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April 24, 2019

Mr. Jeffrey McClanahan
Director of Utilities
Kansas Corporation Commission
1500 Southwest Arrowhead Road
Topeka, Kansas 66604

Re: Docket No. 02-GIME-365-GIE

Dear Mr. McClanahan:

Attached for filing are the Annual Reliability Reports for Westar Energy, Inc. (Westar Energy North) and Kansas Gas and Electric Company (Westar Energy South). This is in compliance with the Commission's Orders in the above-mentioned docket.

If additional follow-up information is needed please let me know.

Sincerely,

A handwritten signature in black ink, appearing to read "Anthony R. Westenkirchner", is written over a printed name. The signature is stylized with a large, sweeping "A" and "W".

Anthony R. Westenkirchner

cc: Jeff Martin
Larry Wilkus

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Annual Reliability Performance Report for Kansas Service Territory, 2018
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Westar Energy, NORTH

Annual Reliability Performance Report for Kansas Service Territory, 2018

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Table 1. Annual Performance Data		
	Actual(1)	Normalized (1)(2)
Average monthly customers	379,743	379,743
Total number of customer interruptions (1)	440,713	440,713
Sum of all customer interruption durations (minutes) (1)	58,237,715	58,237,715
SAIDI (minutes)	153.36	153.36
SAIFI (interruptions)	1.16	1.16
CAIDI (minutes)	132.14	132.14

Date(s)	Description (i.e. cause of event)	Customer Interruptions (1)	Customer Interruption Minutes (1)
Total Related to Major Events		-	-

please provide attachments if necessary

Notes

(1) Report data for all sustained interruptions as defined in subsection 3(t), subject to the limitations specified in subsection 7(c)

(2) Report data excluding interruptions related to major events, as defined in subsection 3(n), and as reported in Table 2

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Westar Energy, NORTH

Annual Reliability Performance Report for Kansas Service Territory, 2018

Docket No. 02-GIME-365-GIE

Table 3. Actual Interruptions Statistics By Root Cause

Cause	Customer Interruptions (1)	Customer Interruption Minutes (1)
03-EQUIPMENT FAILED	156,903	18,049,326
09-OVERLOAD	4,841	309,819
10-TREES/VEGETATION	54,290	9,396,812
11-PUBLIC DAMAGE	30,352	2,834,401
15-ANIMALS/WILDLIFE	52,417	3,289,589
16-OTHER	2,986	876,246
17-LIGHTNING	28,974	2,673,780
18-EXTREME WIND	-	-
19-ICE STORM	11,780	3,835,341
20-TREES OUTSIDE RIGHT OF WAY	6,072	1,227,110
21-DEBRIS, NATURE/WEATHER	565	46,556
22-UNKNOWN	46,640	4,165,007
23-COMPANY DAMAGED	857	16,534
24-PROCEDURAL ERROR	354	12,840
26-LOAD TRANSFER	408	10,502
29-LOAD SHED	245	10,782
30-MAINTENANCE	18,841	2,310,077
31-FUSE FATIGUE	5,420	361,119
32-TORNADO	7,943	6,458,983
33-MICROBURST	10,825	2,352,891
Total All Causes	440,713	58,237,715

Notes

(1) Report data for all sustained interruptions as defined in subsection 3(t), subject to the limitations specified in subsection 7(c)

(2) Report data excluding interruptions related to major events, as defined in subsection 3(n), and as reported in Table 2

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Westar Energy, North
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Table 4. Statistics for Worst-Performing Circuits With Respect to SAIDI

Circuit ID Code	WPC in Previous Year (1)	Associated Substation	Communities Affected (i.e., Cities, townships, portions of counties)	Customers Served	Customer interruptions (2)(3)	Customer interruption minutes (2)(3)	SAIDI (minutes) (2)(3)	SAIFI (interruptions) (2)(3)	CAIDI (minutes) (2)(3)
FALL012012	X	FALL RIVER DAM	CLIMAX, EUREKA, FALL RIVER, FREDONIA, HAMILTON, HOWARD, PIEDMONT, SEVERY	210	2064	1060486	5,049.93	9.83	513.80
EEUR012024		EAST EUREKA	CLIMAX, EUREKA, FALL RIVER, HAMILTON, HOWARD, PIEDMONT, SEVERY	476	1430	1150867	2,417.79	3.00	804.80
CECR012016		CENTRAL CROSSING	TOPEKA	364	3150	753539	2,070.16	8.65	239.22
BENJ012012		BENDENA JCT.	ATCHISON, BENDENA, DENTON, HIGHLAND, LEONA, ROBINSON, SEVERANCE, TROY	253	1591	511178	2,020.47	6.29	321.29
TESC012002		TESCOTT	ADA, BARNARD, MINNEAPOLIS, TESCOTT	176	810	354906	2,016.51	4.60	438.16
TESC012001		TESCOTT	BENNINGTON, BEVERLY, BROOKVILLE, CULVER, LINCOLN, MINNEAPOLIS, SHADY BEND, TESCOTT, WESTFALL	533	3156	1015851	1,905.91	5.92	321.88
EEUR012026		EAST EUREKA	CLIMAX, EUREKA, FALL RIVER, HAMILTON, HOWARD, PIEDMONT, SEVERY	836	2344	1379362	1,649.95	2.80	588.47
MAPL012014		MAPLE STREET	EUREKA	193	323	287772	1,491.05	1.67	890.93
BRNG012016		BROWNING	MADISON, OLPE	28	158	41679	1,488.54	5.64	263.79
MAPL012012		MAPLE STREET	EUREKA, PIEDMONT, REECE, SEVERY	624	968	923561	1,480.07	1.55	954.09
EFFJ012001	X	EFFINGHAM JCT	EFFINGHAM, MUSCOTAH	490	1709	718738	1,466.81	3.49	420.56
QNCY012004		QUINCY	HAMILTON, VIRGIL	51	329	74120	1,453.33	6.45	225.29

please provide attachments if necessary

Table 5. Statistics for Worst-Performing Circuits With Respect to SAIFI

Circuit ID Code	WPC in Previous Year (1)	Associated Substation	Communities Affected (i.e., Cities, townships, portions of counties)	Customers Served	Customer interruptions (2)(3)	Customer interruption minutes (2)(3)	SAIDI (minutes) (2)(3)	SAIFI (interruptions) (2)(3)	CAIDI (minutes) (2)(3)
FALL012012	X	FALL RIVER DAM	CLIMAX, EUREKA, FALL RIVER, FREDONIA, HAMILTON, HOWARD, PIEDMONT, SEVERY	210	2064	1060486	5,049.93	9.83	513.80
CECR012016		CENTRAL CROSSING	TOPEKA	364	3150	753539	2,070.16	8.65	239.22
VIRG012024		VIRGIL	GRIDLEY, LAMONT, MADISON, VIRGIL	64	488	56675	885.55	7.63	116.14
QNCY012004		QUINCY	HAMILTON, VIRGIL	51	329	74120	1,453.33	6.45	225.29
BENJ012012		BENDENA JCT.	ATCHISON, BENDENA, DENTON, HIGHLAND, LEONA, ROBINSON, SEVERANCE, TROY	253	1591	511178	2,020.47	6.29	321.29
SPRU012022		SPRUCE ST.	LEAVENWORTH	2207	13454	974054	441.35	6.10	72.40
FALL012014		FALL RIVER DAM	CLIMAX, FALL RIVER, FREDONIA, SEVERY, TORONTO	350	2077	461462	1,318.46	5.93	222.18
TESC012001		TESCOTT	BENNINGTON, BEVERLY, BROOKVILLE, CULVER, LINCOLN, MINNEAPOLIS, SHADY BEND, TESCOTT, WESTFALL	533	3156	1015851	1,905.91	5.92	321.88
BRNG012016		BROWNING	MADISON, OLPE	28	158	41679	1,488.54	5.64	263.79
VIRG012026		VIRGIL	GRIDLEY	26	132	21707	834.88	5.08	164.45
QNCY012002		QUINCY	TORONTO, VIRGIL	40	203	27855	696.38	5.08	137.22
TORO012014		TORONTO RURAL	TORONTO	14	71	18417	1,315.50	5.07	259.39

please provide attachments if necessary

Notes

- (1) Check if circuit qualified as a worst-performing circuit in the previous calendar year
- (2) Report data for all sustained interruptions as defined in subsection 3(t), subject to the limitations specified in subsection 7(c)
- (3) Report data excluding interruptions related to major events, as defined in subsection 3(n), and as reported in Table 2

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Westar Energy, North
Annual Reliability Performance Report for Kansas Service Territory, 2018
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Table 4. Statistics for Worst-Performing Circuits With Respect to SAIDI

Circuit ID Code	WPC in Previous Year (1)	Associated Substation	Communities Affected (i.e., Cities, townships, portions of counties)	Customers Served	Customer interruptions (2)(3)	Customer interruption minutes (2)(3)	SAIDI (minutes) (2)(3)	SAIFI (interruptions) (2)(3)	CAIDI (minutes) (2)(3)
FALL012014		FALL RIVER DAM	CLIMAX, FALL RIVER, FREDONIA, SEVERY, TORONTO	350	2077	461462	1,318.46	5.93	222.18
TORO012014		TORONTO RURAL	TORONTO	14	71	18417	1,315.50	5.07	259.39
TORO012012	X	TORONTO RURAL	BENEDICT, BUFFALO, COYVILLE, EUREKA, FALL RIVER, FREDONIA, TORONTO	266	973	326603	1,227.83	3.66	335.67
TORO007010		TORONTO RURAL	EUREKA, NEAL, TORONTO	63	205	69485	1,102.94	3.25	338.95
LANJ012000		LANCASTER JCT	ATCHISON, EFFINGHAM, LANCASTER	230	362	250941	1,091.05	1.57	693.21
SALM341900		SALINA MAIN	SALINA, MINNEAPOLIS	3	3	3085	1,028.33	1.00	1,028.33
SHAN012012	X	SHANNON PARK	ATCHISON	15	20	13819	921.27	1.33	690.95
OSKA012000		OSKALOOSA	MC LOUTH, OSKALOOSA, OZAWKIE, VALLEY FALLS, WINCHESTER	1003	4738	917345	914.60	4.72	193.61
CASS012014		CASSODY	CASSODAY	186	646	168567	906.27	3.47	260.94
VIRG012024		VIRGIL	GRIDLEY, LAMONT, MADISON, VIRGIL	64	488	56675	885.55	7.63	116.14
EEUR012022	X	EAST EUREKA	EUREKA	525	1510	450909	858.87	2.88	298.62
VIRG012026		VIRGIL	GRIDLEY	26	132	21707	834.88	5.08	164.45

please provide attachments if necessary

Table 5. Statistics for Worst-Performing Circuits With Respect to SAIFI

Circuit ID Code	WPC in Previous Year (1)	Associated Substation	Communities Affected (i.e., Cities, townships, portions of counties)	Customers Served	Customer interruptions (2)(3)	Customer interruption minutes (2)(3)	SAIDI (minutes) (2)(3)	SAIFI (interruptions) (2)(3)	CAIDI (minutes) (2)(3)
LEBO012014		LEBO	ADMIRE, BURLINGTON, EMPORIA, HARTFORD, LEBO, NEOSHO RAPIDS, OSAGE CITY, READING	525	2551	364564	694.41	4.86	142.91
HAMI012012		HAMILTON	HAMILTON, MADISON	40	192	29958	748.95	4.80	156.03
OSKA012000		OSKALOOSA	MC LOUTH, OSKALOOSA, OZAWKIE, VALLEY FALLS, WINCHESTER	1003	4738	917345	914.60	4.72	193.61
SLDR012002		SOLDIER JCT.	CIRCLEVILLE, HAVENSVILLE, SOLDIER	152	717	54851	360.86	4.72	76.50
DENI012002		DENISON JCT.	DENISON, HOLTON, MAYETTA, MUSCOTAH	582	2743	425489	731.08	4.71	155.12

please provide attachments if necessary

Notes

- (1) Check if circuit qualified as a worst-performing circuit in the previous calendar year
- (2) Report data for all sustained interruptions as defined in subsection 3(t), subject to the limitations specified in subsection 7(c)
- (3) Report data excluding interruptions related to major events, as defined in subsection 3(n), and as reported in Table 2

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Westar Energy, North

Annual Reliability Performance Report for Kansas Service Territory, 2018

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Table 4. Statistics for Worst-Performing Circuits With Respect to SAIDI

Circuit ID Code	WPC in Previous Year (1)	Associated Substation	Communities Affected (i.e., Cities, townships, portions of counties)	Customers Served	Customer interruptions (2)(3)	Customer interruption minutes (2)(3)	SAIDI (minutes) (2)(3)	SAIFI (interruptions) (2)(3)	CAIDI (minutes) (2)(3)
ALTA013002		ALTAMONT	ALTAMONT, BARTLETT, COFFEYVILLE, EDNA, OSWEGO, PARSONS, VALEDA	468	1595	377501	806.63	3.41	236.68
KEEN012001		KEENE	MAPLE HILL, PAXICO, ROSSVILLE, TOPEKA, WAMEGO, WILLARD	553	1642	445635	805.85	2.97	271.40
VAUG012024		VAUGHN	HAMILTON, MADISON, OLPE	87	246	66399	763.21	2.83	269.91
HAMI012012		HAMILTON	HAMILTON, MADISON	40	192	29958	748.95	4.80	156.03
DENI012002		DENISON JCT.	DENISON, HOLTON, MAYETTA, MUSCOTAH	582	2743	425489	731.08	4.71	155.12
TEET012012		TEETERVILLE	CASSODAY	18	69	13124	729.11	3.83	190.20
BETO007010	X	BETO JCT REA	LEBO, OLIVET	108	490	77817	720.53	4.54	158.81
QNCY012002		QUINCY	TORONTO, VIRGIL	40	203	27855	696.38	5.08	137.22
LEBO012014		LEBO	ADMIRE, BURLINGTON, EMPORIA, HARTFORD, LEBO, NEOSHO RAPIDS, OSAGE CITY, READING	525	2551	364564	694.41	4.86	142.91
WAKE012001		WAKEFIELD	WAKEFIELD	291	768	191154	656.89	2.64	248.90
FAIC002000	X	FAIRLAND IND.	CONWAY, MCPHERSON	4	9	2546	636.50	2.25	282.89
MOON012014		MOONLIGHT	DE SOTO, OLATHE	626	1919	390543	623.87	3.07	203.51

please provide attachments if necessary

Table 5. Statistics for Worst-Performing Circuits With Respect to SAIFI

[illegible]

please provide attachments if necessary

Notes

- (1) Check if circuit qualified as a worst-performing circuit in the previous calendar year
- (2) Report data for all sustained interruptions as defined in subsection 3(t), subject to the limitations specified in subsection 7(c)
- (3) Report data excluding interruptions related to major events, as defined in subsection 3(n), and as reported in Table 2

Westar Energy, North

Assessment of Performance and Planned Improvement of 2018 WPC's that also qualified as a WPC in the Previous Year (2017)

FALL012012 (Fall River Substation)

- Westar tree trimmed on this circuit in July 2015. The next trim is planned for 2020.
- The Fall River 12-12 circuit was inspected in 2017 for issues as a previously identified Worst Performing Circuit. Additionally, this circuit has been inspected with Ultrasound in March 2019. A full 12 kV circuit pole inspection was completed recently as well. We have 50 12 kV mainline circuit poles identified for change out in 2019. The identified repairs and maintenance are planned to be completed on the distribution circuit by priority relative to other previously identified KCC WPF circuits with the annual KCC WPF budget and available manpower.
- Fall River Substation is fed by EEUR 34-4588 out of East Eureka, a substation which is radially sourced on the 115kV transmission. It is currently in the forecast to rebuild the Butler-Viola-Altoona 138kV line which runs through this area, as well as tie it to the north into East Eureka. This thereby creates a loop to provide N-1 contingency on the transmission which feeds much of the south Emporia area. It is also tentatively planned to establish a 34 kV and 12.47 kV source in the area to relieve much of the exposure FALL 12-12 carries. The addition of a 34kV source in the area will also allow creating a loop-tie for the EEUR 34-4588 circuit feeding Fall River. We replaced 10 miles of 34 kV line and plan on continuing with the circuit over the next couple of years.

TORO012012 (Toronto Rural Substation)

- Westar tree trimmed on this circuit in March 2015. The next trim is planned for 2020.
- As a previously identified KCC Worst Performing Circuit, this circuit has already been inspected and circuit maintenance has begun. Additionally, this circuit has been inspected with Ultrasound in March 2019. Several work orders have been designed and repairs made to several areas of the circuit in 2018. Although the maintenance outages contributed to making this a worst performing circuit this year, the largest reason was a tornado that took down the 34 kV line feeding the Toronto Rural Substation. We replaced 10 miles of 34 kV line and plan on continuing with the circuit over the next couple of years. Design on the rebuild/relocation of the main feed into Toronto from the city was stalled in 2016 due to complications in acquiring easement from the Army Corps of Engineers due to proximity to Toronto Lake. As of Q1 2018, all discussions for attaining easement along a more assessable path have not been successful. Westar's subsequent plan is maintaining the existing line where it stands and perform maintenance on the structures crossing the northern end of the lake which are unable to be relocated.

EFFJ012001 (Effingham Junction Substation)

- Westar tree trimmed on this circuit in 2014. The next trim is planned for 2019.
- The Effingham Junction Substation feeding this circuit experienced outages due to an ice storm in November 2018 that took out both 34 kV lines, PARA 34-439 and MUSC 34-325, feeding the sub. The repairs took more than 19 hours causing this circuit to qualify as a worst performing circuit. Part of the reason for the long duration was due to iced

road conditions and drifting snow that made it unsafe to attend to until the morning when the roads had been treated. The county crews worked through the night clearing and re-cleaning roads with snow drifts.

- In addition to the 34 kV line damage, some November outages on this 12 kV distribution circuit were due to high straight-line winds, 50-60 mph sustained for 8-10 hours. The main problem was galloping conductor, breaking insulators, arms and braces. Approximately 20-25 structures from the Muscotah sub going east were affected. Also, approximately 2.5 miles of structures from Shannon to west of Lancaster were affected. Since rebuilding the line segments in 2005 and 2006, this stretch from Muscotah sub all the way into Parallel sub has been physically damaged in the 2007 Ice storm and three or four smaller weather events to date. Local crews frequently generate workorders repairing and replacing braces and insulators due to wind damage and loose hardware. To address this, an engineering study on the installation of vibration dampeners is will be conducted this year and identified remedies will be put into place later this year or early 2020.

SHAN012012 (Shannon Park Substation)

- Westar tree trimmed on this circuit in 2018. The next trim is planned for 2024.
- The Shannon Park Substation feeding this circuit experienced outages due to an ice storm in November 2018 that took out the PARA 34-439 34 kV line feeding the sub. The repairs took more than 14 hours causing this circuit to qualify as a worst performing circuit. While SHAN012012 itself experienced some broken crossarms and insulators during the November storm, this circuit is just 2 miles long and makes the WPC list due to the 34 kV line issues experienced during the storm. The repairs needed due to the November storm have been completed.

EEUR012022 (East Eureka Substation)

- Westar tree trimmed this circuit in April 2018. The next trim is planned for 2024.
- This circuit experienced outages due to tornado in June 2018. The repairs took more than 19 hours causing this circuit to qualify as a worst performing circuit. In 2017 we had a major microburst storm in Eureka. During the restoration from these two storms, a significant number of poles and wire were replaced on the circuit.
- There are forecasted plans to add a sub and create a transmission loop with the East Eureka source by 2025.

BETO007010 (Beto Junction Substation)

- Westar tree trimmed on this circuit in December 2015. The next trim is planned for 2021.
- Most of the outage minutes experienced on this circuit were from 34 kV line outages feeding the Beto Junction Substation. In 2018, we replaced 12 miles of 34 kV line and we plan on doing more over the next few years. Transmission maintenance replaced 12 115 kV anchors where the 34 kV is underbuilt which should improve the performance of the 34 kV line. We installed a new 34 kV recloser east of Waverly Substation cutting off 8 miles of 34 kV exposure to our customers. The new recloser has been working well preventing sustained outages.

FAIC002000 (Farmland Industrial Substation)

- Westar tree trimmed on this circuit in 2017. The next trim is planned for 2021.
- This circuit saw three separate outage events in 2018. Two outages were very minor, but in a third outage, the Farmland Industrial Substation feeding this circuit had a transformer failure. In 2017 a substation transformer bushing failed and in 2018 the same substation transformer failed. The failed transformer was replaced, and some bus maintenance was completed. The repairs took more than 10 hours causing this circuit to qualify as a worst performing circuit.

Westar Energy, North

Five-Year Assessment of SAIFI, SAIDI, & CAIDI by Subsidiary

Subsidiary	Year	SAIFI	SAIDI	CAIDI	Normalized Events
North	2014	1.621	169.9	104.8	0
	2015	1.726	233.2	135.2	0
	2016	1.419	146.8	103.4	0
	2017	1.232	146.1	118.5	0
	2018	1.161	153.4	132.1	0

Note: Years 2014-2018 were normalized by the KCC Major Event classification.

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Docket No. 02-GIME-365-GIE

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Westar Energy, SOUTH

Annual Reliability Performance Report for Kansas Service Territory, 2018

Docket No. 02-GIME-365-GIE

	Actual(1)	Normalized (1)(2)
Average monthly customers	326,707	326,707
Total number of customer interruptions (1)	357,544	357,544
Sum of all customer interruption durations (minutes) (1)	34,522,489	34,522,489
SAIDI (minutes)	105.67	105.67
SAIFI (interruptions)	1.09	1.09
CAIDI (minutes)	96.55	96.55

Table 2. Major Events			
Date(s)	Description (i.e. cause of event)	Customer Interruptions (1)	Customer Interruption Minutes (1)
Total Related to Major Events		-	-

please provide attachments if necessary

Notes

(1) Report data for all sustained interruptions as defined in subsection 3(t), subject to the limitations specified in subsection 7(c)

(2) Report data excluding interruptions related to major events, as defined in subsection 3(n), and as reported in Table 2

Form ER

Westar Energy, SOUTH

Annual Reliability Performance Report for Kansas Service Territory, 2018

Docket No. 02-GIME-365-GIE

Table 3. Actual Interruptions Statistics By Root Cause

Cause	Customer Interruptions (1)	Customer Interruption Minutes (1)
03-EQUIPMENT FAILED	178,480	19,598,407
09-OVERLOAD	487	29,632
10-TREES/VEGETATION	12,910	2,130,348
11-PUBLIC DAMAGE	25,925	2,035,736
15-ANIMALS/WILDLIFE	28,208	1,718,767
16-OTHER	617	98,418
17-LIGHTNING	19,059	2,339,085
18-EXTREME WIND	-	-
19-ICE STORM	231	23,030
20-TREES OUTSIDE RIGHT OF WAY	607	106,354
21-DEBRIS, NATURE/WEATHER	200	9,394
22-UNKNOWN	72,861	4,710,307
23-COMPANY DAMAGED	2,498	153,312
24-PROCEDURAL ERROR	77	2,730
26-LOAD TRANSFER	24	638
29-LOAD SHED	36	749
30-MAINTENANCE	13,028	1,229,581
31-FUSE FATIGUE	1,509	95,459
32-TORNADO	153	32,679
33-MICROBURST	634	207,863
Total All Causes	357,544	34,522,489

Notes

(1) Report data for all sustained interruptions as defined in subsection 3(t), subject to the limitations specified in subsection 7(c)

(2) Report data excluding interruptions related to major events, as defined in subsection 3(n), and as reported in Table 2

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Westar Energy, SOUTH Annual Reliability Performance Report for Kansas Service Territory, 2018 Docket No. 02-GIME-365-GIE

Table 4. Statistics for Worst-Performing Circuits With Respect to SAIDI

Circuit ID Code	WPC in Previous Year (1)	Associated Substation	Communities Affected (i.e., Cities, townships, portions of counties)	Customers Served	Customer interruptions (2)(3)	Customer interruption minutes (2)(3)	SAIDI (minutes) (2)(3)	SAIFI (interruptions) (2)(3)	CAIDI (minutes) (2)(3)
ORCH012002		ORCHARD	YATES CENTER	458	2349	473418	1,033.66	5.13	201.54
NEWA007000		NEW ALBANY	FREDONIA, NEW ALBANY	104	449	102684	987.35	4.32	228.69
ORCH012004		ORCHARD	LA HARPE, PIQUA, YATES CENTER	768	2724	655307	853.26	3.55	240.57
MIDI012022		MIDIAN	BENTON, EL DORADO, TOWANDA, WICHITA	186	1316	151729	815.75	7.08	115.30
GREN002000	X	GRENOLA	GRENOLA	137	431	89185	650.99	3.15	206.93
PEAB012002	X	PEABODY	BURNS, ELBING, FLORENCE, MARION, NEWTON, PEABODY	33	127	21378	647.82	3.85	168.33
ALTO012002		ALTOONA	ALTOONA, NEODESHA	380	1030	237312	624.51	2.71	230.40
PEAB012004	X	PEABODY	BURNS, ELBING, NEWTON, WHITEWATER	27	97	16167	598.78	3.59	166.67
WARE012004	X	WARE	ARCADIA, FORT SCOTT, GARLAND	917	2577	546101	595.53	2.81	211.91
PEAB012006		PEABODY	BURNS, NEWTON	180	647	104253	579.18	3.59	161.13
FORT012004		FORT SCOTT	FORT SCOTT, GARLAND, REDFIELD, UNIONTOWN	1670	6898	896472	536.81	4.13	129.96
TAYL012004		TAYLOR	INDEPENDENCE, NEODESHA	1119	5025	600176	536.35	4.49	119.44

please provide attachments if necessary

Table 5. Statistics for Worst-Performing Circuits With Respect to SAIFI

Circuit ID Code	WPC in Previous Year (1)	Associated Substation	Communities Affected (i.e., Cities, townships, portions of counties)	Customers Served	Customer interruptions (2)(3)	Customer interruption minutes (2)(3)	SAIDI (minutes) (2)(3)	SAIFI (interruptions) (2)(3)	CAIDI (minutes) (2)(3)
MIDI012022		MIDIAN	BENTON, EL DORADO, TOWANDA, WICHITA	186	1316	151729	815.75	7.08	115.30
ORCH012002		ORCHARD	YATES CENTER	458	2349	473418	1,033.66	5.13	201.54
TAYL012004		TAYLOR	INDEPENDENCE, NEODESHA	1119	5025	600176	536.35	4.49	119.44
NEWT012002		NEWTON	NEWTON	1177	5139	460199	390.99	4.37	89.55
NEWA007000		NEW ALBANY	FREDONIA, NEW ALBANY	104	449	102684	987.35	4.32	228.69
HSFH012001		HILLSBORO- FLINT HILLS CO-	HILLSBORO, MARION	61	261	29559	484.57	4.28	113.25
GATZ012002		GATZ	GOESSEL, HESSTON, MOUNDRIDGE, NEWTON	206	863	67951	329.86	4.19	78.74
FORT012004		FORT SCOTT	FORT SCOTT, GARLAND, REDFIELD, UNIONTOWN	1670	6898	896472	536.81	4.13	129.96
BAKE012002		BAKER	CHEROKEE, PITTSBURG, WEIR	857	3469	179617	209.59	4.05	51.78
MARM034002	X	MARMATON	KINCAID, LA HARPE, MILDRED, MORAN	125	493	59307	474.46	3.94	120.30

please provide attachments if necessary

Notes

- (1) Check if circuit qualified as a worst-performing circuit in the previous calendar year
- (2) Report data for all sustained interruptions as defined in subsection 3(t), subject to the limitations specified in subsection 7(c)
- (3) Report data excluding interruptions related to major events, as defined in subsection 3(n), and as reported in Table 2

Form ER

Westar Energy, SOUTH

Annual Reliability Performance Report for Kansas Service Territory, 2018

Docket No. 02-GIME-365-GIE

Table 4. Statistics for Worst-Performing Circuits With Respect to SAIDI

[illegible]

please provide attachments if necessary

Table 5. Statistics for Worst-Performing Circuits With Respect to SAIFI

[illegible]

please provide attachments if necessary

Notes

- (1) Check if circuit qualified as a worst-performing circuit in the previous calendar year
- (2) Report data for all sustained interruptions as defined in subsection 3(t), subject to the limitations specified in subsection 7(c)
- (3) Report data excluding interruptions related to major events, as defined in subsection 3(n), and as reported in Table 2

Westar Energy, South

Assessment of Performance and Planned Improvement of 2018 WPC's that also qualified as a WPC in the Previous Year (2017)

PEAB012002 (Peabody Substation)

- Westar tree trimmed on this circuit in 2014. The next trim is planned for 2019.
- The Peabody Substation feeding this circuit experienced one outage due to transmission lines feeding the sub. It also experienced an outage due to the substation feeding circuit. Those two outages along with several lightning outages resulted in this circuit making the worst performing circuit list.
- This circuit will be walked down in 2019 to find any additional issues that can be resolved to help us improve reliability. Any issues found will be addressed as soon as possible.

GREN002000 (Grenola Substation)

- Westar tree trimmed on this circuit in 2016. The next trim is planned for 2022.
- Maintenance completed on this circuit in 2018 resulted in this circuit being identified as a KCC worst performing circuit. The only other significant outage affecting this circuit was a transmission line failure feeding the Grenola Substation.
- This circuit will be walked down in 2019 to find any additional issues that can be resolved to help us improve reliability. Any issues found will be addressed as soon as possible.

PEAB012004 (Peabody Substation)

- Westar tree trimmed on this circuit in 2014. The next trim is planned for 2019.
- The Peabody Substation feeding this circuit experienced one outage due to transmission lines feeding the sub. It also experienced an outage due to the substation feeding circuit. Those two outages resulted in this circuit making the worst performing circuit list.
- This circuit will be walked down in 2019 to find any additional issues that can be resolved to help us improve reliability. Any issues found will be addressed as soon as possible.

MOLI002000 (Moline Substation)

- Westar tree trimmed on this circuit in 2016. The next trim is planned for 2020.
- The Moline Substation feeding this circuit experienced two outages due to transmission lines feeding the sub. Those outages were not terribly lengthy but did result in this circuit making the worst performing circuit list. In addition to those outages, dozens of smaller, shorter duration outages were needed to complete maintenance on the circuit following the tree trimming cycle almost all of which was to install wildlife protection guards.
- This circuit will be walked down again in 2019 to find any additional issues that can be resolved to help us improve reliability. Any issues found will be addressed as soon as possible.

MARM034002 (Marmaton Substation)

- Westar tree trimmed on this circuit in 2016. The next trim is planned for 2020.
- The second phase of this circuit's rebuild will take it to LaHarpe substation. We are in the process of purchasing right of way and plan to begin construction in the fall 2019.
- A new substation breaker will be installed in April 2019 feeding this circuit.

MCKE012002 (Mc Kee Substation)

- Westar tree trimmed on this circuit in 2016. The next trim is planned for 2022.
- This circuit will be walked down in 2019 to find any additional issues that can be resolved to help us improve reliability. Any issues found will be addressed as soon as possible.

WARE012004 (Ware Substation)

- Westar tree trimmed on this circuit in February 2016. The next trim is planned for 2020.
- We have recently removed all the unused 69 kV conductor from over this circuit and in the process, replaced more than 10 poles. This circuit will be walked down in 2019 to find any additional issues that can be resolved to help us improve reliability. Any issues found will be addressed as soon as possible.

Kansas Gas and Electric Company Westar Energy, South

Five-Year Assessment of SAIFI, SAIDI, & CAIDI by Subsidiary

Subsidiary	Year	SAIFI	SAIDI	CAIDI	Normalized Events
South	2014	1.287	116.7	90.7	0
	2015	1.408	146.2	103.8	1
	2016	1.406	165.6	117.8	0
	2017	1.007	100.6	99.9	0
	2018	1.094	105.7	96.6	0

Note: Years 2014-2018 were normalized by the KCC Major Event classification.