Utility Advisory Commission Regular Meeting

Agenda

Thursday, July 11, 2024

7:00 pm – Gardner City Hall Council Chambers

CALL TO ORDER

PLEDGE OF ALLEGIANCE

PRESENTATION

1. Electric Master Plan

PUBLIC COMMENT

CONSENT AGENDA

1. Standing approval of the minutes as written for the June 6, 2024 meeting of the Utility Advisory Commission.
2. Consider a recommendation to the City Council for appointment of a Director on the Kansas Municipal Gas Agency's Board of Directors.

OLD BUSINESS

NEW BUSINESS

1. Consider a recommendation to accept the proposal from KOC Electric to purchase transformers for the Substation 1, Transformer 2 Upgrade CIP Project EL4004 and for the new Substation 4 CIP Project EL4005.

DISCUSSION ITEMS

1. APPA Reliability Report- 2nd Quarter
2. Sewer Repair Report- 2nd Quarter
3. Water Repair Report- 2nd Quarter
4. Project Updates

OTHER BUSINESS

ADJOURNMENT

UTILITIES ADVISORY COMMISSION STAFF REPORT CONSENT AGENDA ITEM #1
MEETING DATE: JULY 11, 2024
STAFF CONTACT: GONZ GARCIA, UTILITIES DIRECTOR

AGENDA ITEM: Standing approval of the minutes as written for the June 6, 2024 meeting of the Utilities Advisory Commission.

Background:

The draft minutes for the June 6, 2024 Utilities Advisory Commission meeting are attached.

Staff Recommendation:

Staff recommends approval of the minutes for the June 6, 2024 meeting of the Utilities Advisory Commission.

Attachments:

- Draft minutes of the June 6, 2024 Utilities Advisory Commission meeting.

RECORD OF PROCEEDINGS
OF THE UTILITY ADVISORY COMMISSION
GARDNER, KANSAS
Page No. 2024-08
June 6, 2024

The Utilities Advisory Commission of Gardner, Kansas, met in Regular Session on June 6, 2024, at City Hall. Present were Chairperson Barbara Coleman, Commissioner Nate Plahn, Commissioner Christopher Jackson, Commissioner Russell Wohler and Utilities Department Director Gonzalo Garcia. Vice Chairperson Bryce Augstine and Utilities Specialist Erin Groh were not in attendance.

CALL TO ORDER

The meeting was called to order at 7:00 p.m. by Chairperson Barbara Coleman.

CONSENT AGENDA

1. **Presentation on the Electric Master Plan Update by Kiewit, presented by Director Garcia.**

2. **Standing approval of the minutes as written for the April 4, 2024, meeting of the Utility Advisory Commission.**

Motion by Commissioner Plahn seconded by Commissioner Jackson, to approve the Consent Agenda.

Motion carried 4-0 Aye

NEW BUSINESS

1. **Consider a recommendation to the City Council to authorize the purchase of a 2024 Compact Excavator for the Electric Distribution Department.**

Director Garcia discussed how the present 2007 Hitachi Compact Excavator is nearing its useful service life. It was purchased used from Commercial Capital, LLC in 2009. The unit is primarily used for dirt construction involving the installation of the electric infrastructure. It is an essential component for daily scheduled work activities and projects.

The City of Gardner purchasing policy states employees with delegated purchasing authority shall utilize informal solicitations for the purchase of any materials, services, or professional services not to exceed a cost of $75,000.00. Employees with delegated purchasing authority shall attempt to obtain written (fax, e-mail, etc.) quotes from a minimum of three (3) vendors. Purchases of materials or services shall be awarded to the vendor supplying the lowest responsible and responsive quote or as determined to be most advantageous to the city.

The submitted quotes for the 2024 Compact Excavator:

Vendor	Compact Excavator	5 Year Warranty	Total Cost Tax Included
Coleman Equipment, Inc.	Kubota	Yes	$63,111.08
K.C. Bobcat	Bobcat	Yes	$68,237.96
Foley Equipment	CAT	Yes	$68,008.08

Motion by Commissioner Plahn, seconded by Commissioner Wohler to approve a recommendation to the City Council to accept the bid from Coleman Equipment, Inc. for the 2024 Kubota Compact Excavator and authorize the City Administrator the contract for the purchase amount of $63,111.08 plus insurance and shipping charges. Final pricing and applicable programs will be established at delivery.

Motion carried 4-0 Aye

DISCUSSION ITEMS

1. Electric Reliability Report

Garcia presented the latest numbers on the APPA's Reliability Index. Garcia discussed that the momentary interruption numbers (MAIFI) are being driven way high on the report due to momentary outages on one circuit but other circuits are seeing the blinks on their circuits also. A representative from APPA responded to Garcia's inquiries about how to report the blinks and they told him not to report the blinks that were duplicates of the original blinks. Chairperson Coleman asked how we are gathering the data. Garcia said that we get it from EcoOne software. EcoOne will give how many meters were impacted by an interruption or outage.

2. Project Updates.

Garcia gave an update on the Circuit 31 Overhead Powerline Project. Electric Distribution has been busy replacing the Circuit 31 overhead lines. There is about 2 miles of electrical line that is being replaced. Staff is hoping to be done by July. The electric lines were about 50 years old.

Commissioner Plahn asked about Substation 4 and what is the latest. Garcia said that City Council approved the final design, specifications, bid review, and construction supervision led by Olsson. The transformer lead time is two years and the circuit breaker lead time is three years. We can start construction of the main structure of the grid between 2025 and 2027. The equipment will come in 2027.

ADJOURNMENT

Motion by Commissioner Wohler, seconded by Commissioner Plahn to adjourn the meeting at 7:50 p.m.

Motion carried 4-0 Aye

/s/ Erin Groh

Utilities Specialist
City of Gardner Utilities Department

UTILITY ADVISORY COMMISSION STAFF REPORT CONSENT AGENDA ITEM #2
MEETING DATE: JULY 11, 2024
STAFF CONTACT: GONZALO GARCIA, UTILITIES DIRECTOR

AGENDA ITEM: Consider a recommendation to the City Council for appointment of a Director on the Kansas Municipal Gas Agency's Board of Directors.

Background/Description of Item:

As a member city of the Kansas Municipal Gas Agency, Gardner is required to appoint a Member (Director) and Alternate Member (Alternate Director) to serve on the agency's Board of Directors. The City's Directors must be appointed by the City Council.

Gardner's current representatives on the KMGA Board of Directors are:

- Director: Gonzalo Garcia, Utilities Department Director, term expires on 08/31/2024
- Alternate Director: Jeff LeMire, Utility Manager, term expires 8/31/2025

Staff Recommendation:

Recommend the appointment of Evan Rose, Generation Substation Manager, as Director for a term expiring on August 31, 2026 with voting rights, to represent the City of Gardner on the Kansas Municipal Gas Agency Board of Directors.

Attachment Included:

- KMGA Bylaws Excerpt

EXCERPT OF AMENDED AND RESTATED BYLAWS OF KANSAS MUNICIPAL GAS AGENCY
ARTICLE V
BOARD OF DIRECTORS

Section 5.1. Selection of Directors. The property and business of the Agency shall be managed by the Board of Directors. The Board of Directors shall consist of one (1) Director for each Member, provided that there shall be not less than three (3) Directors. The Directors shall be selected by the governing bodies of the Members. In the event that the number of Members is less than three (3), each Member shall be represented by the number of Directors that constitutes a Board of Directors of not less than three (3) Directors, provided that each Member shall select the same number of Directors. No Director may represent more than one Member. Each Member may designate an Alternate for any Director selected by certifying same in writing to the Agency prior to the participation of such Alternate at any meeting of the Board.

The term of each Director shall be for a period of two (2) years except that the initial term of a number equal to one half of the Directors shall be selected to a term of one (1) year. The Directors selected to the initial one (1) year term shall be those Directors representing the Members selected at the first Board meeting in a random drawing from a complete list of Members. Any Director selected by a Member may be removed at any time by the Member selecting the Director. Written evidence of selection or removal shall be forwarded by the Clerk or other authorized official of the Member to the principal office of the Agency in writing prior to any meeting of the Agency or the Board of Directors. Each Director shall continue in office until a successor is selected in accordance with this Article.

Section 5.2. Voting Powers. Each Member shall be entitled to one vote which shall be equal to the vote of every other Member. Such vote shall be cast on behalf of the Member by its Director or, if such Director is not present, by its duly authorized Alternate. All actions of the Board of shall be made upon affirmative vote of a majority of the Directors voting on such action, unless otherwise provided in the Agreement or these Bylaws.

Section 5.3. Compensation. Except as may be specifically authorized by the Board of Directors, no Director shall receive payment for any time spent in attending meetings of the Board of Directors or otherwise conducting business of the Agency. The Board of Directors, the Executive Committee, or the General Manager may authorize payment of expenses for travel in connection with the business of the Agency.

Section 5.4. Vacancies. In the event of a vacancy on the Board of Directors the appropriate Member shall select an individual to fill such vacancy for the remainder of the term in accordance with the same procedure used to select the original Director. Written evidence of selection shall be provided to the Agency before voting privileges will take effect.

Section 5.5. Removal or Resignation. A Director may be removed only by the governing body of the Member selecting such Director. Any Director may resign by providing notice to the governing body of the Member the Director represents. The governing body shall certify to the Agency such removal or resignation of a Director.

Section 5.6. Successor Director. Upon removal or resignation of a Director, a successor Director will be selected by the governing body in the same manner as the original Director was selected, and the successor Director will be certified by the governing body to the Agency in the same manner as the original Director was certified. The successor Director shall serve for the remainder of the unexpired term of the original Director, subject to the rights of the governing body and such successor Director under ***Section 5.5*** of these Bylaws.

Section 5.7. Alternates. In the event a Director is unable to attend a meeting, the corresponding Alternate may substitute at the meeting of the Board of Directors for such Director. The Member shall provide the Agency with written notification of the selection of its Alternate. This Alternate shall be entitled to participate in any discussion of matters before the Board of Directors, and shall be entitled to vote for the Director represented unless such Alternate is specifically prohibited from voting by action taken by the Member.

UTILITY ADVISORY COMMISSION STAFF REPORT NEW BUSINESS ITEM NO. 1
MEETING DATE: JULY 11, 2024
STAFF CONTACT: GONZ GARCIA, UTILITIES DIRECTOR

AGENDA ITEM: Consider a recommendation to the City Council to purchase transformers for Substation 1 and Substation 4.

Background:

Staff is currently working on two projects:

1) Substation 1, Transformer 2 Upgrade, CIP Project EL4004
2) New Substation 4, CIP Project EL4005

Due to the 32 – 36 months lead time for electrical equipment, our consultant Olsson and Staff began the procurement process for both projects in early 2024.

IFB Process:

City staff issued three (3) Invitations to Bid for CIP Project EL4004 (2) and EL4005 (1). For CIP Project EL4004, two (2) transformer sizes were requested: 30 MVA and 45 MVA. The invitation was published in The Gardner News and on the City's website, and Drexel plan room. A total of three (3) companies submitted a bid shown below:

Company	Transformer 30 MVA	Transformer 45 MVA	Lead Time
WEG	$2,637,800.13	$2,970,275.70	130-140 weeks
Howard Ind	$2,712,430.10	$3,013,505.37	72-76 weeks
KOC Electric	$2,185,121.00	$2,577,336.00	56 weeks

The bids were reviewed by Olsson and recommended KOC for the following reasons:

1. Their cost is lower than the next company by $400k-500k.
2. Their lead time is the shortest at only 56 weeks.
3. They were the only vendor to provide pricing related to sealed tank (non-conservator) and FR3 oil.

Staff Recommendation:

Approve a recommendation to the City Council to accept the proposal from KOC Electric.

Attachments:

- Olsson Bid Tabulation

City of Gardner XFMR Bid Evaluation - EL4004 30 MVA

	Andrew Cass.	Angela Liv.	Joseph Yoon
	WEG	**Howard Ind.**	**KOC Elec.**
Base Price	$2,299,500.00	$2,451,612.90	$1,708,000.00
Delivery	$40,000.00	included	included
Offloading and Placement	$20,000.00	included	included
Field Service	$50,000.00	included	included
Inert Gas Preservation	not included	not included	$20,000.00
FR3 instead of Mineral	not included	not included	$268,000.00
KS Sales Tax	$228,300.13	$260,817.20	$189,121.00
Total:	$2,637,800.13	$2,712,430.10	$2,185,121.00
Adders			
1. Adder to include all associated in-out transportation costs for factory repair for the initial five (5) year warranty.	$95,000.00	N/A	$10,000 - $20,000
2. Cost to extend warranty for second five (5) year period including associated in-out transportation costs for factory repair.	Not offered	N/A	$300,000
3. Cost to extend warranty for second five (5) year period excluding associated in-out transportation costs for factory repair.	Not offered	N/A	$270,000
4. Cost of potential two-stage move onto temporary pad before final pad position.	Not offered	$43,010.76	$5,000
5. Cost of training for CoG maintenance personnel (2 days).	$14,000.00	$12,903.23	$2,000
6. Cost per week of storage at manufacturer facility.	Not offered	Storage policy	$1,500
7. Cost per day of field technician.	$2,500.00	$1,290.33	$1,000
Losses			
1. No load losses at rated voltage and frequency 20°C	14.19	17.8	26
(Evaluated at $4.94/kW)	$70.10	$87.93	$128.44
2. No load losses at 110% of rated voltage and at rated frequency at 20°C	22.0 kW	30.77 kW	38 kW
3. Load losses (ONAN rating, copper losses only at 85°C average winding temperature)			
i. At 25% rated load	4.33 kW	5.45 kW	2.6 kW
ii. At 50% rated load	17.4 kW	18.30 kW	10.3 kW
iii. At 75% rated load	39.0 kW	38.30 kW	23.1 kW
iv. At 100% rated load	69.3	65.65	41
(iv evaluated at $4.94/kW)	$342.34	$324.31	$202.54
4. Total losses (ONAF rating, copper losses only at 85°C average winding temperature)			
i. At 25% rated load	18.55 kW	23.25 kW	28.6 kW
ii. At 50% rated load	31.6 kW	36.1 kW	36.3 kW
iii. At 75% rated load	53.2 kW	56.1 kW	49.1 kW
iv. At 100% rated load	83.5 kW	83.45 kW	67 kW
5. Auxiliary losses			
i. With no cooling fans	1.0 kW	0	1.5 kW
ii. With Stage 1 cooling	2.0 kW	1.0 kW	2.3 kW
iii. With Stage 1 and 2 cooling	4	2	3.1
(iii Evaluated at $4.94/kW)	$19.76	$9.88	$15.31
Total including losses:	$2,638,232	$2,712,852	$2,185,467
Loss Measurement Accuracy			

1. No load losses - error less than	3.00%	1.00%	10%
2. Load losses - error less than	3.00%	1.00%	10%
Lead Times			
Delivery after PO issuance	130-140 wks	72-76 weeks	56 weeks
Prelim drawings submitted after PO issuance	14-16 wks	mutually agreed upon	10 weeks
Final drawings submitted after PO issuance	With Transformer	76 weeks	16 weeks
Manufacture and assembly after final drawing approval	120 wks	included in lead time	32 weeks
Weeks before shipment that test reports submitted to CoG	1 wk	76 weeks	50 weeks
Complete field assembly and testing after site arrival	7 days	7 days	7 days
Spare Parts (Unit Price)			
161kV bushings		$172.05	$16,750.00
12.47kV bushings	$3000 (full set)	$53.77	$11,260.00
LTC door gasket		Exception	$300.00
LTC contacts	Not offered	Exception	$37,720.00
Radiator gasket	included in $3000 above	$30.93	$100.00
Manhole gasket set	included in $3000 above	$188.18	$300.00
Radiator	$5,100.00	$6,967.75	$78.00
161kV arrestors	$6,600.00	$5,136.56	$8,630.00
12.47kV arrestor	$1,200.00	$778.50	$3,168.00
Vacuum interrupter	Not offered	Exception	$43,200.00
Transformer Weights			
1. Weight of core and coil	44,765	74,768	62,100
2. Weight of tank and fittings	38,417	50,015	49,500
3. Weight of copper in windings	12,750	13,310	13,400
4. Weight of oil	40,127	76,510	48,600
5. Gallons of oil in transformer	5,267	10,201	6,472
6. Gallons of oil in LTC	236	268	270
7. Weight of total assembled unit	123,308	201,293	160,000
8. Weight of heaviest part as shipping	70,506	74,768	99,400
Transformer Dimensions			
1. Height (overall) (in)	233	260	230
2. Depth (front to back) (in)	192	186	198
3. Width (side to side) (in)	219	239	330
4. Minimum un-tanking height (FND to crane hook) (in)	258	316	295
Cooling			
1. Number of fans	10	4	4
2. Number of radiator banks	6	1	6
Shipping Data			
List parts removed for shipment	HV/LV bushings & arresters, radiators & fans, oil	Bushing, bushing terminals, arresters, arrester brackets, conservator tank, conservator mounting assembly, bucholz relay, radiator & fans	Radiator, fan, conservator, HV&LV&LVN bushings, HV&LV LA, insulation oil and other miscellaneous items

Painting

Describe method of painting and type of paint used:	Refer to attached paint procedure. HI paint spec attached. Finish paint color for exterior surfaces will be ANSI 70 (Grey). Finish Paint color for the interior surfaces will be white; Hot dip galvanized surfaces unpainted; detail paint spec to be submitted later.		

Impedance

Calculated impedances at 18 MVA, 65°C:			
High to Low Voltage			
		10.50% per IEEE Std	
Positive Sequence	9.50%	57.12	Approx 9.5% (30MVA)
Zero Sequence	8.50%	10.40%	Approx 10% (30MVA)

Sound Levels

Calculated sound values at rated voltage for 18/24/30 MVA load ratings at the stages of 65°C rise cooling	73/75/76 db	74/76/77 db	73/75/76 db

Regulation

Guaranteed regulation in percent for rated voltage, MVA (18) and frequency at 85°C average winding temperature, high to low voltage.			
1. Unity power factor	0.840%	0.915%	0.50%
2. 90 percent power factor	4.830%	5.333%	3.00%
3. 80 percent power factor	6.270%	6.922%	3.90%
Guaranteed regulation in percent for rated voltage, MVA (30) and frequency at 85°C average winding temperature, high to low voltage.			
1. Unity power factor	1.890%	1.529%	1.00%
2. 90 percent power factor	8.450%	5.844%	5.00%
3. 80 percent power factor	10.760%	7.361%	6.50%

Excitation Current

Guaranteed excitation current in percent, at HV terminals.			
1. 95% rated voltage	0.265%	0.18%	0.28%
2. 100% rated voltage	0.271%	0.25%	0.35%
3. 105% rated voltage	0.483%	0.78%	0.55%
4. 110% rated voltage	1.080%	1.15%	1.44%

Impedance

Guaranteed impedance in percent at 85°C average winding temperature on the ONAN rated of 18MVA.			
1. High to low voltage	9.50%	10.50%	9.50%
2. Guaranteed tolerance to bid impedance to actual impedance of			
i. High to low voltage	7.50%	7.50%	7.50%

Forced Cooling

Maximum continuous rating in MVA not exceeding 65°C rise, 30MVA, copper temperature.			
1. Loss of 1/3 of fans	after order	30	26
2. Loss of 2/3 of fans	after order	29	20
3. Auxiliary power requirement at maximum (65°C, continuous)	4.0 kW	2.0 kW	0.4 kW
4. Rated voltage of fan motors	230 V	208-230 V	240 V
5. Fan motor phasing (single, three)	single	single	single

Efficiency

Guaranteed efficiency in percent based on full load self-cooled rating.			
1. 1/4 load	99.54%	99.52%	99.36%

2. 1/2 load	99.61%	99.62%	99.59%
3. 3/4 load	99.65%	99.60%	99.63%
4. Full load	99.59%	99.54%	99.62%

Temperature

Guaranteed temperature rise at 18MVA			
1. High voltage	65°C	52°C	65°C
i. Winding	80°C	64.2°C	80°C
ii. Hot spot			
2. Low voltage	65°C	53°C	65°C
i. Winding	80°C	65°C	80°C
ii. Hot spot			

Partial Discharge Level

Guaranteed RIV level		N/A per IEEE std	<100 µV
Guaranteed partial discharge level	250 pC	250 pC	<500 pC

Additional Information

1. What is the recommended maintenance/inspection intervals required during the first 500,000 LTC operations? Give the intervals and describe the required action at each.

Inspection at 500,000.
Check vacuum interrupters, contact erosion indicator, by-pass switch. Must replace the braking contactor in the motor drive unit.
Operational Check - Annually; Electrical Testing (Ductor Test and Insulation Resistance Test) and Oil Analysis - Every 2-3 years
Dynamic Resistance Measurement (DRM) and Full Function Test - Every 5 years; Major Overhaul - Every 10-15 years;
Maintenance/Inspection manual will be provided.

2. Will the LTC euipment, if in operation at the time of through fault on the LV side, successfully complete the tap change?	Yes	Yes	Yes
3. If control power is lost during a tap change, will the LTC equipment complete the change using stored mechanical energy? If "No", what are the ramifications?	Yes	Yes	Yes
4. LTC Equipment:			
i. Type of interrupter:	Reactance/Vacuum	Reinhausen	Vacuum
ii. Regulating location and type:	RV Winding at Neutral of LV	LV Winding & Reduced capacity OLTC	LV side / OLTC
iii. BIL and ampacity ratings:	125kV Bil / 1500 A	110kV Bil / 1500 A	125kV Bil / 2000 A
5. Would the oil level of the main tank have to be lowered to the point where the core an coil are exposed for maintenance of the LTC tap board barriers or gaskets?	No	No	Yes
6. Would the oil level of the main tank have to be lowered to the point where the core and coil is exposed for removal or installation of any high or low voltage or neutral bushing?	Yes	No	Yes
If "Yes", which ones?	LV		

7. Describe briefly the method used to dry the transformer to ensure dryness as required by this specification.

Vapor Phase
Use oven to dry winding coils and use vaperphase to dry core and coils.
After the core and coil assembly of transformers is completed, it is dried in the vapor phase drying plants under high vacuum condition for the purpose of eliminating moisture content. After the primary vacuum drying, core and coil assembly is pulled out of the vacuum drying oven to retighten the loosed core and coil assembly caused by removing the moisture from the insulation

	material of the core and coil assembly. On the completion of the vacuum drying the core and windings are tanked and the transformer is filled with insulating oil under high vacuum.		
8. Gasket Material:			
i. What type of material is used?	Nitril	Nitrile gaskets	NBR
ii. Are bushing gaskets recessed?	Yes	Yes	Yes
iii. Are the hand hole gaskets recessed?	Yes	Yes	Yes
iv. Are LTC covers recessed?	Yes	No	No
9. Gas Accumulator Relays:			
i. Type:	N/A	Gas & Oil Bucholz Relay	038-003-01
ii. Manufacturer:		EMG	Qualitrol
iii. Catalog Number:		BF 80/10	Qualitrol 038
iv. Location:		Conservator	Top of the Tank
10. Are fan motors designed so that an overload protection device is not required for locked rotor condition?	Yes	Yes	Yes
If "No" what type of overload protection device will be provided?			
11. What is the limiting factor for overload capability of the transformer?	Windings only based on IEEE		
Bushings			
rating (Amps)		2700	800A (HV), 2000A (LV, LVN)
percent over 30MVA rating		29.60%	1200%, 129%
LTC			
rating (Amps)		2500	2000A (OLTC), 1000A (DETC)
percent over 30MVA rating		20.00%	129%, 1500%
Other			
12. In addition to your obligations under this specification, in case of equipment failure, what is your policy relative to replacing failed equipment?	Attached warranty	Attached warranty	Within the first five year warranty period, the manufacturer will send out an engineer or a technician and determine whether the equipment needs replacement or can be repaired. There will be no charge for service and replacement. After the warranty period, the manufacturer will continue to provide the same service at the owner's expense.
13. Has a transformer similar in design to that proposed under this specification been tested for the ability to withstand a short circuit per this specification?	Attached references	No - see attached SC test	Attached support document
14. Tank structural capability:			
i. Number of tank ruptures in the last 10 years?	0	0	0
ii. Number of gallons of oil lost for each incident?	N/A	N/A	N/A
15. State the type of oil preservation system	Positive Pressure N2	Conservator	Conservator

18. Availability of Parts and Service:

i. Replacement parts for the transformer shall be available from manufacturer's factory located at

WEG does not stock spare parts.
Ellisville, MS
852-162 Gacheon-ri Samnam-eup Ulju-gun Ulsan, Republic of Korea

ii. Contractor's service headquarters for the state of Kansas area is located at

6349 Avantha Dr, Washington, MO 63090
Ellisville, MS
14511 Old Katy Rd., Suite 275 Houston, TX 77079 USA

iii. The transformer will be built at the Bidder's factory located at

6349 Avantha Dr, Washington, MO 63090
Ellisville, MS
852-162 Gacheon-ri Samnam-eup Ulju-gun Ulsan, Republic of Korea

iv. Warranty work would be performed at the Bidder' factory located at

6349 Avantha Dr, Washington, MO 63090
Ellisville, MS
852-162 Gacheon-ri Samnam-eup Ulju-gun Ulsan, Republic of Korea

City of Gardner XFMR Bid Evaluation - EL4004A 45 MVA

	Andrew Cass. **WEG**	Angela Liv. **Howard Ind.**	Joseph Yoon **KOC Elec.**
Base Price	$2,603,200.00	$2,752,688.17	$1,980,000
Delivery	$40,000.00	included	included
Offloading and Placement	$20,000.00	included	included
Field Service	$50,000.00	included	included
Inert Gas Preservation	not included	not included	$12,000.00
FR3 instead of Mineral	not included	not included	$344,000.00
KS Sales Tax	$257,075.70	$260,817.20	$221,336.00
Total:	$2,970,275.70	$3,013,505.37	$2,557,336.00
Adders			
1. Adder to include all associated in-out transportation costs for factory repair for the initial five (5) year warranty.	$105,000.00	N/A	$10,000 - $20,000
2. Cost to extend warranty for second five (5) year period including associated in-out transportation costs for factory repair.	Not offered	N/A	$320,000
3. Cost to extend warranty for second five (5) year period excluding associated in-out transportation costs for factory repair.	Not offered	N/A	$290,000
4. Cost of potential two-stage move onto temporary pad before final pad position.	Not offered	$43,010.76	$5,000
5. Cost of training for CoG maintenance personnel (2 days).	$14,000.00	$12,903.23	$2,000
6. Cost per week of storage at manufacturer facility.	Not offered	Storage policy	$1,500
7. Cost per day of field technician.	$2,500.00	$1,290.33	$1,000
Losses			
1. No load losses at rated voltage and frequency 20°C	19.88	19.95	31
(Evaluated at $4.94/kW)	$98.21	$98.55	$153.14
2. No load losses at 110% of rated voltage and at rated frequency at 20°C	30.0 kW	34.81 kW	46 kW
3. Load losses (ONAN rating, copper losses only at 85°C average winding temperature)			
i. At 25% rated load	6.1 kW	7.50 kW	3.8 kW
ii. At 50% rated load	24.1 kW	25.95 kW	15.1 kW
iii. At 75% rated load	54.2 kW	55.25 kW	33.9 kW
iv. At 100% rated load	96.2	94.4	60.2
(iv evaluated at $4.94/kW)	$475.23	$466.34	$297.39
4. Total losses (ONAF rating, copper losses only at 85°C average winding temperature)			
i. At 25% rated load	25.98 kW	27.45 kW	34.8 kW
ii. At 50% rated load	43.98 kW	45.90 kW	46.1 kW
iii. At 75% rated load	74.08 kW	75.20 kW	64.9 kW
iv. At 100% rated load	116.08 kW	114.35 kW	91.2 kW
5. Auxiliary losses			
i. With no cooling fans	1.0 kW	0 kW	1.5 kW
ii. With Stage 1 cooling	2.0 kW	1.625 kW	2.7 kW
iii. With Stage 1 and 2 cooling	4	3.25	3.9
(iii Evaluated at $4.94/kW)	$19.76	$16.06	$19.27
Total including losses:	$2,970,868.90	$3,014,086.31	$2,557,805.79

Loss Measurement Accuracy			
1. No load losses - error less than	3.00%	+/- 1.0%	10%
2. Load losses - error less than	3.00%	+/- 1.0%	10%
Lead Times			
Delivery after PO issuance	130-140 weeks	72-76 weeks	56 weeks
Prelim drawings submitted after PO issuance	14-16 wks	mutually agreed upon	10 weeks
Final drawings submitted after PO issuance	With Transformer	76 weeks	16 weeks
Manufacture and assembly after final drawing approval	120 wks	included in lead time	32 weeks
Weeks before shipment that test reports submitted to CoG	1 wk	76 weeks	50 weeks
Complete field assembly and testing after site arrival	7 days	7 days	7 days
Spare Parts (Unit Price)			
161kV bushings		$172.05	$16,750.00
12.47kV bushings	$3000 (full set)	$53.77	$11,260.00
LTC door gasket		Exception	$300.00
LTC contacts	Not offered	Exception	$37,720.00
Radiator gasket	included in $3000 above	$30.93	$100.00
Manhole gasket set	included in $3000 above	$188.18	$300.00
Radiator	$5,100.00	$6,967.75	$78.00
161kV arrestors	$6,600.00	$5,136.56	$8,630.00
12.47kV arrestor	$1,200.00	$778.50	$3,168.00
Vacuum interrupter	Not offered	Exception	$43,200.00
Transformer Weights			
1. Weight of core and coil	57,885	88,082	78,000
2. Weight of tank and fittings	45,147	54,432	59,700
3. Weight of copper in windings	15,234	18,385	19,900
4. Weight of oil	46,099	85,210	59,000
5. Gallons of oil in transformer	5,977	11,361	7,850
6. Gallons of oil in LTC	345	268	345
7. Weight of total assembled unit	149,130	227,724	197,000
8. Weight of heaviest part as shipping	85,528	88,082	122,000
Transformer Dimensions			
1. Height (overall) (in)	237	279	257.1
2. Depth (front to back) (in)	192	186	198
3. Width (side to side) (in)	295	235	330
4. Minimum un-tanking height (FND to crane hook) (in)	266	352	318
Cooling			
1. Number of fans	10	6	6
2. Number of radiator banks	6	1	8
Shipping Data			
List parts removed for shipment	HV/LV bushings & arresters, radiators & fans, oil	Bushing, bushing terminals, arresters, arrester brackets, conservator tank, conservator mounting assembly, bucholz relay, radiator & fans	

	Radiator, fan, conservator, HV&LV&LVN bushings, HV&LV LA, insulation oil and other miscellaneous items		
Painting			
Describe method of painting and type of paint used:	Refer to attached paint procedure. HI paint spec attached. Finish paint color for exterior surfaces will be ANSI 70 (Grey). Finish Paint color for the interior surfaces will be white; Hot dip galvanized surfaces unpainted; detail paint spec to be submitted later.		
Impedance			
Calculated impedances at 27 MVA, 65°C:			
High to Low Voltage			
Positive Sequence	9.50%	10.50%	Approx 9.6% (45MVA)
Zero Sequence	8.50%	10.40%	Approx 10% (45MVA)
Sound Levels			
Calculated sound values at rated voltage for 27/36/45 MVA load ratings at the stages of 65°C rise cooling	73.5/77/78 db	76/78/79 db	75/77/78 db
Regulation			
Guaranteed regulation in percent for rated voltage, MVA (27) and frequency at 85°C average winding temperature, high to low voltage.			
1. Unity power factor	0.810%	0.900%	0.50%
2. 90 percent power factor	4.810%	5.321%	3.00%
3. 80 percent power factor	6.250%	6.911%	4.00%
Guaranteed regulation in percent for rated voltage, MVA (45) and frequency at 85°C average winding temperature, high to low voltage.			
1. Unity power factor	1.850%	1.499%	1.00%
2. 90 percent power factor	8.410%	5.820%	5.00%
3. 80 percent power factor	6.250%	7.340%	6.50%
Excitation Current			
Guaranteed excitation current in percent, at HV terminals.			
1. 95% rated voltage	0.17%	0.14%	0.27%
2. 100% rated voltage	0.242%	0.20%	0.33%
3. 105% rated voltage	0.45%	0.58%	0.54%
4. 110% rated voltage	0.97%	0.85%	1.40%
Impedance			
Guaranteed impedance in percent at 85°C average winding temperature on the ONAN rated of 27MVA.			
1. High to low voltage	9.50%	10.50%	9.60%
2. Guaranteed tolerance to bid impedance to actual impedance of			
i. High to low voltage	7.50%	7.50%	7.50%
Forced Cooling			
Maximum continuous rating in MVA not exceeding 65°C rise, 45MVA, copper temperature.			
1. Loss of 1/3 of fans	after order	45	39
2. Loss of 2/3 of fans	after order	42	30
3. Auxiliary power requirement at maximum (65°C, continuous)	4.0 kW	2.5 kW	0.4 kW
4. Rated voltage of fan motors	230 V	208-230 V	240 V
5. Fan motor phasing (single, three)	single	single	single
Efficiency			
Guaranteed efficiency in percent based on full load self-cooled rating.			

1. 1/4 load	99.57%	99.62%	99.48%
2. 1/2 load	99.64%	99.68%	99.66%
3. 3/4 load	99.68%	99.64%	99.68%
4. Full load	99.62%	99.58%	99.66%

Temperature

Guaranteed temperature rise at 27MVA			
1. High voltage			
i. Winding	65°C	57.0°C	65°C
ii. Hot spot	80°C	70.4°C	80°C
2. Low voltage			
i. Winding	65°C	58.0°C	65°C
ii. Hot spot	80°C	72°C	80°C

Partial Discharge Level

Guaranteed RIV level		N/A per IEEE std	<100 µV
Guaranteed partial discharge level	250 pC	250 pC	<500 pC

Additional Information

1. What is the recommended maintenance/inspection intervals required during the first 500,000 LTC operations? Give the intervals and describe the required action at each.	Inspection at 500,000. Check vacuum interrupters, contact erosion indicator, by-pass switch. Must replace the braking contactor in the motor drive unit. Operational Check - Annually; Electrical Testing (Ductor Test and Insulation Resistance Test) and Oil Analysis - Every 2-3 years Dynamic Resistance Measurement (DRM) and Full Function Test - Every 5 years; Major Overhaul - Every 10-15 years; Maintenance/Inspection manual will be provided.		
2. Will the LTC euipment, if in operation at the time of through fault on the LV side, successfully complete the tap change?	Yes	Yes	Yes
3. If control power is lost during a tap change, will the LTC equipment complete the change using stored mechanical energy? If "No", what are the ramifications?	Yes	Yes	Yes
4. LTC Equipment:			
i. Type of interrupter:	Reactance/Vacuum	Reinhausen RMV-II	Vacuum
ii. Regulating location and type:	RV Winding at Neutral of LV	LV winding and reduced capacity OLTC	LV side / OLTC
iii. BIL and ampacity ratings:	350kV BiL & 2500A	110kV BiL & 2500A	400kV Bil / 2500 A
5. Would the oil level of the main tank have to be lowered to the point where the core an coil are exposed for maintenance of the LTC tap board barriers or gaskets?	No	No	Yes
6. Would the oil level of the main tank have to be lowered to the point where the core and coil is exposed for removal or installation of any high or low voltage or neutral bushing?	Yes	No	Yes
If "Yes", which ones?	LV		
7. Describe briefly the method used to dry the transformer to ensure dryness as required by this specification.	Vapor phase Use oven to dry winding coils and use vaperphase to dry core and coils. Likely the same as on the 30MVA bids, but info not filled out on 45MVA bid.		

8. Gasket Material:			
i. What type of material is used?	Nitril	Nitrile Gasket	NBR
ii. Are bushing gaskets recessed?	Yes	Yes	Yes
iii. Are the hand hole gaskets recessed?	Yes	Yes	Yes
iv. Are LTC covers recessed?	Yes	No	No
9. Gas Accumulator Relays:			
i. Type:	N/A	Gas & Oil Bucholz Relay	038-003-01
ii. Manufacturer:		EMG	Qualitrol
iii. Catalog Number:		BF 80/10	Qualitrol 038
iv. Location:		Conservator	Top of the Tank
10. Are fan motors designed so that an overload protection device is not required for locked rotor condition?	Yes	Yes	Yes
If "No" what type of overload protection device will be provided?			
11. What is the limiting factor for overload capability of the transformer?	Windings only based on IEEE		
Bushings			
			800A (HV), 3000A (LV,
rating (Amps)		2700	LVN)
percent over 45MVA rating		29.6	815%, 129%
LTC			
			2500A (OLTC), 1000A
rating (Amps)		2500	(DETC)
percent over 45MVA rating		20	108%, 1019%
Other			
12. In addition to your obligations under this specification, in case of equipment failure, what is your policy relative to replacing failed equipment?			
	Attached warranty Refer to attached HI warranty Within the first five year warranty period, the manufacturer will send out an engineer or a technician and determine whether the equipment needs replacement or can be repaired. There will be no charge for service and replacement. After the warranty period, the manufacturer will continue to provide the same service at the owner's expense.		
13. Has a transformer similar in design to that proposed under this specification been tested for the ability to withstand a short circuit per this specification?			
	No No - see attached short circuit test. Yes - attached support document		
14. Tank structural capability:			
i. Number of tank ruptures in the last 10 years?	0	0	0
ii. Number of gallons of oil lost for each incident?	N/A	N/A	N/A
15. State the type of oil preservation system	Positive Pressure N2	Conservator	Conservator
18. Availability of Parts and Service:			

i. Replacement parts for the transformer shall be available from manufacturer's factory located at	WEG does not stock spare parts. Ellisville, MS 852-162 Gacheon-ri Samnam-eup Ulju-gun Ulsan, Republic of Korea
ii. Contractor's service headquarters for the state of Kansas area is located at	6350 Weg Dr, Washington, MO 63090 Ellisville, MS 14511 Old Katy Rd., Suite 275 Houston, TX 77079 USA
iii. The transformer will be built at the Bidder's factory located at	6349 Avantha Dr, Washington, MO 63090 Ellisville, MS 852-162 Gacheon-ri Samnam-eup Ulju-gun Ulsan, Republic of Korea
iv. Warranty work would be performed at the Bidder' factory located at	6349 Avantha Dr, Washington, MO 63090 Ellisville, MS 852-162 Gacheon-ri Samnam-eup Ulju-gun Ulsan, Republic of Korea

City of Gardner XFMR Bid Evaluation - EL4005 30 MVA

	Andrew Cass.	Angela Liv.	Joseph Yoon
	WEG	**Howard Ind.**	**KOC Elec.**
Base Price	$2,299,500.00	$2,451,612.90	$1,708,000.00
Delivery	$40,000.00	included	included
Offloading and Placement	$20,000.00	included	included
Field Service	$50,000.00	included	included
Inert Gas Preservation	not included	not included	$20,000.00
FR3 instead of Mineral	not included	not included	$268,000.00
KS Sales Tax	$228,300.13	$260,817.20	$161,833.00
Total:	$2,637,800.13	$2,712,430.10	$2,157,833.00
Adders			
1. Adder to include all associated in-out transportation costs for factory repair for the initial five (5) year warranty.	$95,000.00	N/A	$10,000 - $20,000
2. Cost to extend warranty for second five (5) year period including associated in-out transportation costs for factory repair.	Not offered	N/A	$300,000
3. Cost to extend warranty for second five (5) year period excluding associated in-out transportation costs for factory repair.	Not offered	N/A	$270,000
4. Cost of potential two-stage move onto temporary pad before final pad position.	Not offered	$43,010.76	$5,000
5. Cost of training for CoG maintenance personnel (2 days).	$14,000.00	$12,903.23	$2,000
6. Cost per week of storage at manufacturer facility.	Not offered	Storage policy	$1,500
7. Cost per day of field technician.	$2,500.00	$1,290.33	$1,000
Losses			
1. No load losses at rated voltage and frequency 20°C	14.19	17.8	26
(Evaluated at $4.94/kW)	$70.10	$87.93	$128.44
2. No load losses at 110% of rated voltage and at rated frequency at 20°C	22.0 kW	30.77 kW	38 kW
3. Load losses (ONAN rating, copper losses only at 85°C average winding temperature)			
i. At 25% rated load	4.33 kW	5.45 kW	2.6 kW
ii. At 50% rated load	17.4 kW	18.30 kW	10.3 kW
iii. At 75% rated load	39.0 kW	38.30 kW	23.1 kW
iv. At 100% rated load	69.3	65.65	41
(iv evaluated at $4.94/kW)	$342.34	$324.31	$202.54
4. Total losses (ONAF rating, copper losses only at 85°C average winding temperature)			
i. At 25% rated load	18.55 kW	23.25 kW	28.6 kW
ii. At 50% rated load	31.6 kW	36.1 kW	36.3 kW
iii. At 75% rated load	53.2 kW	56.1 kW	49.1 kW
iv. At 100% rated load	83.5 kW	83.45 kW	67 kW
5. Auxiliary losses			
i. With no cooling fans	1.0 kW	0	1.5 kW
ii. With Stage 1 cooling	2.0 kW	1.0 kW	2.3 kW
iii. With Stage 1 and 2 cooling	4	2	3.1
(iii Evaluated at $4.94/kW)	$19.76	$9.88	$15.31
Total including losses:	$2,638,232	$2,712,852	$2,158,179
Loss Measurement Accuracy			

1. No load losses - error less than	3.00%	1.00%	10%
2. Load losses - error less than	3.00%	1.00%	10%
Lead Times			
Delivery after PO issuance	130-140 wks	72-76 weeks	56 weeks
Prelim drawings submitted after PO issuance	14-16 wks	mutually agreed upon	10 weeks
Final drawings submitted after PO issuance	With Transformer	76 weeks	16 weeks
Manufacture and assembly after final drawing approval	120 wks	included in lead time	32 weeks
Weeks before shipment that test reports submitted to CoG	1 wk	76 weeks	50 weeks
Complete field assembly and testing after site arrival	7 days	7 days	7 days
Spare Parts (Unit Price)			
161kV bushings		$172.05	$16,750.00
12.47kV bushings	$3000 (full set)	$53.77	$11,260.00
LTC door gasket		Exception	$300.00
LTC contacts	Not offered	Exception	$37,720.00
Radiator gasket	included in $3000 above	$30.93	$100.00
Manhole gasket set	included in $3000 above	$188.18	$300.00
Radiator	$5,100.00	$6,967.75	$78.00
161kV arrestors	$6,600.00	$5,136.56	$8,630.00
12.47kV arrestor	$1,200.00	$778.50	$3,168.00
Vacuum interrupter	Not offered	Exception	$43,200.00
Transformer Weights			
1. Weight of core and coil	44,765	74,768	62,100
2. Weight of tank and fittings	38,417	50,015	49,500
3. Weight of copper in windings	12,750	13,310	13,400
4. Weight of oil	40,127	76,510	48,600
5. Gallons of oil in transformer	5,267	10,201	6,472
6. Gallons of oil in LTC	236	268	270
7. Weight of total assembled unit	123,308	201,293	160,000
8. Weight of heaviest part as shipping	70,506	74,768	99,400
Transformer Dimensions			
1. Height (overall) (in)	233	260	230
2. Depth (front to back) (in)	192	186	198
3. Width (side to side) (in)	219	239	330
4. Minimum un-tanking height (FND to crane hook) (in)	258	316	295
Cooling			
1. Number of fans	10	4	4
2. Number of radiator banks	6	1	6
Shipping Data			
List parts removed for shipment	HV/LV bushings & arresters, radiators & fans, oil	Bushing, bushing terminals, arresters, arrester brackets, conservator tank, conservator mounting assembly, bucholz relay, radiator & fans	Radiator, fan, conservator, HV&LV&LVN bushings, HV&LV LA, insulation oil and other miscellaneous items

Painting

Describe method of painting and type of paint used:	Refer to attached paint procedure. HI paint spec attached. Finish paint color for exterior surfaces will be ANSI 70 (Grey). Finish Paint color for the interior surfaces will be white; Hot dip galvanized surfaces unpainted; detail paint spec to be submitted later.		

Impedance

Calculated impedances at 18 MVA, 65°C:			
High to Low Voltage			
		10.50% per IEEE Std	
Positive Sequence	9.50%	57.12	Approx 9.5% (30MVA)
Zero Sequence	8.50%	10.40%	Approx 10% (30MVA)

Sound Levels

Calculated sound values at rated voltage for 18/24/30 MVA load ratings at the stages of 65°C rise cooling	73/75/76 db	74/76/77 db	73/75/76 db

Regulation

Guaranteed regulation in percent for rated voltage, MVA (18) and frequency at 85°C average winding temperature, high to low voltage.			
1. Unity power factor	0.840%	0.915%	0.50%
2. 90 percent power factor	4.830%	5.333%	3.00%
3. 80 percent power factor	6.270%	6.922%	3.90%
Guaranteed regulation in percent for rated voltage, MVA (30) and frequency at 85°C average winding temperature, high to low voltage.			
1. Unity power factor	1.890%	1.529%	1.00%
2. 90 percent power factor	8.450%	5.844%	5.00%
3. 80 percent power factor	10.760%	7.361%	6.50%

Excitation Current

Guaranteed excitation current in percent, at HV terminals.			
1. 95% rated voltage	0.265%	0.18%	0.28%
2. 100% rated voltage	0.271%	0.25%	0.35%
3. 105% rated voltage	0.483%	0.78%	0.55%
4. 110% rated voltage	1.080%	1.15%	1.44%

Impedance

Guaranteed impedance in percent at 85°C average winding temperature on the ONAN rated of 18MVA.			
1. High to low voltage	9.50%	10.50%	9.50%
2. Guaranteed tolerance to bid impedance to actual impedance of			
i. High to low voltage	7.50%	7.50%	7.50%

Forced Cooling

Maximum continuous rating in MVA not exceeding 65°C rise, 30MVA, copper temperature.			
1. Loss of 1/3 of fans	after order	30	26
2. Loss of 2/3 of fans	after order	29	20
3. Auxiliary power requirement at maximum (65°C, continuous)	4.0 kW	2.0 kW	0.4 kW
4. Rated voltage of fan motors	230 V	208-230 V	240 V
5. Fan motor phasing (single, three)	single	single	single

Efficiency

Guaranteed efficiency in percent based on full load self-cooled rating.			
1. 1/4 load	99.54%	99.52%	99.36%

2. 1/2 load	99.61%	99.62%	99.59%
3. 3/4 load	99.65%	99.60%	99.63%
4. Full load	99.59%	99.54%	99.62%

Temperature

Guaranteed temperature rise at 18MVA			
1. High voltage	65°C	52°C	65°C
i. Winding	80°C	64.2°C	80°C
ii. Hot spot			
2. Low voltage	65°C	53°C	65°C
i. Winding	80°C	65°C	80°C
ii. Hot spot			

Partial Discharge Level

Guaranteed RIV level		N/A per IEEE std	<100 µV
Guaranteed partial discharge level	250 pC	250 pC	<500 pC

Additional Information

1. What is the recommended maintenance/inspection intervals required during the first 500,000 LTC operations? Give the intervals and describe the required action at each.

Inspection at 500,000.
Check vacuum interrupters, contact erosion indicator, by-pass switch. Must replace the braking contactor in the motor drive unit.
Operational Check - Annually; Electrical Testing (Ductor Test and Insulation Resistance Test) and Oil Analysis - Every 2-3 years
Dynamic Resistance Measurement (DRM) and Full Function Test - Every 5 years; Major Overhaul - Every 10-15 years;
Maintenance/Inspection manual will be provided.

2. Will the LTC euipment, if in operation at the time of through fault on the LV side, successfully complete the tap change?	Yes	Yes	Yes
3. If control power is lost during a tap change, will the LTC equipment complete the change using stored mechanical energy? If "No", what are the ramifications?	Yes	Yes	Yes
4. LTC Equipment:			
i. Type of interrupter:	Reactance/Vacuum	Reinhausen	Vacuum
ii. Regulating location and type:	RV Winding at Neutral of LV	LV Winding & Reduced capacity OLTC	LV side / OLTC
iii. BIL and ampacity ratings:	125kV Bil / 1500 A	110kV Bil / 1500 A	125kV Bil / 2000 A
5. Would the oil level of the main tank have to be lowered to the point where the core an coil are exposed for maintenance of the LTC tap board barriers or gaskets?	No	No	Yes
6. Would the oil level of the main tank have to be lowered to the point where the core and coil is exposed for removal or installation of any high or low voltage or neutral bushing?	Yes	No	Yes
If "Yes", which ones?	LV		

7. Describe briefly the method used to dry the transformer to ensure dryness as required by this specification.

Vapor Phase
Use oven to dry winding coils and use vaperphase to dry core and coils.
After the core and coil assembly of transformers is completed, it is dried in the vapor phase drying plants under high vacuum condition for the purpose of eliminating moisture content. After the primary vacuum drying, core and coil assembly is pulled out of the vacuum drying oven to retighten the loosed core and coil assembly caused by removing the moisture from the insulation

	material of the core and coil assembly. On the completion of the vacuum drying the core and windings are tanked and the transformer is filled with insulating oil under high vacuum.		
8. Gasket Material:			
i. What type of material is used?	Nitril	Nitrile gaskets	NBR
ii. Are bushing gaskets recessed?	Yes	Yes	Yes
iii. Are the hand hole gaskets recessed?	Yes	Yes	Yes
iv. Are LTC covers recessed?	Yes	No	No
9. Gas Accumulator Relays:			
i. Type:	N/A	Gas & Oil Bucholz Relay	038-003-01
ii. Manufacturer:		EMG	Qualitrol
iii. Catalog Number:		BF 80/10	Qualitrol 038
iv. Location:		Conservator	Top of the Tank
10. Are fan motors designed so that an overload protection device is not required for locked rotor condition?	Yes	Yes	Yes
If "No" what type of overload protection device will be provided?			
11. What is the limiting factor for overload capability of the transformer?	Windings only based on IEEE		
Bushings			
rating (Amps)		2700	800A (HV), 2000A (LV, LVN)
percent over 30MVA rating		29.60%	1200%, 129%
LTC			
rating (Amps)		2500	2000A (OLTC), 1000A (DETC)
percent over 30MVA rating		20.00%	129%, 1500%
Other			
12. In addition to your obligations under this specification, in case of equipment failure, what is your policy relative to replacing failed equipment?	Attached warranty	Attached warranty	Within the first five year warranty period, the manufacturer will send out an engineer or a technician and determine whether the equipment needs replacement or can be repaired. There will be no charge for service and replacement. After the warranty period, the manufacturer will continue to provide the same service at the owner's expense.
13. Has a transformer similar in design to that proposed under this specification been tested for the ability to withstand a short circuit per this specification?	Attached references	No - see attached SC test	Attached support document
14. Tank structural capability:			
i. Number of tank ruptures in the last 10 years?	0	0	0
ii. Number of gallons of oil lost for each incident?	N/A	N/A	N/A
15. State the type of oil preservation system	Positive Pressure N2	Conservator	Conservator

18. Availability of Parts and Service:

i. Replacement parts for the transformer shall be available from manufacturer's factory located at

WEG does not stock spare parts.
Ellisville, MS
852-162 Gacheon-ri Samnam-eup Ulju-gun Ulsan, Republic of Korea

ii. Contractor's service headquarters for the state of Kansas area is located at

6349 Avantha Dr, Washington, MO 63090
Ellisville, MS
14511 Old Katy Rd., Suite 275 Houston, TX 77079 USA

iii. The transformer will be built at the Bidder's factory located at

6349 Avantha Dr, Washington, MO 63090
Ellisville, MS
852-162 Gacheon-ri Samnam-eup Ulju-gun Ulsan, Republic of Korea

iv. Warranty work would be performed at the Bidder' factory located at

6349 Avantha Dr, Washington, MO 63090
Ellisville, MS
852-162 Gacheon-ri Samnam-eup Ulju-gun Ulsan, Republic of Korea

UTILITY ADVISORY COMMISSION STAFF REPORT **DISCUSSION ITEM #1**
MEETING DATE: JULY 11, 2024
STAFF CONTACT: GONZ GARCIA, UTILITIES DIRECTOR

AGENDA ITEM: Electric Reliability Indexes- 2nd Quarter 2024

Background:

Staff will discuss the Electric Reliability Indexes for April-June 2024.

Attachment Included:

- American Public Power Association Electric Reliability Indexes 2nd Quarter 2024

APPA Reliability Indexes

	SAIDI (Minutes/Year)	CAIDI (Minutes/Year)	ASAI (% based on year)	MAIFI (Interruptions per year)	SAIFI (Interruptions per year)	Customers Affected	Interruptions Per Mile (150.8 Miles)
Target	< 90 minutes	< 100 minutes	≥ 99.98 %	<0.5	<0.7		
2021	107 minutes	230 minutes	99.98 %	0.0012	0.2889	8947	317.84
2022	41 minutes	97 minutes	99.99 %	0.0049	0.1658	9181	409.18
2023	21 minutes	39 minutes	99.99 %	6.391	0.5430	5004	30.51
January 2024	1 minute	91 minutes	99.99 %	0.0000	0.0110	104	0.68
February 2024	3 minutes	18 minutes	99.99 %	0.0113	0.0005	1461	9.28
March 2024	0 minutes	51 minutes	99.99 %	0.0011	0.0001	1	0.006
April 2024	0 minutes	75 minutes	99.99 %	0.0000	0.00105	10	0.066
May 2024	9 minutes	29 minutes	99.97 %	0.0000	0.3260	3105	20.59
June 2024	0 minutes	107 minutes	99.99 %	0.0000	0.00021	2	0.013
YTD	**13 minutes**	**27 minutes**	**99.99 %**	**0.0125**	**0.4930**	**4683**	**31.05**

Definitions

SAIDI *(**System Average Interruption Duration Index)** - indicates the total duration of interruption for the average customer during a predefined period of time.*

CAIDI (***Customer Average Interruption Duration Index)*** *- represents the average time required to restore service.*

ASAI (Average Service Availability Index) *- represents the fraction of time (in percentage) that a customer has received power during the defined reporting period*

MAIFI (***Momentary Average Interruption Frequency Index)*** *- indicates the average frequency of momentary interruptions*

SAIFI (System Average Interruption Frequency Index) *- indicates how often the average customer experiences a sustained interruption over a predefined period of time.*

UTILITY ADVISORY COMMISSION STAFF REPORT **DISCUSSION ITEM #2**
MEETING DATE: JULY 11, 2024
STAFF CONTACT: GONZ GARCIA, UTILITIES DIRECTOR

AGENDA ITEM: 2024 2nd Quarter Wastewater Collection Repairs Report

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Background:

Line maintenance staff completed 10 sanitary sewer line repairs affecting 8 customers:

- 1 due to grease
- 5 due to residents' issues
- 4 due to other issues

The average workday response time was 14 minutes and the average workday repair time was 1 hour and 2 minutes.

The average after hours response time was 18 minutes and the average after hours repair time was 15 hours and 42 minutes.

The overall average response time was 16 minutes. The overall average repair time was 8 hours and 22 minutes.

Attachment Included:

- 2024 2nd Quarter Wastewater Collection Repairs Report

Sewer Repair Summary

Report Dates Between 4/1/2024 and 6/30/2024

GR - Grease, RT - Roots, LS - Line Sag, DB - Debris, LF - Line Failure, O - Damage By Others, RI - Residents Issue, OT - Other

7/8/2024

7:25 AM

WO #	Location	Date Reported	Time Reported	Date of Arrival	Time of Arrival	Date Complete	Time Completed	# Customers Affected	Problem	Comments	Response Time	Repair Time	Manhours	Cause
20240405-014	701 E VALERIE LN	4/2/2024	2:45 pm	4/2/2024	3:05 pm	4/2/2024	3:50 pm	1	Residents Issue	Received call from Erin stating resident at 701 Valerie Ln said their basement drain was backing up when they would use water. Checked upstream	0:20	1:05	0.8	RI
20240410-022	440 W COLLEEN CT	4/10/2024	10:40 am	4/10/2024	10:45 am	4/10/2024	11:00 am	1	Sewer Investigation	Received call stating that resident at 440 W Colleen had water start coming from basement drain after seeing city trucks had started working in area.	0:05	0:20	0.5	OT
20240429-009	1199 E SANTA FE ST 359	4/28/2024	7:22 pm	4/28/2024	7:30 pm	4/28/2024	9:00 pm	0	Backup	Resident called in due to sewer coming out of manhole. After investigation found that it wasn't a blockage in the lines. Found out that	0:08	1:38	2.5	OT
20240429-025	1150 E SANTA FE ST	4/29/2024	9:00 am	4/29/2024	9:15 am	4/29/2024	11:45 am	1	Backup	Received call from Ted stating the drains were backing up in the energy center and wanted to have us checkout the sewer for possible	0:15	2:45	7.0	OT
20240506-009	312 S CENTER ST	5/3/2024	3:30 pm	5/3/2024	3:45 pm	5/3/2024	4:30 pm	1	Backup	Resident call in sewer back up in her house. went out and found manholes full. vac out manhole by the driveway. sewer line is not the city	0:15	1:00	2.0	RI
20240516-019	539 S OAK ST	5/16/2024	7:00 am	5/16/2024	7:15 am	5/16/2024	7:30 am	1	Backup	Customer reported their sewer backed up and there were leaves in the backup making them believe the problem was in the main. We Checked	0:15	0:30	0.8	RI
20240610-011	1199 E SANTA FE ST #1	6/8/2024	8:30 am	6/8/2024	9:00 am	6/8/2024	10:30 am	1	Backup	Resident at lot #1 called in possible back up went out open upstream and downstream manhole doth had sewer water in them. found grease, shop	0:30	2:00	4.0	GR
20240625-015	817 E VALERIE LN	6/24/2024	2:39 pm	6/24/2024	3:00 pm	6/24/2024	4:00 pm	1	Backup	customer stated she has sewer smell and believes it is on our side. pulled manholes up and down stream and there were no issues. anthony	0:21	1:21	1.0	RI
20240625-016	312 S CENTER ST	6/25/2024	12:00 pm	6/25/2024	12:15 pm	6/25/2024	12:30 pm	1	Sewer Investigation	Resident called in possible sewer back up went out to check upstream and downstream manholes both had good flow.	0:15	0:30	1.0	RI

Sewer Repair Summary

Report Dates Between 4/1/2024 and 6/30/2024

GR - Grease, RT - Roots, LS - Line Sag, DB - Debris, LF - Line Failure, O - Damage By Others, RI - Residents Issue, OT - Other

7/8/2024

7:25 AM

WO #	Location	Date Reported	Time Reported	Date of Arrival	Time of Arrival	Date Complete	Time Completed	# Customers Affected	Problem	Comments	Response Time	Repair Time	Manhours	Cause
20240628-012	1199 E SANTA FE ST	6/27/2024	6:00 pm	6/27/2024	6:15 pm	6/30/2024	6:30 pm			Check on sewer vault per Teddy @ 6:00 pm. had good flow. 6/28/24 6/29/24 6/30/24	0:15	72:30	2.0	OT
							Totals:	8					21.5	

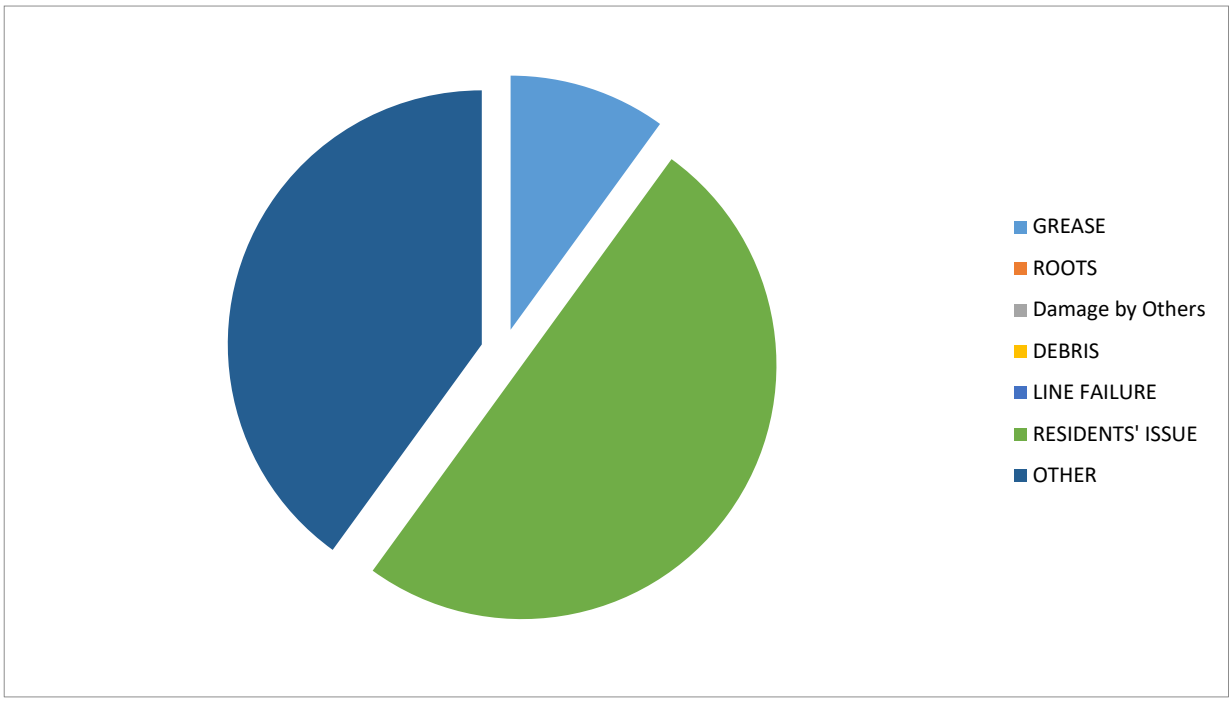
5	**After Hours Average**	**0:18**	**15:42**
5	**Workday Average**	**0:14**	**1:02**
10	**Average**	**0:16**	**8:22**

Cause Totals

GR	1
RT	0
LF	0
LS	0
O	0
DB	0
RI	5
OT	4

2Q 2024 Sewer Repair Report

GREASE	ROOTS	Damage by Others	DEBRIS	LINE FAILURE	RESIDENTS' ISSUE	OTHER	TOTAL
1	0	0	0	0	5	4	10



UTILITY ADVISORY COMMISSION STAFF REPORT **DISCUSSION ITEM #3**
MEETING DATE: JULY 11, 2024
STAFF CONTACT: GONZ GARCIA, UTILITIES DIRECTOR

AGENDA ITEM: 2024 2nd Quarter Water Distribution Repairs Report

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Background:

Line maintenance staff completed 12 water distribution service repairs affecting 11 customers:

- 1 due to line failure
- 1 due to damage by others
- 5 due to residents' issues
- 5 due to other issues

The average workday response time was 17 minutes and the average workday repair time was 2 hours and 4 minutes.

The average after hours response time was 22 minutes and the average after hours repair time was 3 hours and 1 minute.

The overall average response time was 19 minutes. The overall average repair time was 2 hours and 28 minutes.

Attachment Included:

- 2024 2nd Quarter Water Distribution Repairs Report

Water Distribution Repair Summary

Report Dates Between 4/1/2024 and 6/30/2024

LF - Line Failure, SF - Saddle Failure, VF - Valve Failure, RCF - Repair Clamp Failure, O - Damage By Others, RI - Residents Issue, OT - Other

7/8/2024

7:27 AM

WO #	Location	Date Reported	Time Reported	Date of Arrival	Time of Arrival	Date Complete	Time Completed	# Customers Affected	Problem	Comments	Response Time	Repair Time	Manhours	Cause
20240403-006	16200 WAVERLY RD	4/3/2024	7:00 am	4/3/2024	7:15 am	4/3/2024	3:00 pm	2	Leak	Water main break repair. Dug up and found crack under pipe. cut out bad pipe and replace with new 16' PVC and backfilled with rock.	0:15	8:00	36.0	LF
20240409-014	400 MOONLIGHT RD	4/9/2024	9:30 am	4/9/2024	9:45 am	4/9/2024	10:30 am	0	Leak	Greg from streets called and reported water running over the sidewalk at this address. went out and found the apartment	0:15	1:00	2.0	RI
20240418-017	1765 E SANTA FE ST	4/17/2024	8:00 pm	4/17/2024	8:30 pm	4/17/2024	10:30 pm	1	Leak	Customer called in and reported water coming out of ground by curb, thinks it is a water main break. Went out and looked and thought it was the fire line	0:30	2:30	7.5	RI
20240426-009	530 E MEADOWLARK CT	4/26/2024	2:00 am	4/26/2024	2:30 am	4/26/2024	11:00 am	2	Leak	Resident called in water main break. went out and found water running down curb and street. dug up and found 8" water line broken and	0:30	9:00	23.5	
20240429-024	604 N WINWOOD TER	4/29/2024	9:00 am	4/29/2024	9:15 am	4/29/2024	10:00 am	0	Leak	Tom called and said the leak pods had a hit on the valve at this address. went out and listened to valve and could not hear or see anything.	0:15	1:00	2.0	OT
20240510-015	16088 GARDNER PL	5/10/2024	12:00 pm	5/10/2024	12:15 pm	5/10/2024	1:00 pm	1		Customer called in and reported they had water standing in their yard and it was killing his grass. stated he thinks we have a leak on the water main.	0:15	1:00	3.0	RI
20240514-010	232 S ELM ST	5/14/2024	7:00 am	5/14/2024	7:30 am	5/14/2024	8:30 am	1	Water Quality	customer called in and said their water tasted like Chlorine. went out and flushed 10,000glns of water. talked to customer.	0:30	1:30	2.0	OT
20240528-006	KILL CREEK RD	5/25/2024	7:53 am	5/25/2024	8:00 am	5/25/2024	9:00 am	0	Inoperable	Customer hit and knocked over fire hydrant 22SEH45 on Kill Creek RD and W 174th St while he was mowing. Customer set the hydrant up before I	0:07	1:07	1.0	O
20240531-016	232 S ELM ST	5/29/2024	4:30 pm	5/29/2024	4:45 pm	5/29/2024	5:30 pm	1	Leak	Resident at 232 S Elm called in stating there had been water pooling in their yard for a couple days. Upon arrival there was water on south side of	0:15	1:00	1.0	OT

Water Distribution Repair Summary

Report Dates Between 4/1/2024 and 6/30/2024

7/8/2024

7:27 AM

LF - Line Failure, SF - Saddle Failure, VF - Valve Failure, RCF - Repair Clamp Failure, O - Damage By Others, RI - Residents Issue, OT - Other

WO #	Location	Date Reported	Time Reported	Date of Arrival	Time of Arrival	Date Complete	Time Completed	# Customers Affected	Problem	Comments	Response Time	Repair Time	Manhours	Cause
20240612-014	28371 W 164TH ST	6/11/2024	11:00 am	6/11/2024	11:15 am	6/11/2024	12:00 pm	1	Leak	Customer called in and reported they had a lot of water coming out of their sump pump and thought we have a leak on our main. listened to meter of	0:15	1:00	2.0	OT
20240621-011	895 S WOODSON CT	6/21/2024	9:00 am	6/21/2024	9:15 am	6/21/2024	10:00 am	1	Leak	CUSTOMER CALLED IN AND REPORTED THEY HAD WATER SEEPING UP IN THEIR YARD. WENT OUT AND FOUND ONE OF THE	0:15	1:00	2.0	RI
20240626-006	18970 GARDNER RD	6/25/2024	3:00 pm	6/25/2024	3:30 pm	6/25/2024	4:30 pm	1	Leak	(Culvers) caller stated water boiling up from grass, said it might be a main break. upon investigation I found a sprinkler pipe was broken.	0:30	1:30	1.0	RI
							Totals:	11					83.0	

5	**After Hours Average**	**0:22**	**3:01**
7	**Workday Average**	**0:17**	**2:04**
12	**Average**	**0:19**	**2:28**

Cause Totals

LF	1
SF	0
VF	0
RCF	0
O	1
RI	5
OT	4

2Q 2024 Water Repair Report

LINE FAIL	HARDWARE FAIL	VALVE FAIL	HYDRANT FAIL	DAMAGED BY OTH	RESIDENTS' ISSUE	OTHER	TOTAL
1	0	0	0	1	5	5	12