Tacoma's VISA procurement card program is supported by standard bank credit Suppliers and requires merchants abide by the VISA merchant operating rules.
  - 1. Vendors must be PCI–DSS compliant (secure credit card data management).



- 2. Vendors must be set up by their card processing equipment provider (merchant acquirer) as a minimum of a Level II merchant with the ability to pass along tax, shipping and merchant references information.
- B. Electronic Funds Transfer (EFT) by Automated Clearing House (ACH).
- C. Check or other cash equivalent.
- D. The City may consider cash discounts when evaluating submittals. See 1.20.2 of the Standard Terms and Conditions.

## **1.20.2A - UNSATISFACTORY PERFORMANCE**

In the case of unsatisfactory performance, the payment shall be made after the Supplier has made the necessary repairs and/or modifications and satisfactory performance is obtained, or the unit is replaced.

#### **1.21 - EQUITY IN CONTRACTING**

The City of Tacoma is committed to encouraging firms certified through the <u>Washington State Office</u> <u>of Minority and Women's Business Enterprise</u> to participate in City contracting opportunities. See the TMC 1.07 Equity in Contracting Policy at the City's <u>Equity in Contracting Program website</u>.

## 1.22 – STANDARD TERMS AND CONDITIONS

City of Tacoma <u>Standard Terms and Conditions</u> apply.



THESE TECHNICAL SPECIFICATIONS HAVE BEEN PREPARED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF WASHINGTON.

# **SECTION II - TECHNICAL PROVISIONS**

# 2.00 - SCOPE

The three phase, oil filled, Vault and Network style, described in this specification shall be suitable for connection on the City's 12,470 GrdY/7,200 Volt, 60 hertz, multi-grounded WYE primary system. The usual service conditions as described in Section 4.1 of IEEE C57.12.00-2015, shall apply.



# 2.00.1 - STANDARDS

All transformers shall meet the most recent editions of the following standards and all others that are applicable:

Standard Number	Standard Title
DOE 10 CFR Part 431	Energy Conservation Standards for Distribution Transformers
ASME B1.1-2019	Unified Inch Screw Threads (UN and UNR Thread Form)
IEEE C57.12.00- 2015	IEEE Standard General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers
IEEE C57.12.10- 2017	IEEE Standard Requirements for Liquid-immersed Power Transformers
IEEE C57.12.26- 1992	IEEE Standard for Pad-Mounted Compartment-Type, Self-Cooled, Three Phase Distribution Transformers for Use With Separable Insulated High-Voltage Connectors (34 500 GrdY/19 920 V and Below; 2500 kVA and Smaller)
IEEE C57.12.32- 2019	IEEE Standard for Submersible Equipment - Enclosure Integrity
IEEE C57.12.35- 2013	IEEE Standard for Bar Coding Distribution Transformers
IEEE C57.12.36- 2007	IEEE Standard requirements for liquid immersed distribution substation transformers
IEEE C57.12.40- 2017	IEEE Standard for Network, Three-Phase Transformers, 2500kVA and smaller; High Voltage, 34,500 GrdY/19,920 and Below; Low Voltage, 600 V and Below; Subway and Vault Types (Liquid Immersed
IEEE C57.12.70- 2020	IEEE Standard for Terminal Markings and Connections for Distribution and Power Transformers
IEEE C57.12.80- 2010	IEEE Standard Terminology for Power and Distribution Transformers
IEEE C57.12.90- 2015	IEEE Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers
IEEE C57.91	Guide for Loading Mineral-Oil-Immersed Transformers
C57.12.59-2001	Through fault current duration- (Equipment damage curves)
ASQ/ IEEE/ISO 9001:2015	Quality Systems- Model for Quality Assurance in Design, Development, Production, Installation, and Servicing
ASTM D-3487-16e1	Standard Specification for Mineral Oil Used in Electrical Apparatus
ASTM D-6871	Natural (Vegetable Oil) Ester Fluids Used in Electrical Apparatus
IEEE C57.147	Guide for Acceptance and Maintenance of Natural Ester Insulating fluid
NEMA 107-2016	Methods of Measurement of Radio Influence Voltage (RIV) of High Voltage Apparatus
NEMA TR-1-2013 (R2019)	Transformers, Regulators, and Reactors



# 2.01 – STYLES OF TRANSFORMERS





## FIGURE 2.01.2 – TACOMA POWER STANDARD VAULT STYLE





## FIGURE 2.01.3 – NETWORK STYLE TRANSFORMER

Reference IEEE C57.12.40.-2017 (page 30 & 31) for dimensions by transformer kVA.





## **2.02 - TANK SPECIFICATIONS**

The tank dimensions generally follow the specifications of table 9 of IEEE C57.12.40-2017. Specific requirements are described below.

## 2.02.1 - DIMENSIONS

The maximum dimensions of the Vault and Network style and network transformers shall be as shown below. These dimensions include cooling fins and all protrusions.

15kV Vault and Network style Transformers				
	500 kVA	750 kVA	1000 kVA	1500 kVA
Width	44" max	47" max	52" max	56" max
Length	78" max	84" max	86" max	96" max
Height	70" max	74" max	84" max	86" max

# <u>2.02.2 – TANK</u>

The tank shall be constructed in accordance with C57.12.32-2019 for vault style and IEEE C57.12.40-2017 5.3.1 for Network style transformers.

## 2.02.2A - TANK PRESSURE LIMITS

The tank shall withstand a static pressure of 7- PSIG without permanent distortion and 15- PSIG without rupturing, displacing components of the transformer, or damaging seals and/or gaskets.

## 2.02.2A.1 – PRESSURE RELIEF DEVICE

A diaphragm type pressure relief device shall be mounted to the cover of the transformer. The device shall be designed to operate at 10-PSIG. Approved supplier: Qualitrol

## 2.02.2A.2 – ALARM SWITCH

The pressure relief device shall include a sealed alarm switch. The switch shall meet the requirements of Section 7 of IEEE C57.12.10-2017.

## 2.02.2B – CORROSION RESISTANCE – THICKNESS

Per IEEE C57.12.40-2017 Sec 5.2.1 table 5 & 6

Component	Vault and Network style Transformers
Tank Wall	5/16"
Auxiliary Coolers	5/16"
Cover	1/2"
Tank Bottom	1/2"



# 2.02.3 – EXTERIOR HARDWARE

All exterior hardware and fasteners shall be Type 304 Stainless Steel or better.

#### 2.02.3A - SILICON BRONZE NUTS

All stainless steel fasteners shall be equipped with silicon bronze nuts.

#### 2.02.4 - COOLING PANELS AND/OR RADIATORS

#### <u> 2.02.4A – TYPE</u>

Radiators shall be of the panel type. Cooling panels shall not extend beyond the transformer enclosure dimensions.

#### 2.02.5 – HANDHOLES

Per the table below hand-holes that meet the size requirements of IEEE C57.12.40-2017 shall be provided.

Bid Items 1 thru 5 & 11 thru 16	Bid items 6 thru 10
Low Profile & network Design	Standard vault design.
A minimum of two (2) covers mounted hand-holes shall be provided	A minimum of one (1) cover mounted hand-holes shall be provided

## 2.02.5A - HANDHOLE COVERS

All hand-hole covers for access to primary and secondary bushings shall be bolted with a gasket. Welded or banded hand-hole covers will not be accepted.

#### 2.02.5A1 - COVER ORIENTATION

Hand-hole covers shall be designed and installed so that the proper orientation can be easily determined when they are re-installed.

#### 2.02.5B – HANDHOLE SIZE

Hand-holes shall have a minimum opening per the table below.

Bid Items 1 thru 16	
all Designs	
Hand-holes shall have a minimum opening size of 200 square inches. For square openings, the opening shall	

## 2.02.5C – ACCESSIBLE COMPONENTS

Accessibility is required per the table below.

Bid Items 1 thru 16 all Designs
Hand-holes shall be located so that free access is provided to the high and low voltage bushings and taps.



## 2.02.5D – RAISED FLANGE

All hand holes shall be of a through-bolt raised flange design to allow bolting of the hand hole covers to the tank.

## 2.02.6 - GASKETS

## 2.02.6A – HANDHOLES

Handhold gaskets shall be a one piece re-usable item that extends from edge to edge of the flange. Nitrile rubber gaskets for this application will not be accepted. They must be rated to withstand 3-psi or 7-feet of water.

#### 2.02.6B- SPARE GASKETS

One set of spare gaskets shall be provided for each transformer in clear vacuum sealed bags. At a minimum, the set shall include the following gaskets:

- All hand-holes
- Low voltage throat
- All high voltage bushings
- All low voltage bushings

## 2.02.7 – DISCONNECTING AND GROUNDING SWITCH

A high voltage disconnecting and grounding switches are **NOT required**.

## 2.02.8 - SECONDARY TERMINAL ARRANGEMENT

Bid Items 1 thru 5 Low Profile vault Design	Bid Items 6 thru 10 Standard vault Design
The secondary terminal arrangement shall be centered on an end of the transformer opposite from the primary terminations. The secondary terminals shall be 13 inches (+/- 1 inches) from the top flange of the transformer and they shall be 7" on center per IEEE C57.26-1992.	The secondary terminal arrangement shall be centered on the side of the transformer opposite from the cooling fins The secondary terminals shall be 13 inches (+/- 1 inches) from the top flange of the transformer and they shall be 7" on center per IEEE C57.26-1992.

## Bid items 10 thru 16

#### Network style transformers

The secondary terminal arrangement shall be centered on the end of the transformer opposite from the primary terminations. The terminals shall be sized, spaced and located per IEEE C57.12.40-2017 by kVA size.



## 2.02.9 - LIFTING ATTACHMENTS

Four (4) permanent transformer lifting attachments shall be provided in accordance with Section 5.3.4 of IEEE C57.12.40-2017.

## 2.02.9A – TANK COVER

A minimum of two (2) lifting provisions shall be provided to allow lifting of the tank cover. These provisions shall be designed to fail without damage to the tank or cover if their lifting capacity is exceeded.

## 2.02.10 - JACKING FACILITIES

Jacking facilities shall be provided on all four (4) corners of the tank and suitable for jacking of the transformer while the network protector is attached to the transformer.

## 2.02.11 – CABLE SUPPORT PROVISIONS

In order to accommodate cable support structures copper-faced steel or stainless steel nuts or pads that have been tapped 7/16" -13 UNC thread -  $\frac{1}{2}$ " minimum depth shall be welded onto the tank in patterns as shown in the following figures. The tapped hole shall be shipped with a protective cap included.

# FIGURE 2.02.11 – TRANSFORMER TANK CABLE SUPPORTS



# Typical pattern under bushings for all vault style units



# 2.02.12 - COATING

## 2.02.12A – PREMIUM PAINT SYSTEM

The tank, cover(s), radiators, and secondary throat shall have the manufacturer's premium paint system applied.

## 2.02.12A.1 – PAINT THICKNESS

This paint system shall have a uniform corrosion-resistant finish with a minimum thickness of 3.5 mil.

## 2.02.12A.2 – PAINT STANDARD

The paint system applied shall meet or exceed the most recent IEEE C57.12.32-2019.

## 2.02.12A.3 – UNDERSIDE PAINT

The underside of the transformers extending 6 inches up each side of the transformer shall be given a heavy coating of plastic, rubberized, or asphalt compound to prevent rusting. In place of the undercoating the bidder may offer 409 stainless steel.

# 2.02.12B - PAINT COLOR

## 2.02.12B.1 - TANK PAINT COLOR

The exterior of the transformer tank, cover, radiators and secondary throat shall be painted ANSI No. 70 (light gray).

#### 2.02.12B.2 - UNDERSIDE PAINT

The underside coating shall be highly contrasting to the tank color.

## 2.02.12C – GROUND PROVISIONS

Grounding pads and terminals shall not be painted and any threaded areas shall be protected during painting, so paint removal is unnecessary.

#### 2.02.13 - NAMEPLATE INFORMATION

The nameplate must meet the requirements of IEEE C57.12.00 nameplate "C" with the following exceptions/additions:

## 2.02.13A – NAMEPLATE MATERIAL

Nameplate shall be constructed of 300-series stainless steel or City approved non-ferrous material.

## 2.02.13B - SERIAL NUMBER AND MANUFACTURE ID

The serial number and manufacturer's identification code shall be permanently stamped or embossed on the nameplate as specified in Section 4.1 of IEEE C57.12.35-2013.

## 2.02.13C - INSULATING OIL TYPE AND QUANTITY LISTED

The nameplate shall include the approximate volume of oil in gallons. It must note "FR3 insulating fluid".



## 2.02.13D - YEAR OF MANUFACTURE

The nameplate shall include the year that the transformer was manufactured.

#### 2.02.13E – PRESSURE LIMITS

The nameplate shall show the maximum positive and negative pressure that can be applied to the transformer.

#### 2.02.13F - VOLTAGE AND WINDING DESIGNATION

The primary & secondary voltages, and tap ratings must be shown on the nameplate. The primary and secondary windings configuration and diagram must also show on the nameplate.

#### 2.02.13G - STATEMENTS OF REGULATORY COMPLIANCE

#### The nameplate shall state:

- "Contains no detectable level of PCB (less than 1PPM) at the time of manufacture".

- "DOE 10 CFR Part 431 compliant".

## 2.02.13H – THE TOTAL WEIGHT OF THE TRANSFORMER

The combined weight of the transformer and insulating oil shall be noted on the nameplate in pounds (lbs).

#### 2.02.13I – THE TYPE OF TRANSFORMER DESIGN

Type of transformer design shall be listed on the nameplate i.e.; vault or network style.

## <u> 2.02.14 – SUB BASE</u>

#### 2.02.14A - DESCRIPTION

Sub base rails shall be provided in accordance with Section 5.3.2 of IEEE C57.12.40-2017.

#### 2.02.14B – SEISMIC WITHSTAND PROVISIONS

Two seismic management shoes per transformer shall be provided that can be anchored to the floor to manage seismic movement.

## 2.02.14B.1 - INTERFERENCE

The seismic shoe design shall not interfere with the jacking provisions specified in this document or IEEE C57.12.40-2017.

#### 2.03 - INSULATION LEVEL

The insulation class and basic lightning impulse insulation levels (BIL) for the windings and terminals shall be as shown below:

Components		Insulation Class	BIL
High-voltage windings and terminals		15.0 kV	95 kV
Low-voltage windings and terminals	0 to 600 Volts	1.2 kV	30 kV



## 2.04 – ACCESSORY EQUIPMENT SPECIFICATIONS

The following accessory equipment will be required for the transformers listed in this specification.

# 2.04.1 – HIGH VOLTAGE TAPS

High-voltage taps will be included on each transformer as specified Section 3.2 of IEEE C57.12.40-2017.

#### <u> 2.04.1A - TAPS:</u>

Primary Voltage	Taps
12,470 Grd Y/7,200	13,090/12,780/12,470/12,160/11,850

## 2.04.1B - TAP CHANGER SELECTOR SWITCH

The tap changer selector switch shall be cover mounted within a 3" pipe and equipped with a pipe cap.

#### 2.04.1C – SPECIAL WRENCH

If a special wrench is required to change taps, then one shall be provided with each transformer supplied as a part of this contract.

#### 2.04.1C1 – WRENCH STORAGE

The transformer shall be designed so that the storage provisions, for this wrench, are provided on the exterior of the transformer and can be freely accessed, by a worker, once the transformer is energized and placed in service.

## 2.04.2 – AIR TEST PROVISIONS

Air test provisions, as described in Section 5.5.5.2 of IEEE C57.12.40-2017, are required.

#### 2.04.3 – LIQUID LEVEL INDICATOR

A liquid level indicator, per Section 5.5.5.3 of IEEE C57.12.40-2017, shall be provided.

# 2.04.3A – LOCATION OF INDICATOR

Items 1 thru 16	
all Design	
The liquid level indicator shall be readily viewed by a worker, standing at the face of the transformer opposite of the cooling fins as shown in Figures 3.01.1, 3.01.2 and 3.01.3	



# 2.04.3B – ALARM CONTACTS

## <u>2.04.3B.1 – TYPE</u>

All alarm contacts shall be of the non-grounded type.

2.04.3B.2 – QUANTITY

A minimum of one (1) normally open contact shall be provided.

2.04.3B.3 - CALIBRATION

The contact shall be calibrated for actuation at the low liquid level.

2.04.3B.4 - RATINGS

The minimum ratings of the alarm contacts shall be as described in Section 7 of IEEE C57.12.10-2017.

## 2.04.4 – DIAL TYPE THERMOMETER

A dial type thermometer, as described in Section 5.7.4 of IEEE C57.12.40-2017, shall be provided.

## 2.04.4A – LOCATION OF INDICATOR

Items 1 thru 16

all Design

The dial type thermometer shall be readily viewed by a worker, standing at the face of the transformer opposite of the cooling fins as shown in Figures 2.01.1, 2.01.2 and 2.01.3

## 2.04.4B - ALARM CONTACTS

2.04.4B.1 - TYPE

All alarm contacts shall be of the non-grounded type.

2.04.4B.2 - QUANTITY

A minimum of two (2) normally open contacts shall be provided.

2.04.4B.3 - CALIBRATION

One contact shall be calibrated for actuation at 60°C and the second shall be calibrated for 90°C.

#### 2.04.4B.4 - RATINGS

The minimum ratings of the alarm contacts shall be as described in IEEE C57.12.10-2017.

## 2.04.5 – VALVES, SAMPLING DEVICES, AND FILTER PRESS CONNECTIONS

The transformer shall be provided with a valve, sampling device, and filter press connections, as described in IEEE C57.12.40-2017.



## 2.04.5A - PIPE THREAD COMPOUND

Non-conducting pipe thread compound shall be applied to all valves, fittings, pipe plugs, and bushings. Teflon tape shall not be used as the pipe sealer.

#### 2.04.5B NITROGEN" VALVE

- Units shall have a "nitrogen" valve that will allow air pressure to be induced into the air space of the tank.
- This valve shall be a Grainger Inline Brass Ball Valve, FNPT x MNPT, 1/4 in. or approved equivalent with a plug in the female end.



# 2.04.6 - GROUNDING ATTACHMENTS

One grounding pad on each end of the transformer shall be provided in accordance with IEEE C57.12.40-2017.

Transformer Sizes	Grounding Pad Provisions
500 – 1,500 kVA	Copper-faced steel or stainless steel pads, 2" x 3 $\frac{1}{2}$ " with 2 holes spaced on 1 $\frac{3}{4}$ " centers and tapped for $\frac{1}{2}$ " -13 UNC thread - $\frac{1}{2}$ " minimum depth

# 2.05 - CORE SPECIFICATIONS

The following are the transformer core requirements for the transformers listed in this specification.

## 2.05.1 - DESIGN TEMPERATURES

Network transformers shall be designed for <u>55°C / 65°C average winding rise</u> in accordance with IEEE C57.12.00-2015. Operation of the transformer, with an average winding temperature rise of 65°C or a hot spot rise of 80°C above ambient, shall allow the transformer to carry a minimum of 12% additional load without loss of life.

## 2.05.1A – LOADING

The design of the transformers shall allow for the use of IEEE C57.91 to estimate loading levels and loss of life characteristics.

## 2.05.2 - CORE CONSTRUCTION

The transformers to be furnished under this specification shall have shell-type, or 5-legged-type core construction.

## 2.05.2A - CORE MATERIAL

Amorphous core transformers are <u>not</u> acceptable for this specification.



# 2.05.3 - COIL CONSTRUCTION

## 2.05.3A – ELECTRICAL CENTERS

All coils shall be designed and constructed so that the electrical centers of the completed high and low voltage coils, once assembled, shall be aligned to prevent movement of the coils during short circuit.

## 2.05.3A1 – FINAL LAYER OF WINDING

In particular, the final winding of the high voltage coil shall be centered, restrained, and supported.

#### 2.05.3B - INSULATING PAPER

Transformer coils shall be constructed with insulating paper that is coated on both sides with a thermosetting adhesive that when properly cured will form an effective bond, both turn-to-turn and layer-to-layer, prior to impregnating with oil.

## 2.05.3C – FOLLOWING ROLLERS

The use of following rollers during the winding of the coils is preferred to maintain tightness of the assembly and ensure even and complete adhesion of the insulating paper.

## 2.05.3D - AREAS OF POOR ADHESION

Areas that are prone to poor adhesion shall receive additional glue or adhesion enhancements to ensure the tightness of the coil assembly.

#### <u> 2.05.4 – BRACING</u>

The core, windings, and leads shall be securely clamped, braced, and supported to withstand short circuit stresses and to prevent damage during transit, installation, and operation.

## 2.05.4A – AVAILABLE SHORT CIRCUIT CURRENTS

These transformers shall be installed where the available primary short circuit current of 17,000 amps, symmetrical.

#### 2.05.5- NOISE LIMITS

The noise level of the transformer, during normal operation, shall be within the limits of IEEE C57.12.40-2017. The transformers shall be tested per IEEE C57.12.90.

kVA Rating	Sound Level (db)
500	56
750	57
1000	58
1500	60

# 2.05.6 - RADIO INTERFERENCE LIMITS

The radio influence voltages shall not exceed 100 microvolts, per NEMA 107-2016. The transformers shall be tested in accordance with IEEE C57.12.90.



## 2.05.7 – INSULATING FLUID

Natural ester-based insulating fluids shall meet the requirements of IEEE C57.147 and ASTM D-6871.

The fluid shall be Envirotemp FR3 fluid.

## 2.05.8 - LIFTING ATTACHMENTS

Lifting eyes or suitable attachments shall be provided to assist in the removal and installation of core/coil assembly.

## 2.05.8A - RATINGS

The lifting attachments shall be suitable for lifting the entire core/coil assembly (after complete oil impregnation), including any associated leads, clamping structures, and bracing.

#### 2.05.9 - IMPEDANCE

The impedance of Vault and Network transformers shall be per IEEE C57.12.40-2017 section 3.5 table 3. The tolerance shall be as specified in IEEE C57.12.00-2015.

Low profile & Standard Transformer kVA	Percent Impedance
500-1000	5.0
1500	5.75

Network Transformer kVA	Percent Impedance
500-1000	5.00
1500	7.00

## 2.05.10 - TRANSFORMER EFFICIENCY

Only units that meet or exceed the U.S. Department of Energy efficiency standards for liquid filled distribution transformers 10 CFR Part 431 will be considered for this bid.

## 2.06 – BUSHINGS

The bushing requirements for the transformers listed in this specification are as follows:

## 2.06.1 – HIGH VOLTAGE BUSHINGS

## 2.06.1A - VOLTAGE RATINGS

Each high voltage bushing shall be rated for use on a 15 kV system with a minimum BIL of 95 kV.

#### 2.06.1B - CURRENT RATINGS

The minimum rating of each high voltage bushing shall be 200 Amps.



## 2.06.1C – PRIMARY TERMINALS

Bid Items 1-5 and 11-16 Low Profile & Network Designs

The bushing wells shall included a standard 15 kV, 200 amp load-break bushing insert with a 3/8" - 16 UNC studs and parking stands spaced per IEEE C57.12.26 See Figures 2.01.1 and 2.01.3 of this spec.

# 2.06.1C.A – BUSHING WELLS

The three bushing wells shall be EATON (Cooper BW150R 200A, 35KV)

class tri-clamp.

## 2.06.1C.B - BUSHING INSERT

The bushing insert shall be a 15 kV 200 amp load-break bushing insert. It shall be an EATON (Cooper Power Systems<sup>©</sup>) Catalog No. LBI215, or equivalent, that includes a molded-in bright yellow Latch Indicator Ring. The bushing inserts shall be shipped with a red UV resistant shipping covers.

## Bid items 6 -10

#### Standard vault transformer Design

15kV class, live bushings with skirted porcelain insulation and 2-bolt NEMA connection spades. See Figures 2.01.2 of this spec.

#### 2.06.1D – TANK CONNECTION

The high voltage terminals shall be replaceable styles.

## 2.06.2 – LOW VOLTAGE TERMINALS

## 2.06.2A – VOLTAGE RATINGS

Each low voltage terminal shall be rated for use on a 480 Grd Y/277 Volt system with a minimum BIL of 30 kV.



## 2.06.2B – CURRENT RATINGS AND TERMINAL DRILLINGS

The minimum rating and number of 2-bolt NEMA drill patterns for each low voltage terminal shall be as described in the following table.

Transformer Sizes	Secondary Voltage	Minimum Current Rating	Minimum # of 2-bolt NEMA hole patterns per terminal
	208Y/120	2,000 Amps	4
500 kVA	480Y/277	1,000 Amps	2
750kVA	216V/125	2600Amps	5
1.000 kVA	216V, 208Y/120	4,000 Amps	7
1,000	480Y/277	1,800 Amps	3
1,500 kVA	480Y/277	2,600 Amps	5

# 2.06.2C - TANK CONNECTION

The low voltage terminals shall be replaceable styles.

#### 2.06.2D – PHYSICAL ARRANGEMENT

Refer to Sub-Section 2.02.8B for secondary terminal arraignment.

## 2.06.2E -CONNECTORS

The secondary and neutral terminal shall be blades in accordance with IEEE C57.12.26-1992.

The insulating material may be either porcelain, epoxy, or High Temperature Nylon.

## 2.06.3 – NEUTRAL TERMINAL

## 2.06.3A – VOLTAGE RATINGS

The neutral terminal shall be rated for use on a 480 Grd Y/277 Volt system with a minimum BIL of 30 kV.

## 2.06.3B - CURRENT RATING

The minimum current rating of the neutral terminal shall be as specified in Section 8.1.2.2 of IEEE C57.12.40-2017.

## 2.06.3C – GROUND STRAP FOR VAULT STYLE TRANSFORMERS

A ground strap shall be supplied with each transformer having a secondary rating of under 600 volts. The ground strap shall be attached to the neutral terminal and shall be removable.

The secondary strap will <u>not</u> be applicable to network transformers due to the secondary throat and network protector mounting.



# 2.07 – EQUIPMENT NUMBERS & STENCILING

Tacoma Power requires that the following labeling is required for items supplied per this specification. See Figures 2.08.1 & 2.08.2 below.

Items 1 thru 5 & 11 thru 16	Items 6 thru 10	
Low Profile and Network Design	Standard Design	
The stenciling shall be located on the side of the transformer opposite to the cooling fins, within the upper 1/2.	The stenciling shall be located on both ends of the transformer, within the upper 1/2.	

# **FIGURE 2.07.1**





# FIGURE 2.07.2



# 2.07.1 - BUSHING LABELING

Primary and secondary bushings shall be labeled with either White of Black paint 3" in height.

# 2.07.2 - VOLTAGE DESIGNATIONS

Stencil the KVA and voltage designations on the transformers. The stencils shall be the color of standard Black as used with other identifying markings applied by the supplier.

Stencil		Size
KVA Size		3"
Voltage Designation	12,470 / 7200	
	208 / 120	0.447
	216 / 125	3/4
	480 / 240	



# 2.07.3 - CITY OF TACOMA TRACKING NUMBERS (SAP #)

Tacoma Power is requiring that the vendor have unique tracking numbers (SAP Equipment Number) supplied by Tacoma Power's data management section stenciled on the units as shown below. The seven digit numbers shall be 2" stencils in the color of standard black as used with other identifying markings applied by the supplier.

# 2.07.4 - NATURAL ESTER OIL

The term "Natural Ester Oil" shall be stenciled as listed below. The letter size shall be

<sup>3</sup>/<sub>4</sub>" white paint and located on the face of the tank above the oil drain plug.



# **Tacoma Public Utilities**

#### SUBSTITUTION REQUEST FORM

Specification No. PT22-0026F

Prospective bidders may request the use of substitute materials below.

All requests must be submitted electronically, via e-mail to <u>trico@cityoftacoma.org</u> no later than seven (7) business days prior to the submittal deadline.

N	laı	nuf	act	urer	/Mc	odel:
••					,	

Manufacturer Contact Information

Name/Title:\_\_\_\_\_

Phone	Number:	

E-Mail:	

Describe the differences between the proposed substitution and specified material:

Please attach documentation from manufacturer that certifies the material meets all the criteria outlined in Technical Specifications of this bid specification.

Contractor Name:	
Preparer Name/Title:	
Mailing Address:	
Phone Number:	
E-Mail:	
Signature:	



# **Tacoma Public Utilities**

#### INTERNAL USE ONLY

- Approved as Substitute\*
- Rejected Material Not Acceptable
- Rejected Inadequate Information
- Rejected Request Received After Deadline

\*Subject to review and approval of submittal documents

#### Remarks

Reviewer Name/Title:		
Signature:	_Date:	