



HOPKINSVILLE WATER ENVIRONMENT AUTHORITY

Bid Packet:

FY 2025 - 2026

Sealed Bid # 2425-10

Replace Variable Frequency Drives # 1 and 2 - High Service Building

Bid Opening:

Tuesday, April 22, 2025 @ 2:00 P.M. CST
401 East 9th Street, Hopkinsville, KY, 42240
HWEA Boardroom

BID PACKET

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IMPORTANT: In the event any of the documents are not enclosed, please advise the Procurement Officer immediately.



INVITATION TO BID

Sealed bids for furnishing and delivering the following:

FY 2025 - 2026

Sealed Bid # 2425-10

Replace Variable Frequency Drive's # 1 and 2 - High Service Building

will be received at HWEA's Main Office, 401 East 9th Street, P. O. Box 628, Hopkinsville, Kentucky, until 2:00 p.m., CST, on April 22, 2025, at which time the bids will be opened and read aloud publicly in the HWEA Board Room, at the same address.

The Bid Packet contains the Invitation to Bid, General Conditions, Specifications, and Detailed Specifications.

GENERAL CONDITIONS

1. INSTRUCTIONS, SPECIFICATIONS AND FORMS

Instructions, specifications and forms may be obtained via the HWEA website, in person, or by email from the HWEA Procurement Officer at 401 East 9th Street, Hopkinsville, KY, 42240. Telephone number 270-887-2782, email mwesterfield@hwea-ky.com, or see our website at www.hwea-ky.com.

- (a) All bids shall be submitted on and in accordance with the attached Bid Form. The form shall be signed and dated in the appropriate space.
- (b) Each bid shall be submitted in a sealed envelope and clearly marked on the outside of the envelope with the following:

FY 2025 - 2026

Sealed Bid # 2425-10

Replace Variable Frequency Drive's # 1 and 2 - High Service Building

- (c) If forwarded by mail, the sealed envelope containing the proposal must be enclosed in another envelope: FY 2025 - 2026 - SEALED BID # 2425-10 - REPLACE VARIABLE FREQUENCY DRIVE'S # 1 AND 2 - HIGH SERVICE BUILDING and shall be mailed to the HWEA Procurement Officer, P.O. Box 628 Hopkinsville, KY 42241, allowing sufficient time for such mailing to reach this address prior to the scheduled closing time for receipt of bids.
- (d) Additional information or clarifications of any of the instructions or information contained herein may be obtained from the Procurement Officer.
- (e) Any bidder or bidders finding any discrepancy in or omission from the specifications, in doubt as to their meaning, or believing that the specifications are discriminatory, shall notify the Procurement Officer in writing within 5 days of the scheduled opening of bids. Exceptions as taken in no way obligates HWEA to change the specifications. The Procurement Officer will notify all bidders in writing, of any interpretations made of specifications or instructions.
- (f) HWEA will assume no responsibility for oral instructions or suggestions. All official correspondence in regard to the specifications should be directed to and will be issued by the Procurement Officer.

- (g) The successful bidder may have to purchase a City of Hopkinsville vendor's license prior to the official award of the bid, in order to meet the requirements of City of Hopkinsville ordinances.
- (h) Any bidder may withdraw their bid either in person or in writing at any time prior to the scheduled time for the receipt for bids. Withdrawals after the scheduled time for the receipt of bids will not be permitted.

2. AWARD OF CONTRACTS

- (a) The HWEA Board may award the contract to the bidder it finds to be the most responsive (considering price, time of delivery, compliance with specifications and past experiences) and not necessarily the lowest price. HWEA reserves the right to reject any and all bids.
- (b) All bids will be awarded based on the most current edition of HWEA's Purchasing Policy, as amended.
- (c) All bids will be judged on the basis of best buy to HWEA and compliance with the General Conditions and conformance with the bid specifications. HWEA reserves the right to reject any and all bids.
- (d) Any other considerations or basis for judgment will be stated in the specifications.
- (e) Unless otherwise stated, the Procurement Officer reserves the right to award contracts or place orders to a single source or divide awards and orders or enact such combination which in his judgment, shall be in the best interest of HWEA.

3. DELIVERY

- (a) Item(s) shall be delivered F.O.B. destination with delivery costs and applicable charges to be included in the bid.

4. COMPETITION

In order to assure fair competition and to permit determination of the best bid:

- (a) The Detailed Specifications, which may include a name of any manufacturer, trade name, or manufacturer or vendor catalog number mentioned in the specifications or Bid Form is to designate a standard of quality and type and for no other reason.
- (b) Bids which show any omission, irregularity, alteration of forms, additions not called for, conditional or unconditional unresponsive bids, or bids obviously unbalanced may be rejected.
- (c) All bids shall be accompanied by such descriptive literature and documents as may be called for by the specifications or Bid Form.
- (d) Specifications provided are based on HWEA needs and uses, estimated costs of operation and maintenance, and other significant and / or limiting factors to meet HWEA requirements and shall be consistent with HWEA's policies. Minimum or maximum specifications where included, are not established arbitrarily to limit competition or to exclude otherwise competitive bidders.

5. DISPUTES

In cases of disputes, as to whether or not an item or service quoted or delivered meets specifications, the decision of the Procurement Officer, or authorized representative shall be final and binding on all parties. The Procurement Officer may request written recommendation of the head of the Department using the item.

6. EXCEPTIONS

The submission of a bid shall be considered an agreement to all the terms, conditions and specifications provided herein as listed in the various bid documents, unless specifically noted otherwise in the space provided on the Bid Form.

7. BID BINDING

Unless otherwise specified, all formal bids submitted shall be firm and irrevocable for a period of sixty (60) calendar days from the date of opening.

8. UNIT PRICING

Unless clearly shown on the Bid Form that it is the intent of the bidder that a reduced total price is being offered on the basis of receiving an award of all items covered by the total, any totals should be the actual sum of the extension of unit price(s), extended price(s), and/or total price(s). If a mistake is observed in arithmetic, unit prices govern and the bid will be refigured accordingly.

9. DELIVERY TIME

The bidder is to indicate on the Bid Form the approximate lead time on delivery.

10. WARRANTY

The Variable Frequency Drive (VFD) furnished in accordance with these specifications shall be guaranteed to be free from defect in workmanship, material or equipment.

SPECIFICATIONS

1. GENERAL SPECIFICATIONS

- (a) All items are to be equipped with all manufacturer's standard equipment as listed in the manufacturer's literature.
- (b) The items shall be manufactured in production and shall be of good listed quality as to workmanship and materials used.

2. INFORMATION TO BE FURNISHED BY BIDDER

- (a) Each bid shall have attached the following information:
 - 1. A copy of manufacturer's warranty.
 - 2. A copy of the complete descriptive literature to include operation, installation and maintenance instructions.
- (b) Provide unit pricing for VFD #1 only and a second unit price for both VFD # 1 and 2.

3. EXCEPTIONS

- (a) Major exceptions to these specifications or failure to submit requested information may be considered cause for rejection of the bid.

DETAILED SPECIFICATIONS

The following are minimum specifications for;

FY 2025 - 2026

Sealed Bid # 2425-10

Replace Variable Frequency Drive's # 1 and 2 - High Service Building

BIDDER SPECIFICATIONS

Bidder is requested to indicate either by writing "Comply" or "Exceptions" whether his product meets the minimum specifications as listed on this opposite side. If "Exception" is written, please indicate in the space providing the deviation or include a detailed "EXCEPTIONS PAGE" with the bid packet.

ANY AND ALL BIDS WHICH ARE RETURNED MUST HAVE THE FOLLOWING PAGES COMPLETED AND RETURNED OR BID MAY NOT BE CONSIDERED.

DETAILED SPECIFICATIONS

DESCRIPTION	COMPLY	EXCEPTION
Qty. One (1) ABB or Approved Equal Variable Frequency Drive (VFD) #1		
Qty. Two (2) ABB or Approved Equal Variable Frequency Drives (VFD) # 1 and 2		

GENERAL

DESCRIPTION	COMPLY	EXCEPTION
VFD shall operate variable torque loads		
All equipment shall be Underwriters Laboratories (UL) listed		
All equipment shall be in accordance with applicable National Electrical Manufacturers Association (NEMA)		
All equipment shall be in accordance with applicable American National Standards Institute (ANSI) standards		
Manufacturer must guarantee capability of existing motors to run with new VFDs at a minimum system efficiency of 95%		
Manufacturer must recommend changes (e.g., filtering) necessary to preserve the quality of the electrical environment in which the drive must operate		
Manufacturer must provide a Start-up Technician		
Manufacturer must provide on-site training		
Must provide factory-level technical / service manuals for supplied drives		

SUBMITTALS

DESCRIPTION	COMPLY	EXCEPTION
Must provide Product Data Sheet		
Must provide wiring diagrams		
Must provide literature for added equipment / modification recommended to protect existing building's electrical systems / equipment from harmonic current and voltage distortion		

Must provide complete installation and maintenance manuals		
Must provide test results		
Must provide Certificate of System Completion		
Must provide ONE PDF FILE of Submittals		
Must provide AutoCAD Drawings of Wiring Diagrams, Layouts, Dimensional Info, Nameplates, etc.		

VARIABLE FREQUENCY DRIVE UNIT

DESCRIPTION	COMPLY	EXCEPTION
The adjustable frequency controllers (AFCs) shall comply with the latest standards of ANSI, Institute of Electrical and Electronics Engineers (IEEE), NEMA and National Electrical Code (NEC)		
Controllers and factory-mounted options shall be UL listed		
Adjustable frequency controllers shall convert fixed utility voltage and frequency to variable voltage to variable voltage and frequency for AC motor speed control adjustable from 4 to 60 hertz		
AFCs shall produce adjustable voltage and frequency via a two-step process. The first section shall utilize a rectifier converting AC to fixed voltage DC		
The rectifier shall maintain AC line side power factor at .95 or greater at any combination of speed or load. The second shall utilize a pulse width modulated inverter that converts the DC potential into a variable frequency and voltage AC waveform suitable for speed control operation of any standard AC induction motor. This inverter shall utilize insulated gate bipolar transistors (IGBTs)		
The adjustable frequency and voltage output shall provide constant volts per hertz excitation to the motor terminals up to 60 hertz		
The full load output current of the AFC shall not be less than that listed for the motor equivalent horsepower as defined by NEC Table 430-150		
Standard conditions of operation shall include incoming three phase 480-volt, AC power, $\pm 10\%$, 50 or 60 hertz		
Existing motor hp for High Service Building: 450hp		
AC line frequency variation ± 2 hertz		
Service factor of 1.0 with 10% overload capability of 60 seconds		
Humidity rating of 0 to 95% (noncondensing)		

Ambient temperature rating from 0 to 40° C		
Motor slip dependent speed regulation of 3%		
Frequency stability of ± 0.5% for 24 hours with voltage regulation of ± 2% of maximum rated output voltage		
Units shall be supplied with fully protected, manual electric bypass to permit constant speed operation from AC line		

VARIABLE FREQUENCY DRIVE UNIT CONT.

DESCRIPTION	COMPLY	EXCEPTION
VFD shall be mounted in a NEMA 1, 16-gauge, steel enclosure with a front accessibility requirement. Enclosure shall contain a disconnect switch and semiconductor type current limiting fuses and circuit breaker, giving the unit 65,000 amps interrupting capacity (AIC) rating. The disconnect switch shall extend through the enclosure front and shall be capable of being secured with a padlock		
Enclosure shall contain separate fuses of the drive unit and the bypass circuit. There shall be an integrated contactor interlocked mechanically and electrically with a drive output contactor		
3%-line reactors shall be provided at the AC line input to the drive to limit the maximum harmonic distortion and noise input to the drive		
Motor thermal overloads shall be provided		
The following factory integrally mounted options shall be provided with all adjustable frequency controllers		
Hand off automatic switch to allow operation of the drive if the DDC system is inoperative. The "Hand" position of the switch shall bypass the remote start / stop		

RATINGS

DESCRIPTION	COMPLY	EXCEPTION
Efficiency: 96% at 100% speed; 80% at 50% speed		
Displacement power factor: .95		
Input voltage: 480 volts, ± 15%		
Input voltage frequency: 48 to 63 hertz		
Over torque capacity: 110% for 60 seconds		
Output frequency range: 2.5 kilohertz to 15 kilohertz		
Ambient temperature tolerance: 0 to 40° C		
Relative humidity tolerance: 0 to 95% at 40° C		

Maximum power loss ride through: 0.1 second		
Adjustable ramp time range: 0.1 to 999 seconds		
Speed regulation: 3%		
Skip frequencies: 3 at 5 hertz bandwidths		
Maximum corrected harmonic distortion reflected into supply: 5%		

CONTROL FUNCTIONS

DESCRIPTION	COMPLY	EXCEPTION
All programmable parameters shall be adjusted from a digital operator keypad HIM module with advance features located on the front door of the VFD		
All internal parameters shall also be accessible from the SCADA network for monitoring and control		
Parameters shall include programmable frequency command (keyboard, remote)		
Parameters shall include programmable start command (keyboard, remote)		
Parameters shall include forward start, stop and digital speed control via digital operator keypad		
Parameters shall include programmable maximum and minimum frequency limits		
Parameters shall include programmable acceleration and deceleration times		
Parameters shall include programmable carrier frequencies, V / Hz, and critical frequency avoidance lockout zones		
Parameters shall include programmable electronic overload and torque limits		
Parameters shall include programmable multiple attempt restart		
Parameters shall include programmable jog and present speeds		
Parameters shall include programmable dwell time at start to maximize motor starting torque		
Parameters shall include programmable "Catch a Spinning Motor" function		
THE VFD inputs shall have process interface from SCADA system, VFD speed feedback: 4-20mA, VFD running, VFD fault and remote start		
VFD outputs shall have run relay with an isolated set of Form C Contacts, two dry contact outputs to indicate protective function trip and analog output signal		

proportional to output frequency		
Monitoring and display shall have direct network interface between VFD and SCADA; programmable controllers shall be via Ethernet / IP protocol		
Ethernet / IP protocol shall be integral to the VFD or provided with full functionality using an included add-on module with RJ45 connector port.		

CONTROL FUNCTIONS CONT.

DESCRIPTION	COMPLY	EXCEPTION
VFD must be configurable using the Ethernet / IP port		
The VFD shall have an advanced HIM module display indicating monitored functions including: output current, output frequency, motor rpm and trip cause		
External pilot devices of functions: hand off auto switch, fault pilot light and drive on pilot light		
VFD protective features shall have a DC over voltage protection, overcurrent protection, over voltage protection, under voltage protection, over frequency protection, phase loss protection, over temperature protection, ground fault protection, adjustable current limit, line to line to ground short circuit protect, AC line surge protection per IEEE 472-1974 surge withstand test and over temperature protection		
For any protection condition listed above, the controller shall trip and an internal fault relay contact will close for remote trip indication		
An auto restart feature shall be provided for controller automatic restart (after phase loss, over voltage and under voltage trip condition only) at HWEA's option		
THE VFD shall contain necessary relay option for interlocking, emergency shutdown, and so forth and will have minimum of two alarm relay outputs		
VFD unit shall include network capabilities for interface to HWEA's existing plant SCADA network via Ethernet / IP communication		
VFD shall provide control to allow AFD to interface with remote dry contacts at a distance of up to 500 feet		

APPLICATION

DESCRIPTION	COMPLY	EXCEPTION
VFD shall be sized to motor horsepower and voltage per NEMA and National Electric Code Standards		
VFDs shall be capable of operating continuously with the existing motor sizes found in the facility		

STARTUP AND TESTING

DESCRIPTION	COMPLY	EXCEPTION
Manufacturer shall provide authorized field technical representative to conduct startup and testing. Service shall include inspection, final adjustments and installing parameters; final adjustments of ramps and frequency skips, operational checks and a written report		
Manufacturer authorized field technical representative shall operate system for a minimum period of seven consecutive days with no issues before submitting for final acceptance by HWEA		

EQUIPMENT DEMONSTRATION AND TRAINING

DESCRIPTION	COMPLY	EXCEPTION
After all system tests have been completed, an instruction period shall be scheduled with HWEA		
Instruction shall be provided by the manufacturer's authorized field technician and shall last at least one-half day		
Instruction shall include location of all components of the system		
Instruction shall include demonstration of equipment		
Instruction shall include maintenance, troubleshooting and repair procedure		
Instruction shall include programming procedure		
Instruction shall include review of all technical documents; operation and maintenance manuals		
Manufacturer shall provide on PDF file and two hard copies of operation and maintenance manuals		

WARRANTY

DESCRIPTION	COMPLY	EXCEPTION
VFD Manufacturer is responsible for all defects, repairs and replacements in materials and workmanship		
VFD shall be warranted for a period of 18 months upon receipt of shipment or 12 months from startup		
VFD manufacturer shall have a local repair representative able to provide 24-hour turnaround on any failed unit		



RECEIPT OF BID PACKET

FY 2025 - 2026
Sealed Bid # 2425-10
Replace Variable Frequency Drive's # 1 and 2 - High Service Building

I hereby acknowledge receipt of the subject bid packet.

Company Authorized Signature

Date



BID FORM

FY 2025 - 2026
 Sealed Bid # 2425-10
 Replace Variable Frequency Drives # 1 and 2 - High Service Building

Company Name: _____

Address: _____

Telephone: _____ Fax: _____

<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>BIDDER DESCRIPTION</u>	<u>TOTAL COST</u>
One	#1 Variable Frequency Drive	_____	\$ _____
Two	# 1 and 2 Variable Frequency Drives	_____	\$ _____

Lead Time: _____

I, the undersigned, do hereby certify that I am a duly authorized representative of _____ located at _____ and I have carefully examined the Invitation to Bid, General Conditions, Specifications and Bid Form and agree to all terms and conditions as set forth therein.

Signature: _____

Title: _____

Acknowledged before me this _____ day of _____, 2025

 NOTARY PUBLIC
 My Commission Expires: _____