OCR 1947 URET 355 $176.97

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
OCR		1940	URET	239	$226.88
OCR		1950	URET	1,428	$1,078.41
OCR		1953	URET	348	$374.37
OCR		1955	URET	52	$38.74
OCR		1956	URET	214	$171.37
OCR		1960	URET	70	$78.28
OCR		1962	URET	48	$64.13
OCR		1968	URET	339	$527.77
OCR		1971	URET	435	$604.12

OCR		1973	URET	83	$224.07

Work Order Authorization Information

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
OCR		1975	URET	84	$257.09
OCR		1979	URET	29	$193.89
OCR Mains-Steel 4"		1994	URET	140	$3,601.14
OCR		1939	URET	44	$15.21
		Utility Account Total:		5,772	$8,130.15
376300-Mains - Plastic Mains-Plastic 2"					
OCR		1981	URET	46	$240.75
OCR Mains-Plastic Under 2"		1995	URET	25	$116.26
1 1/4 inch Plastic Pipe: NEW	230809; TransType=B 1/1/2018 00:00:00	1994	URET	204	$3,318.60
		Utility Account Total:		275	$3,675.61
380100-Services - Steel Services-Steel					
OCR		1960	URET	6	$4.14
OCR		1960	URET	12	$8.28

OCR		1960	URET	12	$8.28

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
		1960	URET	32	$22.08
OCR		1960	URET	3	$2.07
		Utility Account Total:		65	$44.85
380200-Services - Plastic & Copper					
Services-Plastic					
OCR		1974	URET	8	$2.88
OCR		1983	URET	31	$196.50
OCR		1986	URET	1	$4.70
OCR		1987	URET	4	$24.09
OCR		1988	URET	16	$146.45
OCR		1989	URET	89	$460.80
OCR		1993	URET	79	$672.67

OCR		1994	URET	20	$214.19

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
OCR		1995	URET	1	$12.49
OCR		1996	URET	471	$5,492.46
OCR		1998	URET	4	$30.78
OCR		2000	URET	129	$1,128.29
OCR		2015	URET	1	$5.79
OCR		2016	URET	3	$101.00
OCR		2017	URET	14	$680.19
			Utility Account Total:	871	$9,173.28
			Location Total:	6,983	$21,023.89
			GL Account Total:	6,983	$21,023.89
			Posted Retirements:	6,983	$21,023.89
			Work Order Total:	6,983	$21,023.89

Work Order Authorization Information

Header Detail

Work Order: 802431
Work Order Title: Repl 968F 2P 33rd-34th Joplin Ave
Wo Type Description: WO-Replacement Mains & Svcs MGE
Work Order Group:
Current Revision: 1
Funding Project: F0572
Funding Project Desc: Main Replacement - ISRS (SW)
Eligible for AFUDC yes Eligible for CPI: yes
Reason Code: Strategic

Company: Spire Missouri Inc.
Business Segment: Missouri West
Functional Class: Distribution Plant
Department Code: 20921
Department Description: Region 2B - SW Missouri - Distribution - Union
Budget Description: Replace bare steel main - safety re
Est. Annual Revenue:
Reimbursement Type: None
Retirement Type:

WO Description: Install 968 Ft of 2in PL MP main on S Joplin Ave between W 33rd St and W 34th St.

Major Location: 0501-Joplin
Asset Location: 0501-044001 JASPER CTY/JOPLIN

Status: In service

Estimated Start Date: Jan 07, 2019 Estimated Completion Date: Jan 28, 2019 Estimated In-Service Date: Jan 28, 2019

Notes: Abandon 840 Ft of 2in ST MP mainon S Joplin Ave between W 33rd St and W 34th St. Total Service Tie-overs= 21; Total ServiceReplacements= 0; Total Service Abandons=0. Replace bare steel and isolated steel due toleaks. ISRS recoverable due to replacing bare steelmain. Due to leaks: 3305 S Joplin leak Id 5044027. 3316 S Joplin leak Id 5027183. 3324 S Joplin leak Id 478550. 3328 S Joplin leak Id 5100423. 3329 S Joplin leak Id 5098731.

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Muehlenkamp, Anne	$0	3/15/2019
Engineering Review-Dist S	Hoeferlin, Craig	$0	3/26/2019
VP Field Operations-MGE	Goodson, Timothy	$1,000,000	3/27/2019

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376100-Mains - Steel	$0.00	$771.56	$771.56	$0.00	$0.00
376300-Mains - Plastic	$47,025.86	$2,760.70	$49,786.56	$0.00	$0.00
Total Estimated Costs:	$47,025.86	$3,532.26	$50,558.12	$0.00	$0.00

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0501-044001 JASPER CTY/JOPLIN						
376300-Mains - Plastic						
Mains-Plastic 2"						
Contract Payroll	$1,216.18	$0.00	0	0	0	0
Contractor Work	$24,279.22	$1,714.72	0	0	0	0
Department Clearings	$1,787.78	$0.00	0	0	0	0
Overheads Capitalized - Benefits	$1,070.24	$0.00	0	0	0	0
Overheads Capitalized - General	$16,273.82	$1,045.98	0	0	0	0
Payroll Taxes	$184.86	$0.00	0	0	0	0
Stores	$2,213.76	$0.00	968	0	0	0
SubTotal Utility Account:	**$47,025.86**	**$2,760.70**	**968.00**	**0.00**	**0.00**	**0.00**
376100-Mains - Steel						
Mains-Steel 2"						
Contract Payroll	$0.00	$214.62	0	0	0	0
Department Clearings	$0.00	$315.49	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$188.87	0	0	0	0
Overheads Capitalized - General	$0.00	$19.96	0	0	0	0
Payroll Taxes	$0.00	$32.62	0	0	0	0
Retirement Value	$0.00	$0.00	0	840	0	0
SubTotal Utility Account:	**$0.00**	**$771.56**	**0.00**	**840.00**	**0.00**	**0.00**
SubTotal Location:	**$47,025.86**	**$3,532.26**	**968.00**	**840.00**	**0.00**	**0.00**
Total Unit Estimate:	**$47,025.86**	**$3,532.26**	**968**	**840**	**0**	**0**

***** Class Codes *****

Class Code	Value
cap_expense	capital
ISRS Reason	08 - Cast Iron or Bare Steel Replacement - Lea
isrs_recov	yes
ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod
Project Classification	both

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Available for Unitization:				
0501-044001 JASPER CTY/JOPLIN				
376100-Mains - Steel				
Retirement				
Contract Payroll	Mains-Steel 2"		$1,073.10	0
Contractor Work	Mains-Steel 2"		$2,200.20	0
Department Clearings	Mains-Steel 2"		$1,577.46	0
Overheads Capitalized - Benefits	Mains-Steel 2"		$944.33	0
Overheads Capitalized - General	Mains-Steel 2"		$1,441.92	0
Payroll Taxes	Mains-Steel 2"		$163.11	0
Retirement Value	Mains-Steel 2"		$38.91	51
Retirement Value	Mains-Steel 2"		$57.03	69
Retirement Value	Mains-Steel 2"		$120.29	286
Retirement Value	Mains-Steel 2"		$159.08	271
Retirement Value	Mains-Steel 2"		$5.84	19
Retirement Value	Mains-Steel 2"		$474.43	176
		Retirement Total:	$8,255.70	872
376300-Mains - Plastic				
Addition				
Contract Payroll	Mains-Plastic Under 2"		$178.85	0
Contract Payroll	Mains-Plastic 2"		$1,073.10	0
Contractor Work	Mains-Plastic Under 2"		$386.00	0
Contractor Work	Mains-Plastic 2"		$44,737.88	0
Department Clearings	Mains-Plastic 2"		$1,577.46	0
Department Clearings	Mains-Plastic Under 2"		$262.91	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$944.33	0
Overheads Capitalized - Benefits	Mains-Plastic Under 2"		$157.39	0
Overheads Capitalized - General	Mains-Plastic 2"		$28,806.53	0
Overheads Capitalized - General	Mains-Plastic Under 2"		$257.55	0
Payroll Taxes	Mains-Plastic Under 2"		$27.19	0
Payroll Taxes	Mains-Plastic 2"		$163.11	0
Stores	Mains-Plastic 2"		$2,322.34	1,007
Stores	Mains-Plastic Under 2"		$8.95	3
		Addition Total:	$80,903.59	1,010
Retirement				
Contract Payroll	Mains-Plastic 2"		$35.77	0
Contractor Work	Mains-Plastic 2"		$34.74	0
Department Clearings	Mains-Plastic 2"		$52.58	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$31.48	0
Overheads Capitalized - General	Mains-Plastic 2"		$24.52	0
Payroll Taxes	Mains-Plastic 2"		$5.44	0
Retirement Value	Mains-Plastic 2"		$12.77	3
		Retirement Total:	$197.30	3
380200-Services - Plastic & Copper				
Addition				
Contract Payroll	Services-Plastic		$894.25	0
Contractor Work	Services-Plastic		$3,324.80	0
Department Clearings	Services-Plastic		$1,314.55	0

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Available for Unitization:				
0501-044001 JASPER CTY/JOPLIN				
380200-Services - Plastic & Copper				
Addition				
Overheads Capitalized - Benefits	Services-Plastic		$786.94	0
Overheads Capitalized - General	Services-Plastic		$2,242.08	0
Payroll Taxes	Services-Plastic		$135.03	0
Stores	Services-Plastic		$214.41	131
		Addition Total:	$8,912.96	131
Retirement				
Contractor Work	Services-Plastic		$354.97	0
Overheads Capitalized - General	Services-Plastic		$216.53	0
Retirement Value	Services-Plastic		$887.87	101
Retirement Value	Services-Plastic		$144.51	14
Retirement Value	Services-Plastic		$257.07	16
Retirement Value	Services-Plastic		$117.41	18
Retirement Value	Services-Plastic		$28.92	2
		Retirement Total:	$2,007.28	151

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$89,816.55	1,141	$10,460.28	1,026
Available for Unitization:	$89,816.55	1,141	$10,460.28	1,026
Unit Estimate Total:	$89,816.55	1,141	$10,460.28	1,026

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Selected Retirements:					
Missouri West	101000::Gas Plant In Service				
0501-044001 JASPER CTY/JOPLIN					
376100-Mains - Steel					
Mains-Steel 2"					
OCR		1941	URET	286	$120.29
OCR		1946	URET	271	$159.08
OCR		1948	URET	51	$38.91
OCR		1950	URET	69	$57.03
OCR		1964	URET	176	$474.43

Work Order Authorization Information

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Selected Retirements:					
Missouri West	101000::Gas Plant In Service				
0501-044001 JASPER CTY/JOPLIN					
376100-Mains - Steel					
Mains-Steel 2"					
OCR		1965	URET	19	$5.84
		Utility Account Total:		872	$855.68
376300-Mains - Plastic					
Mains-Plastic 2"					
OCR		1978	URET	3	$12.77
		Utility Account Total:		3	$12.77
380200-Services - Plastic & Copper					
Services-Plastic					
OCR		1987	URET	14	$144.51
OCR		1988	URET	18	$117.41
OCR		1989	URET	16	$257.07
OCR		1990	URET	2	$28.92
OCR		1994	URET	101	$887.87
		Utility Account Total:		151	$1,435.78
		Location Total:		1,026	$2,304.13
		GL Account Total:		1,026	$2,304.13
		Selected Retirements:		1,026	$2,304.13
		Work Order Total:		1,026	$2,304.13

Work Order Authorization Information

Header Detail

Work Order: 802276
Work Order Title: Repl 139F 2P 20th & Jackson
Wo Type Description: WO-Replacement Mains & Svcs MGE
Work Order Group:
Current Revision: 1
Funding Project: F0599
Funding Project Desc: Main Replacement - ISRS (N)
Eligible for AFUDC yes **Eligible for CPI:** yes
Reason Code: System Integrity

Company: Spire Missouri Inc.
Business Segment: Missouri West
Functional Class: Distribution Plant
Department Code: 20648
Department Description: Construction & Maintenance - Region 2A - Unio
Budget Description: Replace cast iron main - CPI / prio
Est. Annual Revenue:
Reimbursement Type: None
Retirement Type:

WO Description: Install ~139 Ft of 2 in PL LP Main. Abandon ~ 139 Ft of of 2 in ST LP Main. Total Service Tie-over = 2. Main is being replaced due to leak. This is not a reimbursable project.

Major Location: 0401-KC/MO - Central
Asset Location: 0401-043050 JACKSON CTY/KC

Status: posted to CPR

Estimated Start Date: Sep 24, 2018 **Estimated Completion Date:** Sep 28, 2018 **Estimated In-Service Date:** Sep 28, 2018

Notes:

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Muehlenkamp, Anne	$0	9/17/2018
Engineering Review-Dist S	Hoeferlin, Craig	$0	9/18/2018
VP Field Operations-MGE	Hampton, Joe	$1,000,000	9/19/2018

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376100-Mains - Steel	$344.26	$3,666.17	$4,010.43	$0.00	$0.00
376300-Mains - Plastic	$18,352.65	$0.00	$18,352.65	$0.00	$0.00
Total Estimated Costs:	$18,696.91	$3,666.17	$22,363.08	$0.00	$0.00

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0401-043050 JACKSON CTY/KC						
376300-Mains - Plastic						
Mains-Plastic 2"						
Contract Payroll	$6,534.67	$0.00	0	0	0	0
Department Clearings	$5,652.49	$0.00	0	0	0	0
Overheads Capitalized - Benefits	$3,652.88	$0.00	0	0	0	0
Overheads Capitalized - General	$746.62	$0.00	0	0	0	0
Payroll Taxes	$993.27	$0.00	0	0	0	0
Stores	$772.72	$0.00	139	0	0	0
SubTotal Utility Account:	**$18,362.65**	**$0.00**	**139.00**	**0.00**	**0.00**	**0.00**
376100-Mains - Steel						
Mains-Steel 2"						
Contract Payroll	$130.40	$1,388.70	0	0	0	0
Department Clearings	$112.80	$1,201.23	0	0	0	0
Overheads Capitalized - Benefits	$72.89	$776.28	0	0	0	0
Overheads Capitalized - General	$8.35	$88.88	0	0	0	0
Payroll Taxes	$19.82	$211.08	0	0	0	0
Retirement Value	$0.00	$0.00	0	139	0	0
SubTotal Utility Account:	**$344.26**	**$3,666.17**	**0.00**	**139.00**	**0.00**	**0.00**
SubTotal Location:	**$18,696.91**	**$3,666.17**	**139.00**	**139.00**	**0.00**	**0.00**
Total Unit Estimate:	**$18,696.91**	**$3,666.17**	**139**	**139**	**0**	**0**

***** Class Codes *****

Class Code	Value
cap_expense	capital
ISRS Reason	03 - Bare Steel Replacement
Isrs_recov	yes
ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod
Project Classification	both

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used in Unitization:				
0401-043050 JACKSON CTY/KC				
376100-Mains - Steel				
Retirement				
Contract Payroll	Mains-Steel 2"		$1,847.11	0
Department Clearings	Mains-Steel 2"		$2,715.25	0
Overheads Capitalized - Benefits	Mains-Steel 2"		$1,625.46	0
Overheads Capitalized - General	Mains-Steel 2"		$171.78	0
Payroll Taxes	Mains-Steel 2"		$280.76	0
Retirement Value	Mains-Steel 2"		$1,580.99	125
		Retirement Total:	$8,221.35	125
376300-Mains - Plastic				
Addition				
Contract Payroll	Mains-Plastic 2"		$6,795.36	0
Contract Payroll	Mains-Plastic 2"		$143.08	0
Department Clearings	Mains-Plastic 2"		$210.33	0
Department Clearings	Mains-Plastic 2"		$9,989.18	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$5,979.92	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$125.91	0
Overheads Capitalized - General	Mains-Plastic 2"		$13.31	0
Overheads Capitalized - General	Mains-Plastic 2"		$1,080.17	0
Payroll Taxes	Mains-Plastic 2"		$1,032.89	0
Payroll Taxes	Mains-Plastic 2"		$21.75	0
Stores	Mains-Plastic 2"		$734.75	117
		Addition Total:	$26,126.65	117

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$26,126.65	117	$8,221.35	125
Used in Unitization:	$26,126.65	117	$8,221.35	125
Unit Estimate Total:	$26,126.65	117	$8,221.35	125

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	101000::Gas Plant In Service				
0401-043050 JACKSON CTY/KC					
376100-Mains - Steel					
Mains-Steel 2"					
OCR		1995	URET	125	$1,580.99
		Utility Account Total:		125	$1,580.99

Work Order Authorization Information

Header Detail

Work Order: 802032
Work Order Title: Repl 360F 2P 33rd & Highland
Wo Type Description: WO-Replacement Mains & Svcs MGE
Work Order Group:
Current Revision: 1
Funding Project: F0599
Funding Project Desc: Main Replacement - ISRS (N)
Eligible for AFUDC yes Eligible for CPI: yes
Reason Code: Strategic

Company: Spire Missouri Inc.
Business Segment: Missouri West
Functional Class: Distribution Plant
Department Code: 20648
Department Description: Construction & Maintenance - Region 2A - Unio
Budget Description: Replace cast iron main - CPI / prio
Est. Annual Revenue:
Reimbursement Type: None
Retirement Type:

WO Description: Install 360 Ft. of 2 Inch PL IP Main on 33rd St., and Highland Ave.

Major Location: 0401-KC/MO - Central
Asset Location: 0401-043050 JACKSON CTY/KC

Status: posted to CPR

Estimated Start Date: Jun 25, 2018 Estimated Completion Date: Sep 28, 2018 Estimated In-Service Date: Sep 28, 2018

Notes: Abandon 354 Ft of 4 In CI LP Main on the above mentioned streets. Total Service Tie-over =5; Total Service Abandoned = 1; Total Service Replace = 0. This main is being replaced due to a leak and is part of FY18 Cast Iron Replacement Program.

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Muehlenkamp, Anne	$0	5/15/2018
Engineering Review-Dist S	Hoeferlin, Craig	$0	5/29/2018
VP Field Operations-MGE	Hampton, Joe	$1,000,000	5/30/2018

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376200-Mains - Cast Iron	$0.00	$7,537.16	$7,537.16	$0.00	$0.00
376300-Mains - Plastic	$25,781.79	$0.00	$25,781.79	$0.00	$0.00
380200-Services - Plastic & Copper	$364.94	$0.00	$364.94	$0.00	$0.00
Total Estimated Costs:	$26,146.73	$7,537.16	$33,683.89	$0.00	$0.00

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0401-043050 JACKSON CTY/KC						
376200-Mains - Cast Iron						
Mains-Cast Iron 4"						
Contract Payroll	$0.00	$65.20	0	0	0	0
Contractor Work	$0.00	$4,902.42	0	0	0	0
Department Clearings	$0.00	$56.40	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$36.45	0	0	0	0
Overheads Capitalized - General	$0.00	$2,200.76	0	0	0	0
Payroll Taxes	$0.00	$9.91	0	0	0	0
Retirement Value	$0.00	$0.00	0	354	0	0
Stores	$0.00	$266.02	0	0	0	0
SubTotal Utility Account:	**$0.00**	**$7,537.16**	**0.00**	**354.00**	**0.00**	**0.00**
376300-Mains - Plastic						
Mains-Plastic 2"						
Contract Payroll	$163.00	$0.00	0	0	0	0
Contractor Work	$16,658.81	$0.00	0	0	0	0
Department Clearings	$141.00	$0.00	0	0	0	0
Overheads Capitalized - Benefits	$91.12	$0.00	0	0	0	0
Overheads Capitalized - General	$7,571.39	$0.00	0	0	0	0
Payroll Taxes	$24.78	$0.00	0	0	0	0
Stores	$1,131.69	$0.00	360	0	0	0
SubTotal Utility Account:	**$25,781.79**	**$0.00**	**360.00**	**0.00**	**0.00**	**0.00**
380200-Services - Plastic & Copper						
Services-Plastic						
Contractor Work	$256.10	$0.00	0	0	0	0
Overheads Capitalized - General	$108.84	$0.00	0	0	0	0
SubTotal Utility Account:	**$364.94**	**$0.00**	**0.00**	**0.00**	**0.00**	**0.00**
SubTotal Location:	**$26,146.73**	**$7,537.16**	**360.00**	**354.00**	**0.00**	**0.00**
Total Unit Estimate:	**$26,146.73**	**$7,537.16**	**360**	**354**	**0**	**0**

***** Class Codes *****

Class Code	Value
cap_expense	capital
ISRS Reason	08 - Cast Iron or Bare Steel Replacement - Lea
isrs_recov	yes
ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod

Work Order Authorization Information

***** Class Codes *****	
Class Code	Value
Project Classification	both

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0401-043050 JACKSON CTY/KC				
376200-Mains - Cast Iron				
Retirement				
Contractor Work	Mains-Cast Iron 4"		$6,611.71	0
Overheads Capitalized - General	Mains-Cast Iron 4"		$4,073.48	0
Retirement Value	Mains-Cast Iron 4"		$43.91	354
Stores	Mains-Cast Iron 4"		$66.13	0
		Retirement Total:	$10,795.23	354
376300-Mains - Plastic				
Addition				
Contract Payroll	Mains-Plastic 2"		$4,318.54	0
Contractor Work	Mains-Plastic 2"		$6,569.26	0
Department Clearings	Mains-Plastic 2"		$6,348.25	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$3,800.32	0
Overheads Capitalized - General	Mains-Plastic 2"		$4,959.70	0
Payroll Taxes	Mains-Plastic 2"		$656.42	0
Stores	Mains-Plastic 2"		$903.00	372
		Addition Total:	$27,555.49	372
Retirement				
Contractor Work	Mains-Plastic 4"		$1,963.59	0
Overheads Capitalized - General	Mains-Plastic 4"		$1,197.79	0
Retirement Value	Mains-Plastic 4"		$1,697.40	5
		Retirement Total:	$4,858.78	5
380200-Services - Plastic & Copper				
Retirement				
Retirement Value	Services-Plastic		$1,019.08	177
Retirement Value	Services-Plastic		$671.24	64
		Retirement Total:	$1,690.32	241

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$27,555.49	372	$17,344.33	600
Used In Unitization:	$27,555.49	372	$17,344.33	600
Unit Estimate Total:	$27,555.49	372	$17,344.33	600

Work Order Authorization Information

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	101000::Gas Plant In Service				
0401-043050 JACKSON CTY/KC					
376200-Mains - Cast Iron					
Mains-Cast Iron 4"					
OCR		1922	URET	354	$43.91
		Utility Account Total:		354	$43.91
376300-Mains - Plastic					
Mains-Plastic 4"					
OCR		2013	URET	5	$1,697.40
		Utility Account Total:		5	$1,697.40
380200-Services - Plastic & Copper					
Services-Plastic					
OCR		1996	URET	177	$1,019.08
OCR		1997	URET	64	$671.24
		Utility Account Total:		241	$1,690.32
		Location Total:		600	$3,431.63
		GL Account Total:		600	$3,431.63
		Posted Retirements:		600	$3,431.63
		Work Order Total:		600	$3,431.63

Work Order Authorization Information

Header Detail

Work Order:	800690	**Company:**	Spire Missouri Inc.
Work Order Title:	Repl 5151F 2-4-6 Hwy71&Gregory Ph L	**Business Segment:**	Missouri West
Wo Type Description:	WO-Replacement Mains & Svcs MGE	**Functional Class:**	Distribution Plant
Work Order Group:		**Department Code:**	20648
Current Revision:	1	**Department Description:**	Construction & Maintenance - Region 2A - Unio
Funding Project:	F0599	**Budget Description:**	Replace cast iron main - CPI / prio
Funding Project Desc:	Main Replacement - ISRS (N)	**Est. Annual Revenue:**	
Eligible for AFUDC	yes **Eligible for CPI:** yes	**Reimbursement Type:**	None
Reason Code:	Strategic	**Retirement Type:**	

WO Description: Install ~ 1325 ft of 2 in PL IP main, 2432 ft of 4 in PL IP main, and ~1394 ft of 6 in PL IP main on Indiana, Bales, Askew, and 75th Street.

Major Location: 0401-KC/MO - Central
Asset Location: 0401-043050 JACKSON CTY/KC
Status: posted to CPR

Estimated Start Date: Mar 27, 2017 **Estimated Completion Date:** May 01, 2017 **Estimated In-Service Date:** May 01, 2017

Notes: Retire ~ 10 ft of 2 in PL IP main, ~416 ft of 3 in ST IP main, ~132 ft of 4 in PL IP main, ~3466 ft of 4 in ST IP main, and ~759 ft of 6 in ST main at above locations. Uprate ~ 30617 ft of 2 in PL IP to IP main, ~17969 ft of 4 in PL IP to IP main, and ~1394 ft of 6 in IP to IP main. MAOP is being increased from 55 psi to 58 psi. Total Service Tie-over = 64; Total Service Replace = 14; Total Service Uprate = 557. This main is being replaced as part of the Bare Steel Replacement program. This phase cannot be completed until all other phases for Hwy 71 are completed.

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Muehlenkamp, Anne	$0	3/10/2017
Engineering Review-Dist S	Hoeferlin, Craig	$0	3/20/2017
VP Field Operations-MGE	Hampton, Joe	$1,000,000	3/21/2017

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376100-Mains - Steel	$0.00	$2,081.57	$2,081.57	$0.00	$0.00
376300-Mains - Plastic	$280,881.94	$725.84	$281,607.78	$0.00	$0.00
380200-Services - Plastic & Copper	$46,835.99	$0.00	$46,835.99	$0.00	$0.00
Total Estimated Costs:	**$327,717.93**	**$2,807.41**	**$330,525.34**	**$0.00**	**$0.00**

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Available for Unitization:				
0401-043050 JACKSON CTY/KC				
376300-Mains - Plastic				
Addition				
Contract Payroll	Mains-Plastic 4"		$1,037.12	0
Contractor Work	Mains-Plastic 4"		$8,844.64	0
Contractor Work	Mains-Plastic 4"		$7,907.18	0
Department Clearings	Mains-Plastic 4"		$897.11	0
Mechanical Equipment	Mains-Plastic 4"		$214.40	0
Overheads Capitalized - Benefits	Mains-Plastic 4"		$579.75	0
Overheads Capitalized - General	Mains-Plastic 4"		$3,758.97	0
Overheads Capitalized - General	Mains-Plastic 4"		$4,282.53	0
Payroll Taxes	Mains-Plastic 4"		$157.64	0
Stores	Mains-Plastic 4"		$1,798.79	40
		Addition Total:	$29,478.13	40

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$29,478.13	40	$0.00	0
	Addition Dollars	**Add Qty**	**Retirement Dollars**	**Retire Qty**
Available for Unitization:	$29,478.13	40	$0.00	0
	Addition Dollars	**Add Qty**	**Retirement Dollars**	**Retire Qty**
Unit Estimate Total:	$29,478.13	40	$0.00	0

Work Order Authorization Information

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	***** Unit Estimate ***** Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0401-043050 JACKSON CTY/KC						
376300-Mains - Plastic						
Mains-Plastic 2"						
Contract Payroll	$0.00	$64.82	0	0	0	0
Contractor Work	$17,758.50	$0.00	0	0	0	0
Department Clearings	$0.00	$56.07	0	0	0	0
Mechanical Equipment	$0.00	$13.40	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$36.23	0	0	0	0
Overheads Capitalized - General	$8,758.14	$9.84	0	0	0	0
Payroll Taxes	$0.00	$9.85	0	0	0	0
Retirement Value	$0.00	$0.00	0	10	0	0
Stores	$2,848.88	$0.00	1325	0	0	0
Mains-Plastic 4"						
Contract Payroll	$9,380.08	$64.82	0	0	0	0
Contractor Work	$96,367.74	$242.40	0	0	0	0
Department Clearings	$8,113.77	$56.07	0	0	0	0
Mechanical Equipment	$536.00	$13.40	0	0	0	0
Overheads Capitalized - Benefits	$5,243.46	$36.23	0	0	0	0
Overheads Capitalized - General	$46,150.74	$112.86	0	0	0	0
Payroll Taxes	$1,425.77	$9.85	0	0	0	0
Retirement Value	$0.00	$0.00	0	132	0	0
Stores	$10,273.69	$0.00	2432	0	0	0
Mains-Plastic 6"						
Contractor Work	$45,032.02	$0.00	0	0	0	0
Overheads Capitalized - General	$22,077.68	$0.00	0	0	0	0
Stores	$6,915.47	$0.00	1394	0	0	0
SubTotal Utility Account:	**$280,881.94**	**$725.84**	**5,151.00**	**142.00**	**0.00**	**0.00**
376100-Mains - Steel						
Mains-Steel 3"						
Contract Payroll	$0.00	$64.82	0	0	0	0
Department Clearings	$0.00	$56.07	0	0	0	0
Mechanical Equipment	$0.00	$13.40	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$36.23	0	0	0	0
Overheads Capitalized - General	$0.00	$9.84	0	0	0	0
Payroll Taxes	$0.00	$9.85	0	0	0	0
Retirement Value	$0.00	$0.00	0	416	0	0
Mains-Steel 4"						
Contract Payroll	$0.00	$637.14	0	0	0	0
Department Clearings	$0.00	$551.13	0	0	0	0

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0401-043050 JACKSON CTY/KC						
376100-Mains - Steel						
Mains-Steel 4"						
Mechanical Equipment	$0.00	$13.40	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$356.16	0	0	0	0
Overheads Capitalized - General	$0.00	$46.47	0	0	0	0
Payroll Taxes	$0.00	$96.85	0	0	0	0
Retirement Value	$0.00	$0.00	0	3466	0	0
Mains-Steel 6"						
Contract Payroll	$0.00	$64.82	0	0	0	0
Department Clearings	$0.00	$56.07	0	0	0	0
Mechanical Equipment	$0.00	$13.40	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$36.23	0	0	0	0
Overheads Capitalized - General	$0.00	$9.84	0	0	0	0
Payroll Taxes	$0.00	$9.85	0	0	0	0
Retirement Value	$0.00	$0.00	0	759	0	0
SubTotal Utility Account:	**$0.00**	**$2,081.57**	**0.00**	**4,641.00**	**0.00**	**0.00**
380200-Services - Plastic & Copper						
Services-Plastic						
Contractor Work	$32,867.36	$0.00	0	0	0	0
Overheads Capitalized - General	$13,968.63	$0.00	0	0	0	0
Retirement Value	$0.00	$0.00	0	79	0	0
Stores	$0.00	$0.00	26	0	0	0
SubTotal Utility Account:	**$46,835.99**	**$0.00**	**26.00**	**79.00**	**0.00**	**0.00**
SubTotal Location:	**$327,717.93**	**$2,807.41**	**5,177.00**	**4,862.00**	**0.00**	**0.00**
Total Unit Estimate:	**$327,717.93**	**$2,807.41**	**5,177**	**4,862**	**0**	**0**

***** Class Codes *****

Class Code	Value
cap_expense	capital
ISRS Reason	03 - Bare Steel Replacement
isrs_recov	yes
ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod
Project Classification	both

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0401-043050 JACKSON CTY/KC				
376100-Mains - Steel				
Retirement				
Contract Payroll	Mains-Steel 24"		$71.54	0
Contract Payroll	Mains-Steel 6"		$71.54	0
Contract Payroll	Mains-Steel 3"		$71.54	0
Contract Payroll	Mains-Steel 12"		$71.54	0
Contract Payroll	Mains-Steel 2"		$71.54	0
Contract Payroll	Mains-Steel 4"		$71.54	0
Contractor Work	Mains-Steel 3"		$2,000.10	0
Contractor Work	Mains-Steel 12"		$2,000.10	0
Contractor Work	Mains-Steel 4"		$2,000.10	0
Contractor Work	Mains-Steel 24"		$2,000.10	0
Contractor Work	Mains-Steel 2"		$2,000.10	0
Contractor Work	Mains-Steel 6"		$2,000.10	0
Department Clearings	Mains-Steel 3"		$105.16	0
Department Clearings	Mains-Steel 24"		$105.16	0
Department Clearings	Mains-Steel 4"		$105.16	0
Department Clearings	Mains-Steel 2"		$105.16	0
Department Clearings	Mains-Steel 6"		$105.16	0
Department Clearings	Mains-Steel 12"		$105.16	0
Overheads Capitalized - Benefits	Mains-Steel 6"		$62.96	0
Overheads Capitalized - Benefits	Mains-Steel 3"		$62.96	0
Overheads Capitalized - Benefits	Mains-Steel 2"		$62.96	0
Overheads Capitalized - Benefits	Mains-Steel 24"		$62.96	0
Overheads Capitalized - Benefits	Mains-Steel 12"		$62.96	0
Overheads Capitalized - Benefits	Mains-Steel 4"		$62.96	0
Overheads Capitalized - General	Mains-Steel 12"		$1,226.71	0
Overheads Capitalized - General	Mains-Steel 4"		$1,226.71	0
Overheads Capitalized - General	Mains-Steel 2"		$1,226.71	0
Overheads Capitalized - General	Mains-Steel 3"		$1,226.71	0
Overheads Capitalized - General	Mains-Steel 6"		$1,226.71	0
Overheads Capitalized - General	Mains-Steel 24"		$1,226.71	0
Payroll Taxes	Mains-Steel 6"		$10.87	0
Payroll Taxes	Mains-Steel 2"		$10.87	0
Payroll Taxes	Mains-Steel 3"		$10.87	0
Payroll Taxes	Mains-Steel 24"		$10.87	0
Payroll Taxes	Mains-Steel 12"		$10.87	0
Payroll Taxes	Mains-Steel 4"		$10.87	0
Retirement Value	Mains-Steel 6"		$32,648.64	72
Retirement Value	Mains-Steel 12"		$281.22	23
Retirement Value	Mains-Steel 24"		$37.82	4
Retirement Value	Mains-Steel 6"		$19,395.90	85
Retirement Value	Mains-Steel 2"		$12.66	28
Retirement Value	Mains-Steel 3"		$73.64	415
Retirement Value	Mains-Steel 2"		$1,193.57	95
Retirement Value	Mains-Steel 6"		$1,804.59	6
Retirement Value	Mains-Steel 4"		$31.25	15

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0401-043050 JACKSON CTY/KC				
376100-Mains - Steel				
Retirement				
Retirement Value	Mains-Steel 6"		$2,005.13	706
Retirement Value	Mains-Steel 4"		$64.66	5
Retirement Value	Mains-Steel 6"		$279.96	28
Retirement Value	Mains-Steel 4"		$2,888.72	936
Retirement Value	Mains-Steel 4"		$4,260.68	1,389
Retirement Value	Mains-Steel 4"		$2,726.50	1,117
Retirement Value	Mains-Steel 4"		$2,368.54	18
Retirement Value	Mains-Steel 12"		$1,515.16	11
		Retirement Total:	$92,452.68	4,953
376300-Mains - Plastic				
Addition				
Contract Payroll	Mains-Plastic 6"		$250.39	0
Contract Payroll	Mains-Plastic 2"		$500.78	0
Contract Payroll	Mains-Plastic 4"		$2,682.75	0
Contractor Work	Mains-Plastic 6"		$66,818.82	0
Contractor Work	Mains-Plastic 2"		$32,628.92	0
Contractor Work	Mains-Plastic 4"		$139,828.94	0
Department Clearings	Mains-Plastic 2"		$736.15	0
Department Clearings	Mains-Plastic 6"		$368.07	0
Department Clearings	Mains-Plastic 4"		$3,943.64	0
Overheads Capitalized - Benefits	Mains-Plastic 4"		$2,360.82	0
Overheads Capitalized - Benefits	Mains-Plastic 6"		$220.34	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$440.69	0
Overheads Capitalized - General	Mains-Plastic 2"		$21,580.66	0
Overheads Capitalized - General	Mains-Plastic 6"		$46,492.96	0
Overheads Capitalized - General	Mains-Plastic 4"		$93,378.49	0
Payroll Taxes	Mains-Plastic 4"		$407.78	0
Payroll Taxes	Mains-Plastic 2"		$76.12	0
Payroll Taxes	Mains-Plastic 6"		$38.06	0
Stores	Mains-Plastic 4"		$12,841.54	2,368
Stores	Mains-Plastic 6"		$9,360.97	1,383
Stores	Mains-Plastic 2"		$2,672.87	1,381
		Addition Total:	$437,629.76	6,132
Retirement				
Contract Payroll	Mains-Plastic 2"		$71.54	0
Contract Payroll	Mains-Plastic 4"		$71.54	0
Contractor Work	Mains-Plastic 2"		$2,000.10	0
Contractor Work	Mains-Plastic 4"		$2,721.94	0
Department Clearings	Mains-Plastic 4"		$105.16	0
Department Clearings	Mains-Plastic 2"		$105.16	0
Overheads Capitalized - Benefits	Mains-Plastic 4"		$62.96	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$62.96	0
Overheads Capitalized - General	Mains-Plastic 2"		$1,226.71	0
Overheads Capitalized - General	Mains-Plastic 4"		$1,676.99	0

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0401-043050 JACKSON CTY/KC				
376300-Mains - Plastic				
Retirement				
Payroll Taxes	Mains-Plastic 4"		$10.87	0
Payroll Taxes	Mains-Plastic 2"		$10.87	0
Retirement Value	Mains-Plastic 4"		$387.39	5
Retirement Value	Mains-Plastic 4"		$1,337.10	98
Retirement Value	Mains-Plastic 4"		$90.93	6
Retirement Value	Mains-Plastic 2"		$636.82	10
Stores	Mains-Plastic 4"		$16.32	0
		Retirement Total:	**$10,595.36**	**119**
380100-Services - Steel				
Retirement				
Contractor Work	Services-Steel		$810.70	0
Overheads Capitalized - General	Services-Steel		$494.53	0
Retirement Value	Services-Steel		$142.16	186
Retirement Value	Services-Steel		$272.82	202
Retirement Value	Services-Steel		$38.08	39
Retirement Value	Services-Steel		$105.08	88
Retirement Value	Services-Steel		$47.79	53
Retirement Value	Services-Steel		$31.80	52
Retirement Value	Services-Steel		$188.84	163
		Retirement Total:	**$2,131.80**	**783**
380200-Services - Plastic & Copper				
Addition				
Contract Payroll	Services-Plastic		$2,682.75	0
Contractor Work	Services-Plastic		$25,795.04	0
Department Clearings	Services-Plastic		$3,943.64	0
Overheads Capitalized - Benefits	Services-Plastic		$2,360.82	0
Overheads Capitalized - General	Services-Plastic		$16,876.17	0
Payroll Taxes	Services-Plastic		$407.78	0
Stores	Services-Plastic		$1,461.81	1,338
		Addition Total:	**$53,528.01**	**1,338**
Retirement				
Contractor Work	Services-Plastic		$891.77	0
Overheads Capitalized - General	Services-Plastic		$543.98	0
Retirement Value	Services-Plastic		$649.98	50
Retirement Value	Services-Plastic		$435.31	19
Retirement Value	Services-Plastic		$73.82	3
Retirement Value	Services-Plastic		$1,653.36	129
Retirement Value	Services-Plastic		$19.11	2
Retirement Value	Services-Plastic		$262.64	30
Retirement Value	Services-Plastic		$307.42	13
Retirement Value	Services-Plastic		$3,305.16	340
Retirement Value	Services-Plastic		$48.90	2
Retirement Value	Services-Plastic		$368.48	64
Retirement Value	Services-Plastic		$1,194.40	92

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0401-043050 JACKSON CTY/KC				
380200-Services - Plastic & Copper				
Retirement				
Retirement Value	Services-Plastic		$103.48	9
Retirement Value	Services-Plastic		$712.93	90
Retirement Value	Services-Plastic		$90.44	5
Retirement Value	Services-Plastic		$295.54	23
Retirement Value	Services-Plastic		$578.11	38
Retirement Value	Services-Plastic		$67.04	11
Retirement Value	Services-Plastic		$997.76	92
Retirement Value	Services-Plastic		$124.90	14
Retirement Value	Services-Plastic		$356.73	19
Retirement Value	Services-Plastic		$325.13	31
Retirement Value	Services-Plastic		$320.44	20
Retirement Value	Services-Plastic		$595.22	32
Retirement Value	Services-Plastic		$6,216.90	555
		Retirement Total:	$20,538.95	1,683

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$491,157.77	6,470	$125,718.79	7,538
Used In Unitization:	$491,157.77	6,470	$125,718.79	7,538
Unit Estimate Total:	**$491,157.77**	**6,470**	**$125,718.79**	**7,538**

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	101000::Gas Plant In Service				
0401-043050 JACKSON CTY/KC					
376100-Mains - Steel					
Mains-Steel 12"					
OCR		1957	URET	23	$281.22
OCR		1984	URET	11	$1,515.16
Mains-Steel 2"					
OCR		1928	URET	28	$12.66
OCR		1993	URET	95	$1,193.57

Work Order Authorization Information

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	101000::Gas Plant In Service				
0401-043050 JACKSON CTY/KC					
376100-Mains - Steel					
Mains-Steel 24"					
OCR		1927	URET	4	$37.82
Mains-Steel 3"					
OCR		1957	URET	415	$73.64
Mains-Steel 4"					
OCR		1953	URET	1,389	$4,260.68
OCR		1954	URET	1,117	$2,726.50
OCR		1956	URET	15	$31.25
OCR		1961	URET	936	$2,888.72
OCR		1991	URET	5	$64.66
OCR		2005	URET	18	$2,368.54
Mains-Steel 6"					
OCR		1956	URET	706	$2,005.13
OCR		1973	URET	28	$279.96
OCR		2005	URET	6	$1,804.59
OCR		2011	URET	85	$19,395.90
OCR		2015	URET	72	$32,648.64
		Utility Account Total:		4,953	$71,588.64
376300-Mains - Plastic					
Mains-Plastic 2"					
OCR		2017	URET	10	$636.82
Mains-Plastic 4"					
OCR		1991	URET	6	$90.93
OCR		2005	URET	98	$1,337.10
OCR		2017	URET	5	$387.39
		Utility Account Total:		119	$2,452.24
380100-Services - Steel					
Services-Steel					
OCR		1952	URET	52	$31.80
OCR		1953	URET	163	$188.84
OCR		1954	URET	186	$142.16
OCR		1958	URET	53	$47.79
OCR		1961	URET	202	$272.82
OCR		1966	URET	88	$105.08
OCR		1967	URET	39	$38.08
		Utility Account Total:		783	$826.57
380200-Services - Plastic & Copper					
Services-Plastic					
OCR		1975	URET	11	$67.04
OCR		1978	URET	90	$712.93
OCR		1980	URET	92	$997.76
OCR		1982	URET	23	$295.54
OCR		1984	URET	2	$19.11
OCR		1985	URET	14	$124.90
OCR		1986	URET	92	$1,194.40
OCR		1989	URET	340	$3,305.16

Work Order Authorization Information

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	101000::Gas Plant In Service				
0401-043050 JACKSON CTY/KC					
380200-Services - Plastic & Copper					
Services-Plastic					
OCR		1991	URET	9	$103.48
OCR		1993	URET	555	$6,216.90
OCR		1995	URET	30	$262.64
OCR		1996	URET	64	$368.48
OCR		1997	URET	31	$325.13
OCR		1998	URET	129	$1,653.36
OCR		2000	URET	50	$649.98
OCR		2002	URET	5	$90.44
OCR		2003	URET	20	$320.44
OCR		2004	URET	32	$595.22
OCR		2005	URET	38	$578.11
OCR		2009	URET	3	$73.82
OCR		2010	URET	19	$435.31
OCR		2012	URET	19	$356.73
OCR		2014	URET	13	$307.42
OCR		2015	URET	2	$48.90
		Utility Account Total:		**1,683**	**$19,103.20**
		Location Total:		**7,538**	**$93,970.65**
		GL Account Total:		**7,538**	**$93,970.65**
		Posted Retirements:		**7,538**	**$93,970.65**
		Work Order Total:		**7,538**	**$93,970.65**

Work Order Authorization Information

Header Detail

Work Order: 802411
Work Order Title: Repl 85F 2S Republic Main St - Leak
Wo Type Description: WO-Replacement Mains & Svcs MGE
Work Order Group:
Current Revision: 2
Funding Project: F0572
Funding Project Desc: Main Replacement - ISRS (SW)
Eligible for AFUDC yes Eligible for CPI: yes
Reason Code: Safety

Company: Spire Missouri Inc.
Business Segment: Missouri West
Functional Class: Distribution Plant
Department Code: 20921
Department Description: Region 2B - SW Missouri - Distribution - Union
Budget Description: Replace bare steel main - safety re
Est. Annual Revenue:
Reimbursement Type: None
Retirement Type:

WO Description: Install 85 Ft of 2" ST IP Main on HWY P between W Nicholas Stand Miller Rd due to leaking dressers.

Major Location: 0812-Republic
Asset Location: 0812-034002 GREENE CTY/REPUBLIC

Status: In service

Estimated Start Date: Oct 29, 2018 Estimated Completion Date: Nov 02, 2018 Estimated In-Service Date: Nov 02, 2018

Notes: Abandon 80 Ft of 2" ST IP Main on HWY P between W NicholasSt and Miller Rd. Main being replaced due to leakage.

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Griewing, Michael	$0	1/9/2019
Engineering Review-Dist S	Hoeferlin, Craig	$0	1/14/2019
VP Field Operations-MGE	Goodson, Timothy	$1,000,000	1/15/2019

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376100-Mains - Steel	$7,602.60	$133.47	$7,736.07	$0.00	$0.00
Total Estimated Costs:	$7,602.60	$133.47	$7,736.07	$0.00	$0.00

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0812-034002 GREENE CTY/REPUBI						
376100-Mains - Steel						
Mains-Steel 2"						
Contract Payroll	$130.40	$0.00	0	0	0	0
Contractor Work	$3,030.00	$82.90	0	0	0	0
Department Clearings	$191.69	$0.00	0	0	0	0
Overheads Capitalized - Benefits	$114.75	$0.00	0	0	0	0
Overheads Capitalized - General	$2,715.00	$50.57	0	0	0	0
Payroll Taxes	$19.82	$0.00	0	0	0	0
Retirement Value	$0.00	$0.00	0	160	0	0
Stores	$1,400.94	$0.00	85	0	0	0
SubTotal Utility Account:	**$7,602.60**	**$133.47**	**85.00**	**160.00**	**0.00**	**0.00**
SubTotal Location:	**$7,602.60**	**$133.47**	**85.00**	**160.00**	**0.00**	**0.00**
Total Unit Estimate:	**$7,602.60**	**$133.47**	**85**	**160**	**0**	**0**

***** Class Codes *****

Class Code	Value
cap_expense	capital
ISRS Reason	08 - Cast Iron or Bare Steel Replacement - Lea
Isrs_recov	yes
ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod
Project Classification	both

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Available for Unitization:				
0812-034002 GREENE CTY/REPUBLIC				
376100-Mains - Steel				
Addition				
Contract Payroll	Mains-Steel 2"		$4,416.38	0
Department Clearings	Mains-Steel 2"		$6,492.08	0
Overheads Capitalized - Benefits	Mains-Steel 2"		$3,886.41	0
Overheads Capitalized - General	Mains-Steel 2"		$2,810.42	0

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Available for Unitization:				
0812-034002 GREENE CTY/REPUBLIC				
376100-Mains - Steel				
Addition				
Payroll Taxes	Mains-Steel 2"		$671.29	0
Stores	Mains-Steel 2"		$3,933.93	51
		Addition Total:	$22,210.51	51
Retirement				
Contract Payroll	Mains-Steel 2"		$3,976.29	0
Department Clearings	Mains-Steel 2"		$5,845.15	0
Overheads Capitalized - Benefits	Mains-Steel 2"		$3,499.14	0
Overheads Capitalized - General	Mains-Steel 2"		$649.81	0
Payroll Taxes	Mains-Steel 2"		$604.40	0
Retirement Value	Mains-Steel 2"		$65.92	36
Stores	Mains-Steel 2"		$459.04	0
		Retirement Total:	$15,099.75	36

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$22,210.51	51	$15,099.75	36
Available for Unitization:	$22,210.51	51	$15,099.75	36
Unit Estimate Total:	**$22,210.51**	**51**	**$15,099.75**	**36**

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Selected Retirements:					
Missouri West	**101000::Gas Plant in Service**				
0812-034002 GREENE CTY/REPUBLIC					
376100-Mains - Steel					
Mains-Steel 2"					
OCR		1969	URET	36	$65.92
			Utility Account Total:	36	$65.92
			Location Total:	36	$65.92
			GL Account Total:	36	$65.92
			Selected Retirements:	36	$65.92
			Work Order Total:	36	$65.92

Work Order Authorization Information

Header Detail

Work Order: 802360
Work Order Title: Repl 2015F 4P River N of Pacific
Wo Type Description: WO-Replacement Mains & Svcs MGE
Work Order Group:
Current Revision: 2
Funding Project: F0604
Funding Project Desc: Main Replacement - ISRS (S)
Eligible for AFUDC yes Eligible for CPI: yes
Reason Code: Strategic

Company: Spire Missouri Inc.
Business Segment: Missouri West
Functional Class: Distribution Plant
Department Code: 20638
Department Description: Construction & Maintenance - Region 2B - Unio
Budget Description: Replace bare steel main - safety re
Est. Annual Revenue:
Reimbursement Type: None
Retirement Type:

WO Description: Install ~ 1510 Ft of 4in PL IP Main, ~505 Ft of 4in PL LP Main.

Major Location: 0201-Independence
Asset Location: 0201-043001 JACKSON CTY/INDEPENDENCE

Status: completed

Estimated Start Date: Dec 24, 2018 Estimated Completion Date: Dec 28, 2018 Estimated In-Service Date: Dec 28, 2018

Notes: We have a #3 Leak that is due on 02/19/19 on a 1000 Ft segment ofCast Iron main on River between Walnut and Pacific. We need to replacethis segment and would also like to replace the 270 Ft cast Ironsegment on River between Truman and Maple. Abandon ~ 1448 Ft of 6in ST IP Main ~571 Ft of 8in ST LP Main,~1270 Ft of 8in CI LP main, 10 Ft of 4" PL IP LP Main. Total Service Tie overs: 3. MREPL to clear leak due Feb 2019, also to remove remaining Castlron main. This is ISRS Recoverable.

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Muehlenkamp, Anne	$0	12/17/2018
Engineering Review-Dist S	Hoeferlin, Craig	$0	1/3/2019
VP Field Operations-MGE	Goodson, Timothy	$1,000,000	1/4/2019

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376100-Mains - Steel	$0.00	$30,822.50	$30,822.50	$0.00	$0.00
376200-Mains - Cast Iron	$0.00	$8,399.33	$8,399.33	$0.00	$0.00
376300-Mains - Plastic	$98,784.61	$849.92	$99,634.53	$0.00	$0.00
380200-Services - Plastic & Copper	$1,052.94	$0.00	$1,052.94	$0.00	$0.00
Total Estimated Costs:	$99,837.55	$40,071.75	$139,909.30	$0.00	$0.00

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0201-043001 JACKSON CTY/INDEP						
376200-Mains - Cast Iron						
Mains-Cast Iron 8"						
Contract Payroll	$0.00	$286.16	0	0	0	0
Contractor Work	$0.00	$4,578.00	0	0	0	0
Department Clearings	$0.00	$420.66	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$251.82	0	0	0	0
Overheads Capitalized - General	$0.00	$2,819.19	0	0	0	0
Payroll Taxes	$0.00	$43.50	0	0	0	0
Retirement Value	$0.00	$0.00	0	1270	0	0
SubTotal Utility Account:	**$0.00**	**$8,399.33**	**0.00**	**1,270.00**	**0.00**	**0.00**
376300-Mains - Plastic						
Mains-Plastic 4"						
Contract Payroll	$715.40	$71.54	0	0	0	0
Contractor Work	$51,824.08	$368.16	0	0	0	0
Department Clearings	$1,051.64	$105.16	0	0	0	0
Overheads Capitalized - Benefits	$629.55	$62.96	0	0	0	0
Overheads Capitalized - General	$36,519.81	$231.23	0	0	0	0
Payroll Taxes	$108.74	$10.87	0	0	0	0
Retirement Value	$0.00	$0.00	0	10	0	0
Stores	$7,935.39	$0.00	2015	0	0	0
SubTotal Utility Account:	**$98,784.61**	**$849.92**	**2,015.00**	**10.00**	**0.00**	**0.00**
376100-Mains - Steel						
Mains-Steel 6"						
Contract Payroll	$0.00	$357.70	0	0	0	0
Contractor Work	$0.00	$7,411.44	0	0	0	0
Department Clearings	$0.00	$525.82	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$314.78	0	0	0	0
Overheads Capitalized - General	$0.00	$4,642.54	0	0	0	0
Payroll Taxes	$0.00	$54.37	0	0	0	0
Retirement Value	$0.00	$0.00	0	1493	0	0
Stores	$0.00	$144.74	0	0	0	0
Mains-Steel 8"						
Contract Payroll	$0.00	$214.62	0	0	0	0
Contractor Work	$0.00	$8,282.88	0	0	0	0
Department Clearings	$0.00	$315.49	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$188.87	0	0	0	0
Overheads Capitalized - General	$0.00	$6,309.23	0	0	0	0
Payroll Taxes	$0.00	$32.62	0	0	0	0

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0201-043001 JACKSON CTY/INDEP						
376100-Mains - Steel						
Mains-Steel 8"						
Retirement Value	$0.00	$0.00	0	676	0	0
Stores	$0.00	$2,027.40	0	0	0	0
SubTotal Utility Account:	**$0.00**	**$30,822.60**	**0.00**	**2,169.00**	**0.00**	**0.00**
380200-Services - Plastic & Copper						
Services-Plastic						
Contractor Work	$654.00	$0.00	0	0	0	0
Overheads Capitalized - General	$398.94	$0.00	0	0	0	0
SubTotal Utility Account:	**$1,052.94**	**$0.00**	**0.00**	**0.00**	**0.00**	**0.00**
SubTotal Location:	**$99,837.55**	**$40,071.75**	**2,015.00**	**3,449.00**	**0.00**	**0.00**
Total Unit Estimate:	**$99,837.55**	**$40,071.75**	**2,015**	**3,449**	**0**	**0**

***** Class Codes *****

Class Code	Value
cap_expense	capital
ISRS Reason	08 - Cast Iron or Bare Steel Replacement - Lea
Isrs_recov	yes
ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod
Project Classification	both

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Available for Unitization:				
0201-043001 JACKSON CTY/INDEPENDENCE				
376100-Mains - Steel				
Addition				
Overheads Capitalized - General	Mains-Steel 6"		$248.07	0
Overheads Capitalized - General	Mains-Steel 8"		$668.03	0
		Addition Total:	**$916.10**	**0**
Retirement				
Contract Payroll	Mains-Steel 8"		$1,430.80	0

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Available for Unitization:				
0201-043001 JACKSON CTY/INDEPENDENCE				
376100-Mains - Steel				
Retirement				
Contract Payroll	Mains-Steel 6"		$357.70	0
Contractor Work	Mains-Steel 6"		$2,287.57	0
Contractor Work	Mains-Steel 8"		$30,575.64	0
Department Clearings	Mains-Steel 6"		$525.82	0
Department Clearings	Mains-Steel 8"		$2,103.28	0
Overheads Capitalized - Benefits	Mains-Steel 6"		$314.78	0
Overheads Capitalized - Benefits	Mains-Steel 8"		$1,259.10	0
Overheads Capitalized - General	Mains-Steel 8"		$20,290.67	0
Overheads Capitalized - General	Mains-Steel 6"		$1,247.70	0
Payroll Taxes	Mains-Steel 8"		$217.48	0
Payroll Taxes	Mains-Steel 6"		$54.37	0
Retirement Value	Mains-Steel 8"		$2.65	2
Retirement Value	Mains-Steel 6"		$914.06	672
Retirement Value	Mains-Steel 8"		$1,203.61	176
Retirement Value	Mains-Steel 8"		$1,486.87	77
Retirement Value	Mains-Steel 8"		$8,712.01	245
Retirement Value	Mains-Steel 6"		$4,974.59	749
Stores	Mains-Steel 6"		$109.97	0
Stores	Mains-Steel 8"		$3,564.74	0
		Retirement Total:	**$81,633.41**	**1,921**
376200-Mains - Cast Iron				
Retirement				
Contract Payroll	Mains-Cast Iron 8"		$715.40	0
Contractor Work	Mains-Cast Iron 8"		$8,953.00	0
Department Clearings	Mains-Cast Iron 8"		$1,051.64	0
Overheads Capitalized - Benefits	Mains-Cast Iron 8"		$629.55	0
Overheads Capitalized - General	Mains-Cast Iron 8"		$5,527.86	0
Payroll Taxes	Mains-Cast Iron 8"		$108.74	0
Retirement Value	Mains-Cast Iron 8"		$2,007.78	1,209
		Retirement Total:	**$18,993.97**	**1,209**
376300-Mains - Plastic				
Addition				
Contract Payroll	Mains-Plastic 4"		$3,577.00	0
Contractor Work	Mains-Plastic 4"		$112,049.13	0
Department Clearings	Mains-Plastic 4"		$5,258.19	0
Overheads Capitalized - Benefits	Mains-Plastic 4"		$3,147.76	0
Overheads Capitalized - General	Mains-Plastic 4"		$83,865.64	0
Payroll Taxes	Mains-Plastic 4"		$543.70	0
Stores	Mains-Plastic 4"		$24,890.18	1,907
		Addition Total:	**$233,331.60**	**1,907**
Retirement				
Contract Payroll	Mains-Plastic 4"		$357.70	0
Contractor Work	Mains-Plastic 4"		$383.70	0
Department Clearings	Mains-Plastic 4"		$525.82	0

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Available for Unitization:				
0201-043001 JACKSON CTY/INDEPENDENCE				
376300-Mains - Plastic				
Retirement				
Overheads Capitalized - Benefits	Mains-Plastic 4"		$314.78	0
Overheads Capitalized - General	Mains-Plastic 4"		$267.32	0
Payroll Taxes	Mains-Plastic 4"		$54.37	0
Retirement Value	Mains-Plastic 4"		$1,875.81	50
		Retirement Total:	**$3,779.50**	**50**
380200-Services - Plastic & Copper				
Addition				
Contract Payroll	Services-Plastic		$178.85	0
Contractor Work	Services-Plastic		$2,385.24	0
Department Clearings	Services-Plastic		$262.91	0
Overheads Capitalized - Benefits	Services-Plastic		$157.39	0
Overheads Capitalized - General	Services-Plastic		$1,568.44	0
Payroll Taxes	Services-Plastic		$27.19	0
Stores	Services-Plastic		$158.71	140
		Addition Total:	**$4,738.73**	**140**
Retirement				
Contract Payroll	Services-Plastic		$160.97	0
Contractor Work	Services-Plastic		$685.25	0
Department Clearings	Services-Plastic		$236.63	0
Overheads Capitalized - Benefits	Services-Plastic		$141.65	0
Overheads Capitalized - General	Services-Plastic		$432.97	0
Payroll Taxes	Services-Plastic		$24.47	0
Retirement Value	Services-Plastic		$88.26	3
Retirement Value	Services-Plastic		$576.55	55
Retirement Value	Services-Plastic		$70.93	6
Retirement Value	Services-Plastic		$14.09	2
		Retirement Total:	**$2,431.77**	**66**

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$238,986.43	2,047	$106,838.65	3,246
	Addition Dollars	**Add Qty**	**Retirement Dollars**	**Retire Qty**
Available for Unitization:	$238,986.43	2,047	$106,838.65	3,246
	Addition Dollars	**Add Qty**	**Retirement Dollars**	**Retire Qty**
Unit Estimate Total:	$238,986.43	2,047	$106,838.65	3,246

Work Order Authorization Information

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	**101000::Gas Plant in Service**				
0201-043001 JACKSON CTY/INDEPENDENCE					
376100-Mains - Steel					
Mains-Steel 6"					
OCR		1939	URET	672	$914.06
OCR		1966	URET	749	$4,974.59
Mains-Steel 8"					
OCR		1936	URET	2	$2.65
OCR		1953	URET	176	$1,203.61
OCR		1988	URET	77	$1,486.87
OCR		1989	URET	245	$8,712.01
		Utility Account Total:		**1,921**	**$17,293.79**
376200-Mains - Cast Iron					
Mains-Cast Iron 8"					
OCR		1939	URET	1,209	$2,007.78
		Utility Account Total:		**1,209**	**$2,007.78**
376300-Mains - Plastic					
Mains-Plastic 4"					
OCR		1989	URET	50	$1,875.81
		Utility Account Total:		**50**	**$1,875.81**
380200-Services - Plastic & Copper					
Services-Plastic					
OCR		1980	URET	2	$14.09
OCR		1987	URET	6	$70.93
OCR		1991	URET	55	$576.55
OCR		2014	URET	3	$88.26
		Utility Account Total:		**66**	**$749.83**
		Location Total:		**3,246**	**$21,927.21**
		GL Account Total:		**3,246**	**$21,927.21**
		Posted Retirements:		**3,246**	**$21,927.21**
		Work Order Total:		**3,246**	**$21,927.21**

Work Order Authorization Information

Header Detail

Work Order: 802354
Work Order Title: Repl 167F 2P 25th & Drury
Wo Type Description: WO-Replacement Mains & Svcs MGE
Work Order Group:
Current Revision: 1
Funding Project: F0599
Funding Project Desc: Main Replacement - ISRS (N)
Eligible for AFUDC yes Eligible for CPI: yes
Reason Code: System Integrity

Company: Spire Missouri Inc.
Business Segment: Missouri West
Functional Class: Distribution Plant
Department Code: 20648
Department Description: Construction & Maintenance - Region 2A - Unio
Budget Description: Replace cast iron main - CPI / prio
Est. Annual Revenue:
Reimbursement Type: None
Retirement Type:

WO Description: Insert ~ 167 Ft of 2 in PL LP Main at 25th Street at Drury. One service being tied over. This main is being replaced due to leak.

Major Location: 0401-KC/MO - Central
Asset Location: 0401-043050 JACKSON CTY/KC

Status: completed

Estimated Start Date: Nov 12, 2018 Estimated Completion Date: Nov 16, 2018 Estimated In-Service Date: Nov 16, 2018

Notes:

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Muehlenkamp, Anne	$0	10/24/2018
Engineering Review-Dist S	Hoeferlin, Craig	$0	10/30/2018
VP Field Operations-MGE	Hampton, Joe	$1,000,000	10/31/2018

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376200-Mains - Cast Iron	$0.00	$1,407.79	$1,407.79	$0.00	$0.00
376300-Mains - Plastic	$17,447.40	$0.00	$17,447.40	$0.00	$0.00
Total Estimated Costs:	$17,447.40	$1,407.79	$18,855.19	$0.00	$0.00

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0401-043050 JACKSON CTY/KC						
376200-Mains - Cast Iron						
Mains-Cast Iron 4"						
Contract Payroll	$0.00	$468.48	0	0	0	0
Department Clearings	$0.00	$405.24	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$261.88	0	0	0	0
Overheads Capitalized - General	$0.00	$80.98	0	0	0	0
Payroll Taxes	$0.00	$71.21	0	0	0	0
Retirement Value	$0.00	$0.00	0	164	0	0
Stores	$0.00	$120.00	0	0	0	0
SubTotal Utility Account:	**$0.00**	**$1,407.79**	**0.00**	**164.00**	**0.00**	**0.00**
376300-Mains - Plastic						
Mains-Plastic 2"						
Contract Payroll	$6,284.28	$0.00	0	0	0	0
Department Clearings	$5,435.90	$0.00	0	0	0	0
Overheads Capitalized - Benefits	$3,512.91	$0.00	0	0	0	0
Overheads Capitalized - General	$657.76	$0.00	0	0	0	0
Payroll Taxes	$955.21	$0.00	0	0	0	0
Stores	$601.34	$0.00	167	0	0	0
SubTotal Utility Account:	**$17,447.40**	**$0.00**	**167.00**	**0.00**	**0.00**	**0.00**
SubTotal Location:	**$17,447.40**	**$1,407.79**	**167.00**	**164.00**	**0.00**	**0.00**
Total Unit Estimate:	**$17,447.40**	**$1,407.79**	**167**	**164**	**0**	**0**

***** Class Codes *****

Class Code	Value
cap_expense	capital
ISRS Reason	08 - Cast Iron or Bare Steel Replacement - Lea
isrs_recov	yes
ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod
Project Classification	both

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Available for Unitization:				
0401-043050 JACKSON CTY/KC				
376200-Mains - Cast Iron				
Retirement				
Contract Payroll	Mains-Cast Iron 4"		$468.48	0
Department Clearings	Mains-Cast Iron 4"		$688.67	0
Overheads Capitalized - Benefits	Mains-Cast Iron 4"		$412.26	0
Overheads Capitalized - General	Mains-Cast Iron 4"		$43.57	0
Payroll Taxes	Mains-Cast Iron 4"		$71.21	0
Retirement Value	Mains-Cast Iron 4"		$560.24	176
		Retirement Total:	$2,244.43	176
376300-Mains - Plastic				
Addition				
Contract Payroll	Mains-Plastic 2"		$6,512.46	0
Department Clearings	Mains-Plastic 2"		$9,573.32	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$5,730.96	0
Overheads Capitalized - General	Mains-Plastic 2"		$946.36	0
Payroll Taxes	Mains-Plastic 2"		$989.89	0
Stores	Mains-Plastic 2"		$558.53	157
		Addition Total:	$24,311.52	157

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$24,311.52	157	$2,244.43	176
Available for Unitization:	$24,311.52	157	$2,244.43	176
Unit Estimate Total:	$24,311.52	157	$2,244.43	176

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	101000::Gas Plant In Service				
0401-043050 JACKSON CTY/KC					
376200-Mains - Cast Iron					
Mains-Cast Iron 4"					
OCR		1955	URET	176	$560.24
		Utility Account Total:		176	$560.24
		Location Total:		176	$560.24
		GL Account Total:		176	$560.24
		Posted Retirements:		176	$560.24
		Work Order Total:		176	$560.24

Work Order Authorization Information

Header Detail

Work Order: 801570
Work Order Title: Repl 5870F 2-4P Forest & Grand
Wo Type Description: WO-Replacement Mains & Svcs MGE
Work Order Group:
Current Revision: 1
Funding Project: F0604
Funding Project Desc: Main Replacement - ISRS (S)
Eligible for AFUDC yes Eligible for CPI: yes
Reason Code: Strategic

Company: Spire Missouri Inc.
Business Segment: Missouri West
Functional Class: Distribution Plant
Department Code: 20638
Department Description: Construction & Maintenance - Region 2B - Unio
Budget Description: Replace bare steel main - safety re
Est. Annual Revenue:
Reimbursement Type: None
Retirement Type:

WO Description: Install - 4740 Ft of 2 in PL IP Main, and 1130 Ft of 4 in PL IP Main on SE Grand Ave, NE Ash Ct, NE Ash St, NE Short St, NE Florence Ave, NE Forest Ave. NE Arlington Cir, and Howard Ave.

Major Location: 0901-Lee's Summit
Asset Location: 0901-043021 JACKSON CTY/LEE'S SUMMIT OFFIC

Status: posted to CPR

Estimated Start Date: May 01, 2018 Estimated Completion Date: Jun 01, 2018 Estimated In-Service Date: Jun 01, 2018

Notes: Abandon - 419 Ft of 2 in PL MP Main, and 5498 Ft of 2 in ST MP Main at the above locations. Total Service Tie Over = 117; Total Service Abandon = 1. These mains are being replaced due to leaks and is part of FY18 Bare Steel Replacement Program. Forest and Grand - Replace MP to IP.

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Muehlenkamp, Anne	$0	4/11/2018
Engineering Review-Dist S	Hoeferlin, Craig	$0	4/13/2018
VP Field Operations-MGE	Hampton, Joe	$1,000,000	4/13/2018

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376100-Mains - Steel	$0.00	$6,611.64	$6,611.64	$0.00	$0.00
376300-Mains - Plastic	$484,453.03	$1,279.54	$485,732.57	$0.00	$0.00
Total Estimated Costs:	$484,453.03	$7,891.18	$492,344.21	$0.00	$0.00

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0901-043021 JACKSON CTY/LEE'S						
376300-Mains - Plastic						
Mains-Plastic 2"						
Contract Payroll	$1,988.60	$0.00	0	0	0	0
Contractor Work	$252,249.80	$890.16	0	0	0	0
Department Clearings	$1,720.14	$0.00	0	0	0	0
Overheads Capitalized - Benefits	$1,111.63	$0.00	0	0	0	0
Overheads Capitalized - General	$112,773.39	$381.62	0	0	0	0
Payroll Taxes	$302.27	$0.00	0	0	0	0
Retirement Value	$0.00	$0.00	0	419	0	0
Stores	$12,799.89	$7.76	4740	0	0	0
Mains-Plastic 4"						
Contract Payroll	$489.00	$0.00	0	0	0	0
Contractor Work	$65,634.99	$0.00	0	0	0	0
Department Clearings	$422.99	$0.00	0	0	0	0
Overheads Capitalized - Benefits	$273.35	$0.00	0	0	0	0
Overheads Capitalized - General	$29,920.38	$0.00	0	0	0	0
Payroll Taxes	$74.33	$0.00	0	0	0	0
Stores	$4,692.27	$0.00	1130	0	0	0
SubTotal Utility Account:	**$484,453.03**	**$1,279.54**	**5,870.00**	**419.00**	**0.00**	**0.00**
376100-Mains - Steel						
Mains-Steel 2"						
Contract Payroll	$0.00	$619.40	0	0	0	0
Contractor Work	$0.00	$186.20	0	0	0	0
Department Clearings	$0.00	$535.78	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$346.24	0	0	0	0
Overheads Capitalized - General	$0.00	$1,523.84	0	0	0	0
Payroll Taxes	$0.00	$94.15	0	0	0	0
Retirement Value	$0.00	$0.00	0	5498	0	0
Stores	$0.00	$3,306.03	0	0	0	0
SubTotal Utility Account:	**$0.00**	**$6,611.64**	**0.00**	**5,498.00**	**0.00**	**0.00**
SubTotal Location:	**$484,453.03**	**$7,891.18**	**5,870.00**	**5,917.00**	**0.00**	**0.00**
Total Unit Estimate:	**$484,453.03**	**$7,891.18**	**5,870**	**5,917**	**0**	**0**

***** Class Codes *****

Class Code	Value
cap_expense	capital
[illegible]	[illegible]

ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod
Project Classification	both
Class Code	Value

Work Order Authorization Information

***** Class Codes *****

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0901-043021 JACKSON CTY/LEE'S SUMMIT OFFIC				
376100-Mains - Steel				
Retirement				
Contract Payroll	Mains-Steel 2"		$35.77	0
Contractor Work	Mains-Steel 2"		$4,376.46	0
Department Clearings	Mains-Steel 2"		$52.58	0
Overheads Capitalized - Benefits	Mains-Steel 2"		$31.48	0
Overheads Capitalized - General	Mains-Steel 2"		$2,672.97	0
Payroll Taxes	Mains-Steel 2"		$5.44	0
Retirement Value	Mains-Steel 2"		$1,563.99	1,031
Retirement Value	Mains-Steel 2"		$1,909.75	624
Retirement Value	Mains-Steel 2"		$265.97	216
Retirement Value	Mains-Steel 2"		$2,586.36	2,039
Retirement Value	Mains-Steel 2"		$430.57	534
Retirement Value	Mains-Steel 2"		$516.76	601
		Retirement Total:	**$14,448.10**	**5,045**
376300-Mains - Plastic				
Addition				
Contract Payroll	Mains-Plastic 4"		$3,934.70	0
Contract Payroll	Mains-Plastic 2"		$4,578.56	0
Contractor Work	Mains-Plastic 4"		$81,063.09	0
Contractor Work	Mains-Plastic 2"		$159,954.85	0
Department Clearings	Mains-Plastic 2"		$6,730.48	0
Department Clearings	Mains-Plastic 4"		$5,784.01	0
Overheads Capitalized - Benefits	Mains-Plastic 4"		$3,462.54	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$4,029.13	0
Overheads Capitalized - General	Mains-Plastic 2"		$103,991.00	0
Overheads Capitalized - General	Mains-Plastic 4"		$52,868.75	0
Payroll Taxes	Mains-Plastic 2"		$695.94	0
Payroll Taxes	Mains-Plastic 4"		$598.07	0
Stores	Mains-Plastic 4"		$5,007.11	1,117
Stores	Mains-Plastic 2"		$9,824.16	4,595
		Addition Total:	**$442,522.39**	**5,712**
Retirement				
Contract Payroll	Mains-Plastic 4"		$35.77	0
Contract Payroll	Mains-Plastic 2"		$35.77	0
Contractor Work	Mains-Plastic 2"		$5,085.76	0
Contractor Work	Mains-Plastic 4"		$4,363.92	0
Department Clearings	Mains-Plastic 4"		$52.58	0
Department Clearings	Mains-Plastic 2"		$52.58	0
Overheads Capitalized - Benefits	Mains-Plastic 4"		$31.48	0

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0901-043021 JACKSON CTY/LEE'S SUMMIT OFFIC				
376300-Mains - Plastic				
Retirement				
Overheads Capitalized - Benefits	Mains-Plastic 2"		$31.48	0
Overheads Capitalized - General	Mains-Plastic 2"		$3,109.91	0
Overheads Capitalized - General	Mains-Plastic 4"		$2,665.32	0
Payroll Taxes	Mains-Plastic 2"		$5.44	0
Payroll Taxes	Mains-Plastic 4"		$5.44	0
Retirement Value	Mains-Plastic 2"		$1,238.84	57
Retirement Value	Mains-Plastic 2"		$94.39	23
Retirement Value	Mains-Plastic 2"		$1,333.53	300
Retirement Value	Mains-Plastic 4"		$72.16	9
Retirement Value	Mains-Plastic 2"		$36.42	6
Stores	Mains-Plastic 2"		$7.00	0
		Retirement Total:	$18,257.79	395
380100-Services - Steel				
Retirement				
Contractor Work	Services-Steel		$405.35	0
Overheads Capitalized - General	Services-Steel		$247.26	0
Retirement Value	Services-Steel		$77.60	30
		Retirement Total:	$730.21	30
380200-Services - Plastic & Copper				
Addition				
Contract Payroll	Services-Plastic		$3,577.00	0
Contractor Work	Services-Plastic		$7,461.30	0
Department Clearings	Services-Plastic		$5,268.19	0
Overheads Capitalized - Benefits	Services-Plastic		$3,147.76	0
Overheads Capitalized - General	Services-Plastic		$5,294.71	0
Payroll Taxes	Services-Plastic		$543.70	0
Stores	Services-Plastic		$673.20	793
		Addition Total:	$25,955.86	793
Retirement				
Contractor Work	Services-Plastic		$405.35	0
Overheads Capitalized - General	Services-Plastic		$247.26	0
Retirement Value	Services-Plastic		$216.51	21
Retirement Value	Services-Plastic		$30.77	41
Retirement Value	Services-Plastic		$112.64	13
Retirement Value	Services-Plastic		$101.37	15
Retirement Value	Services-Plastic		$124.28	15
Retirement Value	Services-Plastic		$751.38	24
Retirement Value	Services-Plastic		$3,395.66	327
Retirement Value	Services-Plastic		$498.41	56
Retirement Value	Services-Plastic		$116.48	14
Retirement Value	Services-Plastic		$5.11	37
Retirement Value	Services-Plastic		$120.77	23
Retirement Value	Services-Plastic		$982.31	105
Retirement Value	Services-Plastic		$564.49	50

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0901-043021 JACKSON CTY/LEE'S SUMMIT OFFIC				
380200-Services - Plastic & Copper				
Retirement				
Retirement Value	Services-Plastic		$10.96	4
Retirement Value	Services-Plastic		$418.81	101
Retirement Value	Services-Plastic		$28.04	4
Retirement Value	Services-Plastic		$1,650.09	148
Retirement Value	Services-Plastic		$21.79	41
Retirement Value	Services-Plastic		$261.08	42
Retirement Value	Services-Plastic		$55.67	9
Retirement Value	Services-Plastic		$69.15	20
Retirement Value	Services-Plastic		$46.56	6
Retirement Value	Services-Plastic		$377.63	54
Retirement Value	Services-Plastic		$813.03	104
		Retirement Total:	**$11,425.60**	**1,274**

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$468,478.25	6,505	$44,861.70	6,744
Used In Unitization:	$468,478.25	6,505	$44,861.70	6,744
Unit Estimate Total:	$468,478.25	6,505	$44,861.70	6,744

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	**101000::Gas Plant In Service**				
0901-043021 JACKSON CTY/LEE'S SUMMIT OFFIC					
376100-Mains - Steel					
Mains-Steel 2"					
OCR		1952	URET	601	$516.76
OCR		1953	URET	534	$430.57
OCR		1960	URET	2,039	$2,586.36
OCR		1961	URET	1,031	$1,563.99
OCR		1963	URET	216	$265.97
OCR		1991	URET	624	$1,909.75
		Utility Account Total:		**5,045**	**$7,273.40**
376300-Mains - Plastic					
Mains-Plastic 2"					
OCR		1986	URET	23	$94.39

Work Order Authorization Information

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	101000::Gas Plant In Service				
0901-043021 JACKSON CTY/LEE'S SUMMIT OFFIC					
376300-Mains - Plastic					
Mains-Plastic 2"					
OCR		1991	URET	300	$1,333.53
OCR		2004	URET	6	$36.42
OCR		2015	URET	57	$1,238.84
Mains-Plastic 4"					
OCR		2004	URET	9	$72.16
		Utility Account Total:		395	$2,775.34
380100-Services - Steel					
Services-Steel					
OCR		1961	URET	30	$77.60
		Utility Account Total:		30	$77.60
380200-Services - Plastic & Copper					
Services-Plastic					
OCR		1974	URET	41	$30.77
OCR		1977	URET	41	$21.79
OCR		1978	URET	37	$5.11
OCR		1981	URET	6	$46.56
OCR		1982	URET	15	$101.37
OCR		1983	URET	9	$55.67
OCR		1984	URET	42	$261.08
OCR		1986	URET	20	$69.15
OCR		1987	URET	4	$10.96
OCR		1988	URET	101	$418.81
OCR		1989	URET	104	$813.03
OCR		1990	URET	14	$116.48
OCR		1991	URET	54	$377.63
OCR		1992	URET	15	$124.28
OCR		1993	URET	148	$1,650.09
OCR		1994	URET	4	$28.04
OCR		1995	URET	23	$120.77
OCR		1996	URET	13	$112.64
OCR		1997	URET	105	$982.31
OCR		1998	URET	327	$3,395.66
OCR		2000	URET	56	$498.41
OCR		2002	URET	50	$564.49
OCR		2005	URET	21	$216.51
OCR		2014	URET	24	$751.38
		Utility Account Total:		1,274	$10,772.99
		Location Total:		6,744	$20,899.33
		GL Account Total:		6,744	$20,899.33
		Posted Retirements:		6,744	$20,899.33
		Work Order Total:		6,744	$20,899.33

Work Order Authorization Information

Header Detail

Work Order:	802358	**Company:**	Spire Missouri Inc.
Work Order Title:	Repl 385F 2P River & Euclid - Leak	**Business Segment:**	Missouri West
Wo Type Description:	WO-Replacement Mains & Svcs MGE	**Functional Class:**	Distribution Plant
Work Order Group:		**Department Code:**	20921
Current Revision:	1	**Department Description:**	Region 2B - SW Missouri - Distribution - Union
Funding Project:	F0572	**Budget Description:**	Replace bare steel main - safety re
Funding Project Desc:	Main Replacement - ISRS (SW)	**Est. Annual Revenue:**	
Eligible for AFUDC	yes **Eligible for CPI:** yes	**Reimbursement Type:**	None
Reason Code:	Safety	**Retirement Type:**	

WO Description: Install ~ 385 Ft of 2 in PL LP Main due to #3 leak due on 3/19/19on Euclid Blvd W River St in Carthage.

Major Location: 0601-Carthage **Status:** completed

Asset Location: 0601-044025 JASPER CTY/CARTHAGE

Estimated Start Date: Nov 26, 2018 **Estimated Completion Date:** Dec 07, 2018 **Estimated In-Service Date:** Dec 07, 2018

Notes: Abandon ~ 3 Ft of 2 in PL LP Main and 403 Ft of 2 in ST LP Mainat same location in Carthage. Total Service Tie-Overs: 8. ISRS Recoverable due to vintage year of pipe.

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Muehlenkamp, Anne	$0	1/21/2019
Engineering Review-Dist S	Hoeferlin, Craig	$0	2/7/2019
VP Field Operations-MGE	Goodson, Timothy	$1,000,000	2/8/2019

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376100-Mains - Steel	$0.00	$178.36	$178.36	$0.00	$0.00
376300-Mains - Plastic	$18,875.10	$477.55	$19,352.65	$0.00	$0.00
Total Estimated Costs:	**$18,875.10**	**$655.91**	**$19,531.01**	**$0.00**	**$0.00**

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0601-044025 JASPER CTY/CARTHA						
376300-Mains - Plastic						
Mains-Plastic 2"						
Contract Payroll	$500.78	$35.77	0	0	0	0
Contractor Work	$10,093.07	$214.99	0	0	0	0
Department Clearings	$736.15	$52.58	0	0	0	0
Overheads Capitalized - Benefits	$440.69	$31.48	0	0	0	0
Overheads Capitalized - General	$6,515.90	$135.54	0	0	0	0
Payroll Taxes	$76.12	$5.44	0	0	0	0
Retirement Value	$0.00	$0.00	0	3	0	0
Stores	$512.39	$1.75	385	0	0	0
SubTotal Utility Account:	**$18,875.10**	**$477.55**	**385.00**	**3.00**	**0.00**	**0.00**
376100-Mains - Steel						
Mains-Steel 2"						
Contract Payroll	$0.00	$35.77	0	0	0	0
Contractor Work	$0.00	$30.91	0	0	0	0
Department Clearings	$0.00	$52.58	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$31.48	0	0	0	0
Overheads Capitalized - General	$0.00	$22.18	0	0	0	0
Payroll Taxes	$0.00	$5.44	0	0	0	0
Retirement Value	$0.00	$0.00	0	403	0	0
SubTotal Utility Account:	**$0.00**	**$178.36**	**0.00**	**403.00**	**0.00**	**0.00**
SubTotal Location:	**$18,875.10**	**$655.91**	**385.00**	**406.00**	**0.00**	**0.00**
Total Unit Estimate:	**$18,875.10**	**$655.91**	**385**	**406**	**0**	**0**

***** Class Codes *****

Class Code	Value
cap_expense	capital
ISRS Reason	08 - Cast Iron or Bare Steel Replacement - Lea
isrs_recov	yes
ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod
Project Classification	both

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Available for Unitization:				
0601-044025 JASPER CTY/CARTHAGE				
376100-Mains - Steel				
Retirement				
Contract Payroll	Mains-Steel 2"		$393.47	0
Contractor Work	Mains-Steel 2"		$11.58	0
Department Clearings	Mains-Steel 2"		$578.40	0
Overheads Capitalized - Benefits	Mains-Steel 2"		$346.25	0
Overheads Capitalized - General	Mains-Steel 2"		$43.66	0
Payroll Taxes	Mains-Steel 2"		$59.81	0
Retirement Value	Mains-Steel 2"		$476.97	406
		Retirement Total:	$1,910.14	406
376300-Mains - Plastic				
Addition				
Contract Payroll	Mains-Plastic 2"		$429.24	0
Contractor Work	Mains-Plastic 2"		$21,645.72	0
Department Clearings	Mains-Plastic 2"		$630.98	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$377.73	0
Overheads Capitalized - General	Mains-Plastic 2"		$13,965.57	0
Payroll Taxes	Mains-Plastic 2"		$65.24	0
Stores	Mains-Plastic 2"		$1,183.21	416
		Addition Total:	$38,297.69	416
Retirement				
Contract Payroll	Mains-Plastic 2"		$393.47	0
Contractor Work	Mains-Plastic 2"		$187.76	0
Department Clearings	Mains-Plastic 2"		$578.40	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$346.25	0
Overheads Capitalized - General	Mains-Plastic 2"		$152.18	0
Payroll Taxes	Mains-Plastic 2"		$59.81	0
Retirement Value	Mains-Plastic 2"		$4,501.77	7
Stores	Mains-Plastic 2"		$1.72	0
		Retirement Total:	$6,221.36	7

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$38,297.69	416	$6,131.50	413
	Addition Dollars	**Add Qty**	**Retirement Dollars**	**Retire Qty**
Available for Unitization:	$38,297.69	416	$6,131.50	413
	Addition Dollars	**Add Qty**	**Retirement Dollars**	**Retire Qty**
Unit Estimate Total:	$38,297.69	416	$6,131.50	413

Work Order Authorization Information

******* Work Order Retirements *******

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	**101000::Gas Plant In Service**				
0601-044025 JASPER CTY/CARTHAGE					
376100-Mains - Steel					
Mains-Steel 2"					
OCR		1957	URET	406	$476.97
		Utility Account Total:		406	$476.97
376300-Mains - Plastic					
Mains-Plastic 2"					
OCR		1993	URET	7	$4,501.77
		Utility Account Total:		7	$4,501.77
		Location Total:		413	$4,978.74
		GL Account Total:		413	$4,978.74
		Posted Retirements:		413	$4,978.74
		Work Order Total:		413	$4,978.74

Work Order Authorization Information

Header Detail

Work Order: 801708
Work Order Title: Repl 3920F 2P 84th Belleview/Summit
Wo Type Description: WO-Replacement Mains & Svcs MGE
Work Order Group:
Current Revision: 1
Funding Project: F0599
Funding Project Desc: Main Replacement - ISRS (N)
Eligible for AFUDC yes **Eligible for CPI:** yes
Reason Code: Safety

Company: Spire Missouri Inc.
Business Segment: Missouri West
Functional Class: Distribution Plant
Department Code: 20648
Department Description: Construction & Maintenance - Region 2A - Unio
Budget Description: Replace cast iron main - CPI / prio
Est. Annual Revenue:
Reimbursement Type: None
Retirement Type:

WO Description: Install ~3920 Ft of 2 in PL MP Main on Madison Ave, Summit St, W 84th St, and W 84th Ter.

Major Location: 0401-KC/MO - Central
Asset Location: 0401-043050 JACKSON CTY/KC

Status: posted to CPR

Estimated Start Date: May 01, 2018 **Estimated Completion Date:** Sep 30, 2018 **Estimated In-Service Date:** Sep 30, 2018

Notes: 84th St - Belleview Ave to Summit St - BS Mandated Sec 5. Abandon 3613 Ft of 2 in ST MP Main, 273 Ft of 3 in ST MP Main on the above mentioned streets. Total Service Tie-over = 71; Total Service Replacement = 14. This main is being replaced due to a leak and CP deficiencies and as part of FY18 Bare Steel Replacement Program. Note: 39 feet of Services - Copper was deleted from the Estimate As-Built since there was nothing PowerPlan could match for retirement. - Mike Griewing

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Muehlenkamp, Anne	$0	4/17/2018
Engineering Review-Dist S	Hoeferlin, Craig	$0	4/23/2018
VP Field Operations-MGE	Hampton, Joe	$1,000,000	4/24/2018

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376100-Mains - Steel	$0.00	$12,521.57	$12,521.57	$0.00	$0.00
376300-Mains - Plastic	$385,360.92	$0.00	$385,360.92	$0.00	$0.00
380200-Services - Plastic & Copper	$15,044.69	$1,617.35	$16,662.04	$0.00	$0.00
Total Estimated Costs:	**$400,405.61**	**$14,138.92**	**$414,544.53**	**$0.00**	**$0.00**

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0401-043050 JACKSON CTY/KC						
376300-Mains - Plastic						
Mains-Plastic 2"						
Contract Payroll	$1,662.60	$0.00	0	0	0	0
Contractor Work	$254,813.31	$0.00	0	0	0	0
Department Clearings	$1,438.15	$0.00	0	0	0	0
Overheads Capitalized - Benefits	$929.39	$0.00	0	0	0	0
Overheads Capitalized - General	$113,729.53	$0.00	0	0	0	0
Payroll Taxes	$252.72	$0.00	0	0	0	0
Stores	$12,535.22	$0.00	3920	0	0	0
SubTotal Utility Account:	**$385,360.92**	**$0.00**	**3,920.00**	**0.00**	**0.00**	**0.00**
376100-Mains - Steel						
Mains-Steel 2"						
Contract Payroll	$0.00	$391.20	0	0	0	0
Contractor Work	$0.00	$5,254.22	0	0	0	0
Department Clearings	$0.00	$338.39	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$218.68	0	0	0	0
Overheads Capitalized - General	$0.00	$3,416.73	0	0	0	0
Payroll Taxes	$0.00	$59.46	0	0	0	0
Retirement Value	$0.00	$0.00	0	3613	0	0
Stores	$0.00	$2,726.24	0	0	0	0
Mains-Steel 3"						
Contract Payroll	$0.00	$32.60	0	0	0	0
Contractor Work	$0.00	$21.46	0	0	0	0
Department Clearings	$0.00	$28.20	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$18.22	0	0	0	0
Overheads Capitalized - General	$0.00	$11.21	0	0	0	0
Payroll Taxes	$0.00	$4.96	0	0	0	0
Retirement Value	$0.00	$0.00	0	273	0	0
SubTotal Utility Account:	**$0.00**	**$12,521.67**	**0.00**	**3,886.00**	**0.00**	**0.00**
380200-Services - Plastic & Copper						
Services-Plastic						
Contractor Work	$9,655.80	$1,134.98	0	0	0	0
Overheads Capitalized - General	$4,487.01	$482.37	0	0	0	0
Stores	$901.88	$0.00	0	0	0	0
SubTotal Utility Account:	**$15,044.69**	**$1,617.35**	**0.00**	**0.00**	**0.00**	**0.00**
SubTotal Location:	**$400,405.61**	**$14,138.92**	**3,920.00**	**3,886.00**	**0.00**	**0.00**
Total Unit Estimate:	**$400,405.61**	**$14,138.92**	**3,920**	**3,886**	**0**	**0**

Work Order Authorization Information

Class Code	Value
cap_expense	capital
ISRS Reason	08 - Cast Iron or Bare Steel Replacement - Lea
isrs_recov	yes
ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod
Project Classification	both

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0401-043050 JACKSON CTY/KC				
376100-Mains - Steel				
Retirement				
Contract Payroll	Mains-Steel 3"		$35.77	0
Contract Payroll	Mains-Steel 2"		$71.54	0
Contractor Work	Mains-Steel 2"		$8,302.58	0
Contractor Work	Mains-Steel 3"		$2,497.68	0
Department Clearings	Mains-Steel 2"		$105.16	0
Department Clearings	Mains-Steel 3"		$52.58	0
Overheads Capitalized - Benefits	Mains-Steel 2"		$62.96	0
Overheads Capitalized - Benefits	Mains-Steel 3"		$31.48	0
Overheads Capitalized - General	Mains-Steel 3"		$1,526.91	0
Overheads Capitalized - General	Mains-Steel 2"		$5,474.17	0
Payroll Taxes	Mains-Steel 2"		$10.87	0
Payroll Taxes	Mains-Steel 3"		$5.44	0
Retirement Value	Mains-Steel 2"		$1,556.46	1,443
Retirement Value	Mains-Steel 3"		$152.66	124
Retirement Value	Mains-Steel 2"		$396.01	379
Retirement Value	Mains-Steel 2"		$109.57	104
Retirement Value	Mains-Steel 2"		$64.09	54
Retirement Value	Mains-Steel 2"		$112.72	86
Retirement Value	Mains-Steel 2"		$395.34	132
Retirement Value	Mains-Steel 2"		$823.79	1,020
Retirement Value	Mains-Steel 2"		$334.82	445
Retirement Value	Mains-Steel 3"		$172.56	139
Stores	Mains-Steel 2"		$660.56	0
		Retirement Total:	$22,955.72	3,926
376300-Mains - Plastic				
Addition				
Contract Payroll	Mains-Plastic 2"		$143.08	0
Contractor Work	Mains-Plastic 2"		$148,859.91	0
Department Clearings	Mains-Plastic 2"		$210.33	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$125.91	0
Overheads Capitalized - General	Mains-Plastic 2"		$99,474.43	0
Payroll Taxes	Mains-Plastic 2"		$21.75	0

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0401-043050 JACKSON CTY/KC				
376300-Mains - Plastic				
Addition				
Stores	Mains-Plastic 2"		$14,191.11	3,890
		Addition Total:	**$263,026.52**	**3,890**
380100-Services - Steel				
Retirement				
Contractor Work	Services-Steel		$81.07	0
Overheads Capitalized - General	Services-Steel		$49.45	0
Retirement Value	Services-Steel		$3.06	7
Retirement Value	Services-Steel		$7.29	10
Retirement Value	Services-Steel		$3.03	6
Retirement Value	Services-Steel		$50.94	37
Retirement Value	Services-Steel		$413.67	275
Retirement Value	Services-Steel		$29.17	34
		Retirement Total:	**$637.68**	**369**
380200-Services - Plastic & Copper				
Addition				
Contract Payroll	Services-Plastic		$35.77	0
Contractor Work	Services-Plastic		$2,636.15	0
Department Clearings	Services-Plastic		$52.58	0
Overheads Capitalized - Benefits	Services-Plastic		$31.48	0
Overheads Capitalized - General	Services-Plastic		$1,856.57	0
Payroll Taxes	Services-Plastic		$5.44	0
Stores	Services-Plastic		$201.96	718
		Addition Total:	**$5,019.95**	**718**
Retirement				
Contractor Work	Services-Plastic		$162.14	0
Overheads Capitalized - General	Services-Plastic		$98.91	0
Retirement Value	Services-Plastic		$317.45	46
Retirement Value	Services-Plastic		$237.64	30
Retirement Value	Services-Plastic		$70.36	16
Retirement Value	Services-Plastic		$372.23	31
Retirement Value	Services-Plastic		$1,030.43	106
Retirement Value	Services-Plastic		$2,398.73	273
Retirement Value	Services-Plastic		$162.02	22
Retirement Value	Services-Plastic		$67.49	7
Retirement Value	Services-Plastic		$391.65	41
Retirement Value	Services-Plastic		$286.73	16
Retirement Value	Services-Plastic		$89.02	20
Retirement Value	Services-Plastic		$111.89	11
Retirement Value	Services-Plastic		$268.95	11
Retirement Value	Services-Plastic		$97.61	9
Retirement Value	Services-Plastic		$306.20	28
Retirement Value	Services-Plastic		$78.85	19
Retirement Value	Services-Plastic		$2,383.00	184
Retirement Value	Services-Plastic		$35.69	4

Work Order Authorization Information

******* As-Built *******

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0401-043050 JACKSON CTY/KC				
380200-Services - Plastic & Copper				
Retirement				
Retirement Value	Services-Plastic		$156.82	14
Retirement Value	Services-Plastic		$389.48	30
Retirement Value	Services-Plastic		$89.95	7
		Retirement Total:	**$9,603.24**	**925**

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$268,046.47	4,608	$33,196.64	5,220
Used In Unitization:	$268,046.47	4,608	$33,196.64	5,220
Unit Estimate Total:	$268,046.47	4,608	$33,196.64	5,220

******* Work Order Retirements *******

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	**101000::Gas Plant In Service**				
0401-043050 JACKSON CTY/KC					
376100-Mains - Steel					
Mains-Steel 2"					
OCR		1946	URET	1,020	$823.79
OCR		1947	URET	445	$334.82
OCR		1948	URET	379	$396.01
OCR		1949	URET	132	$395.34
OCR		1950	URET	1,443	$1,556.46
OCR		1952	URET	54	$64.09
OCR		1954	URET	104	$109.57
OCR		1955	URET	86	$112.72
Mains-Steel 3"					
OCR		1931	URET	139	$172.56
OCR		1948	URET	124	$152.66
		Utility Account Total:		**3,926**	**$4,118.02**
380100-Services - Steel					
Services-Steel					
OCR		1946	URET	10	$7.29
OCR		1947	URET	7	$3.06
OCR		1948	URET	6	$3.03
OCR		1950	URET	275	$413.67

Work Order Authorization Information

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	101000::Gas Plant In Service				
0401-043050 JACKSON CTY/KC					
380100-Services - Steel					
Services-Steel					
OCR		1965	URET	37	$50.94
OCR		1968	URET	34	$29.17
		Utility Account Total:		369	$507.16
380200-Services - Plastic & Copper					
Services-Plastic					
OCR		1971	URET	16	$70.36
OCR		1972	URET	20	$89.02
OCR		1973	URET	19	$78.85
OCR		1976	URET	46	$317.45
OCR		1977	URET	22	$162.02
OCR		1978	URET	30	$237.64
OCR		1979	URET	7	$67.49
OCR		1980	URET	9	$97.61
OCR		1981	URET	28	$306.20
OCR		1982	URET	7	$89.95
OCR		1983	URET	31	$372.23
OCR		1984	URET	41	$391.65
OCR		1985	URET	4	$35.69
OCR		1986	URET	30	$389.48
OCR		1988	URET	11	$111.89
OCR		1989	URET	106	$1,030.43
OCR		1990	URET	184	$2,383.00
OCR		1992	URET	273	$2,398.73
OCR		1993	URET	14	$156.82
OCR		2013	URET	16	$286.73
OCR		2015	URET	11	$268.95
		Utility Account Total:		925	$9,342.19
		Location Total:		5,220	$13,967.37
		GL Account Total:		5,220	$13,967.37
		Posted Retirements:		5,220	$13,967.37
		Work Order Total:		5,220	$13,967.37

Work Order Authorization Information

Header Detail

Work Order: 801909
Work Order Title: Repl 4180F 2-4P Pitman and 38th St
Wo Type Description: WO-Replacement Mains & Svcs MGE
Work Order Group:
Current Revision: 1
Funding Project: F0599
Funding Project Desc: Main Replacement - ISRS (N)
Eligible for AFUDC yes Eligible for CPI: yes
Reason Code: Safety

Company: Spire Missouri Inc.
Business Segment: Missouri West
Functional Class: Distribution Plant
Department Code: 20648
Department Description: Construction & Maintenance - Region 2A - Unio
Budget Description: Replace cast iron main - CPI / prio
Est. Annual Revenue:
Reimbursement Type: None
Retirement Type:

WO Description: Install 2720 Ft. of 2 inch PL IP Main and 1460 Ft. of 4 inch PL IP on Pitman Rd., E 41st St., E 38th Ter., and E 38th St.

Major Location: 0401-KC/MO - Central
Asset Location: 0401-043050 JACKSON CTY/KC

Status: posted to CPR

Estimated Start Date: Jun 05, 2018 Estimated Completion Date: Sep 28, 2018 Estimated In-Service Date: Sep 28, 2018

Notes: Abandon 21 Ft of 2 in ST IP Main, 724 Ft of 2 In ST LP Main, 83 Ft of 4 in ST IP Main, and 2970 Ft of 4 in ST LP Main on the above mentioned streets. Total Service Tie-over =26; Total Service Abandoned = 4; Total Service Replace = 18. This main is being replaced due to leaks and is part of FY18 Bare Steel Replacement Program.

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Muehlenkamp, Anne	$0	4/17/2018
Engineering Review-Dist S	Hoeferlin, Craig	$0	4/23/2018
VP Field Operations-MGE	Hampton, Joe	$1,000,000	4/24/2018

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376100-Mains - Steel	$0.00	$5,255.39	$5,255.39	$0.00	$0.00
376300-Mains - Plastic	$294,684.42	$0.00	$294,684.42	$0.00	$0.00
380200-Services - Plastic & Copper	$19,343.18	$2,079.45	$21,422.63	$0.00	$0.00
Total Estimated Costs:	$314,027.60	$7,334.84	$321,362.44	$0.00	$0.00

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0401-043050 JACKSON CTY/KC						
376300-Mains - Plastic						
Mains-Plastic 2"						
Contract Payroll	$1,141.00	$0.00	0	0	0	0
Contractor Work	$119,039.09	$0.00	0	0	0	0
Department Clearings	$986.97	$0.00	0	0	0	0
Overheads Capitalized - Benefits	$637.82	$0.00	0	0	0	0
Overheads Capitalized - General	$53,107.63	$0.00	0	0	0	0
Payroll Taxes	$173.43	$0.00	0	0	0	0
Stores	$5,748.22	$0.00	2720	0	0	0
Mains-Plastic 3"						
Overheads Capitalized - General	$5.63	$0.00	0	0	0	0
Stores	$13.24	$0.00	0	0	0	0
Mains-Plastic 4"						
Contract Payroll	$619.40	$0.00	0	0	0	0
Contractor Work	$70,946.01	$0.00	0	0	0	0
Department Clearings	$535.78	$0.00	0	0	0	0
Overheads Capitalized - Benefits	$346.24	$0.00	0	0	0	0
Overheads Capitalized - General	$33,501.66	$0.00	0	0	0	0
Payroll Taxes	$94.15	$0.00	0	0	0	0
Stores	$7,788.15	$0.00	1460	0	0	0
SubTotal Utility Account:	**$294,684.42**	**$0.00**	**4,180.00**	**0.00**	**0.00**	**0.00**
376100-Mains - Steel						
Mains-Steel 2"						
Contract Payroll	$0.00	$97.80	0	0	0	0
Contractor Work	$0.00	$39.70	0	0	0	0
Department Clearings	$0.00	$84.60	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$54.67	0	0	0	0
Overheads Capitalized - General	$0.00	$1,018.06	0	0	0	0
Payroll Taxes	$0.00	$14.87	0	0	0	0
Retirement Value	$0.00	$0.00	0	745	0	0
Stores	$0.00	$2,341.00	0	0	0	0
Mains-Steel 4"						
Contract Payroll	$0.00	$358.60	0	0	0	0
Contractor Work	$0.00	$454.00	0	0	0	0
Department Clearings	$0.00	$310.19	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$200.46	0	0	0	0
Overheads Capitalized - General	$0.00	$219.19	0	0	0	0
Payroll Taxes	$0.00	$54.51	0	0	0	0

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0401-043050 JACKSON CTY/KC						
376100-Mains - Steel						
Mains-Steel 4"						
Retirement Value	$0.00	$0.00	0	3053	0	0
Stores	$0.00	$7.74	0	0	0	0
SubTotal Utility Account:	$0.00	$5,255.39	0.00	3,798.00	0.00	0.00
380200-Services - Plastic & Copper						
Services-Plastic						
Contractor Work	$12,414.60	$1,459.26	0	0	0	0
Overheads Capitalized - General	$5,769.02	$620.19	0	0	0	0
Stores	$1,159.56	$0.00	0	0	0	0
SubTotal Utility Account:	$19,343.18	$2,079.45	0.00	0.00	0.00	0.00
SubTotal Location:	$314,027.60	$7,334.84	4,180.00	3,798.00	0.00	0.00
Total Unit Estimate:	$314,027.60	$7,334.84	4,180	3,798	0	0

***** Class Codes *****

Class Code	Value
cap_expense	capital
CWIP Property Tax Type	MO-CWIP-Distribution Real
ISRS Reason	08 - Cast Iron or Bare Steel Replacement - Lea
Isrs_recov	yes
ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod
Project Classification	both

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0401-043050 JACKSON CTY/KC				
376100-Mains - Steel				
Retirement				
Contractor Work	Mains-Steel 2"		$5,568.00	0
Contractor Work	Mains-Steel 4"		$6,500.64	0
Overheads Capitalized - General	Mains-Steel 4"		$2,762.77	0

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0401-043050 JACKSON CTY/KC				
376100-Mains - Steel				
Retirement				
Overheads Capitalized - General	Mains-Steel 2"		$2,366.40	0
Retirement Value	Mains-Steel 2"		$600.48	496
Retirement Value	Mains-Steel 4"		$1.86	4
Retirement Value	Mains-Steel 2"		$369.20	229
Retirement Value	Mains-Steel 4"		$470.65	163
Retirement Value	Mains-Steel 2"		$143.79	83
Retirement Value	Mains-Steel 4"		$350.89	160
Retirement Value	Mains-Steel 4"		$1,447.44	469
Retirement Value	Mains-Steel 4"		$1,058.27	345
Retirement Value	Mains-Steel 4"		$881.17	361
Retirement Value	Mains-Steel 2"		$59.53	7
Retirement Value	Mains-Steel 4"		$2,584.08	1,208
Retirement Value	Mains-Steel 4"		$662.33	358
		Retirement Total:	**$25,827.50**	**3,883**
376300-Mains - Plastic				
Addition				
Contract Payroll	Mains-Plastic 3"		$74.76	0
Contract Payroll	Mains-Plastic 4"		$32,436.28	0
Contract Payroll	Mains-Plastic 2"		$44,769.54	0
Contractor Work	Mains-Plastic 4"		$5,888.54	0
Contractor Work	Mains-Plastic 3"		$5,568.00	0
Contractor Work	Mains-Plastic 2"		$45,795.10	0
Department Clearings	Mains-Plastic 4"		$28,057.38	0
Department Clearings	Mains-Plastic 2"		$38,725.65	0
Department Clearings	Mains-Plastic 3"		$64.67	0
Overheads Capitalized - Benefits	Mains-Plastic 3"		$41.79	0
Overheads Capitalized - Benefits	Mains-Plastic 4"		$18,131.88	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$25,026.17	0
Overheads Capitalized - General	Mains-Plastic 4"		$6,545.72	0
Overheads Capitalized - General	Mains-Plastic 3"		$2,379.42	0
Overheads Capitalized - General	Mains-Plastic 2"		$25,264.54	0
Payroll Taxes	Mains-Plastic 2"		$6,804.97	0
Payroll Taxes	Mains-Plastic 4"		$4,930.31	0
Payroll Taxes	Mains-Plastic 3"		$11.36	0
Stores	Mains-Plastic 2"		$6,909.10	2,899
Stores	Mains-Plastic 4"		$4,628.63	1,328
Stores	Mains-Plastic 3"		$19.38	4
		Addition Total:	**$302,073.19**	**4,231**
Retirement				
Contract Payroll	Mains-Plastic 4"		$294.72	0
Contractor Work	Mains-Plastic 4"		$5,568.00	0
Department Clearings	Mains-Plastic 4"		$254.93	0
Overheads Capitalized - Benefits	Mains-Plastic 4"		$164.75	0
Overheads Capitalized - General	Mains-Plastic 4"		$2,385.26	0

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0401-043050 JACKSON CTY/KC				
376300-Mains - Plastic				
Retirement				
Payroll Taxes	Mains-Plastic 4"		$44.80	0
Retirement Value	Mains-Plastic 4"		$886.02	18
		Retirement Total:	**$9,598.48**	**18**
380100-Services - Steel				
Retirement				
Contract Payroll	Services-Steel		$279.79	0
Department Clearings	Services-Steel		$242.02	0
Overheads Capitalized - Benefits	Services-Steel		$156.40	0
Overheads Capitalized - General	Services-Steel		$17.91	0
Payroll Taxes	Services-Steel		$42.53	0
Retirement Value	Services-Steel		$36.69	48
Retirement Value	Services-Steel		$123.35	82
Retirement Value	Services-Steel		$42.40	42
Retirement Value	Services-Steel		$84.35	64
Retirement Value	Services-Steel		$165.91	184
Retirement Value	Services-Steel		$73.92	63
		Retirement Total:	**$1,265.27**	**483**
380200-Services - Plastic & Copper				
Addition				
Contract Payroll	Services-Plastic		$5,025.12	0
Contractor Work	Services-Plastic		$2,324.64	0
Department Clearings	Services-Plastic		$4,346.73	0
Overheads Capitalized - Benefits	Services-Plastic		$2,809.04	0
Overheads Capitalized - General	Services-Plastic		$1,422.47	0
Payroll Taxes	Services-Plastic		$763.82	0
Stores	Services-Plastic		$265.62	682
		Addition Total:	**$16,957.44**	**682**
Retirement				
Contractor Work	Services-Plastic		$810.70	0
Overheads Capitalized - General	Services-Plastic		$344.55	0
Retirement Value	Services-Plastic		$146.83	14
Retirement Value	Services-Plastic		$10.85	1
Retirement Value	Services-Plastic		$33.67	3
Retirement Value	Services-Plastic		$116.84	9
Retirement Value	Services-Plastic		$273.92	66
Retirement Value	Services-Plastic		$53.76	3
Retirement Value	Services-Plastic		$131.32	15
Retirement Value	Services-Plastic		$1,650.69	39
Retirement Value	Services-Plastic		$208.77	11
Retirement Value	Services-Plastic		$103.61	8

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0401-043050 JACKSON CTY/KC				
380200-Services - Plastic & Copper				
Retirement				
Retirement Value	Services-Plastic		$246.99	19
		Retirement Total:	$4,132.50	188

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$319,030.63	4,913	$40,823.75	4,572
Used In Unitization:	$319,030.63	4,913	$40,823.75	4,572
Unit Estimate Total:	$319,030.63	4,913	$40,823.75	4,572

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	101000::Gas Plant In Service				
0401-043050 JACKSON CTY/KC					
376100-Mains - Steel					
Mains-Steel 2"					
OCR		1951	URET	496	$600.48
OCR		1961	URET	229	$369.20
OCR		1968	URET	83	$143.79
OCR		1990	URET	7	$59.53
Mains-Steel 4"					
OCR		1942	URET	4	$1.86
OCR		1949	URET	160	$350.89
OCR		1950	URET	1,208	$2,584.08
OCR		1952	URET	163	$470.65
OCR		1953	URET	345	$1,058.27
OCR		1954	URET	361	$881.17
OCR		1955	URET	358	$662.33
OCR		1961	URET	469	$1,447.44
		Utility Account Total:		3,883	$8,629.69
376300-Mains - Plastic					
Mains-Plastic 4"					
OCR		2009	URET	18	$886.02
		Utility Account Total:		18	$886.02

Work Order Authorization Information

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	101000::Gas Plant In Service				
0401-043050 JACKSON CTY/KC					
380100-Services - Steel					
Services-Steel					
OCR		1950	URET	82	$123.35
OCR		1954	URET	48	$36.69
OCR		1955	URET	42	$42.40
OCR		1958	URET	184	$165.91
OCR		1962	URET	64	$84.35
OCR		1963	URET	63	$73.92
		Utility Account Total:		483	$526.62
380200-Services - Plastic & Copper					
Services-Plastic					
OCR		1973	URET	66	$273.92
OCR		1980	URET	1	$10.85
OCR		1986	URET	9	$116.84
OCR		1990	URET	8	$103.61
OCR		1995	URET	15	$131.32
OCR		1997	URET	14	$146.83
OCR		1999	URET	3	$33.67
OCR		2000	URET	19	$246.99
OCR		2006	URET	11	$208.77
OCR		2013	URET	3	$53.76
OCR		2017	URET	39	$1,650.69
		Utility Account Total:		188	$2,977.25
		Location Total:		4,572	$13,019.58
		GL Account Total:		4,572	$13,019.58
		Posted Retirements:		4,572	$13,019.58
		Work Order Total:		4,572	$13,019.58

Work Order Authorization Information

Header Detail

Work Order: 801828
Work Order Title: Repl 2524F 2-4P 23rd & Topping
Wo Type Description: WO-Replacement Mains & Svcs MGE
Work Order Group:
Current Revision: 1
Funding Project: F0599
Funding Project Desc: Main Replacement - ISRS (N)
Eligible for AFUDC yes Eligible for CPI: yes
Reason Code: Safety

Company: Spire Missouri Inc.
Business Segment: Missouri West
Functional Class: Distribution Plant
Department Code: 20648
Department Description: Construction & Maintenance - Region 2A - Unio
Budget Description: Replace cast iron main - CPI / prio
Est. Annual Revenue:
Reimbursement Type: None
Retirement Type:

WO Description: Install ~ 678 ft of 2 in PL IP main and ~ 1846 ft of 4 in PL IP main along 23rd Street and Lawndale Ave.

Major Location: 0401-KC/MO - Central
Asset Location: 0401-043050 JACKSON CTY/KC

Status: posted to CPR

Estimated Start Date: Feb 05, 2018 Estimated Completion Date: Feb 23, 2018 Estimated In-Service Date: Feb 23, 2018

Notes: . Abandon ~ 922 ft of 2 in ST IP main, ~ 1577 ft of 3 in ST IP main, and ~ 7 ft of 4 in PL IP main at same location. Total Service Tie-over = 17; Total Service Replace = 5; Total Service Abandon = 3. This main is being replaced due to leaks on 3 in bare steel main.

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Muehlenkamp, Anne	$0	3/13/2018
Engineering Review-Dist S	Hoeferlin, Craig	$0	3/13/2018
VP Field Operations-MGE	Hampton, Joe	$1,000,000	3/14/2018

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376100-Mains - Steel	$0.00	$6,837.48	$6,837.48	$0.00	$0.00
376300-Mains - Plastic	$145,770.43	$899.05	$146,669.48	$0.00	$0.00
380200-Services - Plastic & Copper	$13,766.33	$0.00	$13,766.33	$0.00	$0.00
Total Estimated Costs:	$159,536.76	$7,736.53	$167,273.29	$0.00	$0.00

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0401-043050 JACKSON CTY/KC						
376300-Mains - Plastic						
Mains-Plastic 2"						
Contractor Work	$11,941.30	$0.00	0	0	0	0
Overheads Capitalized - General	$5,299.81	$1.52	0	0	0	0
Stores	$528.84	$3.58	678	0	0	0
Mains-Plastic 4"						
Contract Payroll	$1,304.00	$65.20	0	0	0	0
Contractor Work	$79,615.98	$360.92	0	0	0	0
Department Clearings	$1,127.96	$56.40	0	0	0	0
Overheads Capitalized - Benefits	$728.94	$36.45	0	0	0	0
Overheads Capitalized - General	$37,232.31	$219.45	0	0	0	0
Payroll Taxes	$198.21	$9.91	0	0	0	0
Retirement Value	$0.00	$0.00	0	7	0	0
Stores	$7,793.08	$145.62	1846	0	0	0
SubTotal Utility Account:	**$145,770.43**	**$899.05**	**2,524.00**	**7.00**	**0.00**	**0.00**
376100-Mains - Steel						
Mains-Steel 2"						
Contract Payroll	$0.00	$130.40	0	0	0	0
Department Clearings	$0.00	$112.80	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$72.89	0	0	0	0
Overheads Capitalized - General	$0.00	$8.35	0	0	0	0
Payroll Taxes	$0.00	$19.82	0	0	0	0
Retirement Value	$0.00	$0.00	0	924	0	0
Mains-Steel 3"						
Contract Payroll	$0.00	$130.40	0	0	0	0
Contractor Work	$0.00	$2,748.10	0	0	0	0
Department Clearings	$0.00	$112.80	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$72.89	0	0	0	0
Overheads Capitalized - General	$0.00	$1,842.25	0	0	0	0
Payroll Taxes	$0.00	$19.82	0	0	0	0
Retirement Value	$0.00	$0.00	0	1577	0	0
Stores	$0.00	$1,566.96	0	0	0	0
SubTotal Utility Account:	**$0.00**	**$6,837.48**	**0.00**	**2,501.00**	**0.00**	**0.00**
380200-Services - Plastic & Copper						
Services-Plastic						
Contractor Work	$9,660.58	$0.00	0	0	0	0

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0401-043050 JACKSON CTY/KC						
380200-Services - Plastic & Copper						
Services-Plastic						
Overheads Capitalized - General	$4,105.75	$0.00	0	0	0	0
SubTotal Utility Account:	**$13,766.33**	**$0.00**	**0.00**	**0.00**	**0.00**	**0.00**
SubTotal Location:	**$159,536.76**	**$7,736.53**	**2,524.00**	**2,508.00**	**0.00**	**0.00**
Total Unit Estimate:	**$159,536.76**	**$7,736.53**	**2,524**	**2,508**	**0**	**0**

***** Class Codes *****

Class Code	Value
cap_expense	capital
ISRS Reason	07 - Cast Iron or Bare Steel Replacement - Cor
Isrs_recov	yes
ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod
Project Classification	both

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0401-043050 JACKSON CTY/KC				
376100-Mains - Steel				
Retirement				
Contract Payroll	Mains-Steel 3"		$536.55	0
Contract Payroll	Mains-Steel 2"		$536.55	0
Contractor Work	Mains-Steel 2"		$3,347.05	0
Contractor Work	Mains-Steel 3"		$7,287.77	0
Department Clearings	Mains-Steel 2"		$788.73	0
Department Clearings	Mains-Steel 3"		$788.73	0
Overheads Capitalized - Benefits	Mains-Steel 2"		$472.16	0
Overheads Capitalized - Benefits	Mains-Steel 3"		$472.16	0
Overheads Capitalized - General	Mains-Steel 2"		$2,091.60	0
Overheads Capitalized - General	Mains-Steel 3"		$5,315.60	0
Payroll Taxes	Mains-Steel 3"		$81.56	0
Payroll Taxes	Mains-Steel 2"		$81.56	0
Retirement Value	Mains-Steel 3"		$3,413.87	1,553

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0401-043050 JACKSON CTY/KC				
376100-Mains - Steel				
Retirement				
Retirement Value	Mains-Steel 2"		$841.51	709
Retirement Value	Mains-Steel 2"		$303.16	199
Stores	Mains-Steel 3"		$1,344.52	0
		Retirement Total:	$27,703.08	2,461
376300-Mains - Plastic				
Addition				
Contract Payroll	Mains-Plastic 2"		$715.40	0
Contract Payroll	Mains-Plastic 4"		$1,430.80	0
Contractor Work	Mains-Plastic 4"		$147,498.87	0
Contractor Work	Mains-Plastic 2"		$21,630.68	0
Department Clearings	Mains-Plastic 4"		$2,103.28	0
Department Clearings	Mains-Plastic 2"		$1,051.64	0
Overheads Capitalized - Benefits	Mains-Plastic 4"		$1,259.10	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$629.55	0
Overheads Capitalized - General	Mains-Plastic 2"		$13,600.47	0
Overheads Capitalized - General	Mains-Plastic 4"		$106,610.50	0
Payroll Taxes	Mains-Plastic 2"		$108.74	0
Payroll Taxes	Mains-Plastic 4"		$217.48	0
Stores	Mains-Plastic 4"		$27,054.30	1,910
Stores	Mains-Plastic 2"		$556.10	670
		Addition Total:	$324,466.91	2,580
380100-Services - Steel				
Retirement				
Retirement Value	Services-Steel		$94.18	154
Retirement Value	Services-Steel		$43.00	118
Retirement Value	Services-Steel		$22.50	57
Retirement Value	Services-Steel		$41.07	35
		Retirement Total:	$200.75	364
380200-Services - Plastic & Copper				
Addition				
Contractor Work	Services-Plastic		$4,508.20	0
Overheads Capitalized - General	Services-Plastic		$2,797.66	0
Stores	Services-Plastic		$78.12	372
		Addition Total:	$7,383.98	372
Retirement				
Contractor Work	Services-Plastic		$471.56	0
Overheads Capitalized - General	Services-Plastic		$287.65	0
Retirement Value	Services-Plastic		$37.20	2
Retirement Value	Services-Plastic		$126.47	11
Retirement Value	Services-Plastic		$86.72	4
Retirement Value	Services-Plastic		$228.45	26
Retirement Value	Services-Plastic		$1,971.48	176
Retirement Value	Services-Plastic		$4.40	1

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0401-043050 JACKSON CTY/KC				
380200-Services - Plastic & Copper				
Retirement				
Retirement Value	Services-Plastic		$708.44	59
Retirement Value	Services-Plastic		$38.45	3
Retirement Value	Services-Plastic		$886.28	49
Retirement Value	Services-Plastic		$853.01	76
		Retirement Total:	$5,700.11	407

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$331,850.89	2,952	$33,603.94	3,232
Used In Unitization:	$331,850.89	2,952	$33,603.94	3,232
Unit Estimate Total:	$331,850.89	2,952	$33,603.94	3,232

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	101000::Gas Plant In Service				
0401-043050 JACKSON CTY/KC					
376100-Mains - Steel					
Mains-Steel 2"					
OCR		1952	URET	709	$841.51
OCR		1966	URET	199	$303.16
Mains-Steel 3"					
OCR		1954	URET	1,553	$3,413.87
		Utility Account Total:		2,461	$4,558.54
380100-Services - Steel					
Services-Steel					
OCR		1925	URET	57	$22.50
OCR		1928	URET	118	$43.00
OCR		1952	URET	154	$94.18
OCR		1963	URET	35	$41.07
		Utility Account Total:		364	$200.75
380200-Services - Plastic & Copper					
Services-Plastic					
OCR		1971	URET	1	$4.40
OCR		1983	URET	59	$708.44

Work Order Authorization Information

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	**101000::Gas Plant In Service**				
0401-043050 JACKSON CTY/KC					
380200-Services - Plastic & Copper					
Services-Plastic					
OCR		1991	URET	11	$126.47
OCR		1992	URET	26	$228.45
OCR		1993	URET	176	$1,971.48
OCR		1998	URET	3	$38.45
OCR		1999	URET	76	$853.01
OCR		2002	URET	49	$886.28
OCR		2004	URET	2	$37.20
OCR		2007	URET	4	$86.72
			Utility Account Total:	**407**	**$4,940.90**
			Location Total:	**3,232**	**$9,700.19**
			GL Account Total:	**3,232**	**$9,700.19**
			Posted Retirements:	**3,232**	**$9,700.19**
			Work Order Total:	**3,232**	**$9,700.19**

Work Order Authorization Information

Header Detail

Work Order: 801873
Work Order Title: Repl 2175F 2-4P CP at Canterbury
Wo Type Description: WO-Replacement Mains & Svcs MGE
Work Order Group:
Current Revision: 1
Funding Project: F0572
Funding Project Desc: Main Replacement - ISRS (SW)
Eligible for AFUDC yes Eligible for CPI: yes
Reason Code: System Integrity

Company: Spire Missouri Inc.
Business Segment: Missouri West
Functional Class: Distribution Plant
Department Code: 20921
Department Description: Region 2B - SW Missouri - Distribution - Union
Budget Description: Replace bare steel main - safety re
Est. Annual Revenue:
Reimbursement Type: None
Retirement Type:

WO Description: Install 630ft of 4in PL IP Main, 1545ft of 2in PL IP Main on Canterbury Lane and E 4th St.

Major Location: 0501-Joplin
Asset Location: 0501-044001 JASPER CTY/JOPLIN

Status: posted to CPR

Estimated Start Date: Feb 19, 2018 Estimated Completion Date: Mar 27, 2018 Estimated In-Service Date: Mar 27, 2018

Notes: Abandon 5ft of 4in PL IP Main, 4ft of 3in PL IP Main, 36ft of 2in PL IP Main, 461ft of 3in ST IP Main, 1779ft of 2in ST IP Main, 50ft of 1 1/4in ST IP Main on Canterbury Lane and E 4th St. Total number of Tie overs 19, total number of replacements 3. This main is being replaced as part of FY18 Bare ST replacement program and is having CP related issues and has an open leak.

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Muehlenkamp, Anne	$0	3/4/2018
Engineering Review-Dist S	Hoeferlin, Craig	$0	3/6/2018
VP Field Operations-MGE	Hampton, Joe	$1,000,000	3/7/2018

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376100-Mains - Steel	$0.00	$967.36	$967.36	$0.00	$0.00
376300-Mains - Plastic	$145,705.12	$830.15	$146,535.27	$0.00	$0.00
380200-Services - Plastic & Copper	$3,223.31	$346.57	$3,569.88	$0.00	$0.00
Total Estimated Costs:	$148,928.43	$2,144.08	$151,072.51	$0.00	$0.00

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0501-044001 JASPER CTY/JOPLIN						
376300-Mains - Plastic						
Mains-Plastic 2"						
Contract Payroll	$679.00	$0.00	0	0	0	0
Contractor Work	$64,755.12	$190.98	0	0	0	0
Department Clearings	$587.34	$0.00	0	0	0	0
Overheads Capitalized - Benefits	$379.56	$0.00	0	0	0	0
Overheads Capitalized - General	$28,987.37	$81.97	0	0	0	0
Payroll Taxes	$103.21	$0.00	0	0	0	0
Retirement Value	$0.00	$0.00	0	36	0	0
Stores	$3,348.20	$1.88	1545	0	0	0
Mains-Plastic 3"						
Contractor Work	$0.00	$10.52	0	0	0	0
Overheads Capitalized - General	$0.00	$4.47	0	0	0	0
Retirement Value	$0.00	$0.00	0	4	0	0
Mains-Plastic 4"						
Contract Payroll	$305.55	$0.00	0	0	0	0
Contractor Work	$29,797.24	$371.44	0	0	0	0
Department Clearings	$264.30	$0.00	0	0	0	0
Overheads Capitalized - Benefits	$170.80	$0.00	0	0	0	0
Overheads Capitalized - General	$13,756.35	$161.15	0	0	0	0
Payroll Taxes	$46.44	$0.00	0	0	0	0
Retirement Value	$0.00	$0.00	0	5	0	0
Stores	$2,524.64	$7.74	630	0	0	0
SubTotal Utility Account:	**$145,705.12**	**$830.15**	**2,175.00**	**45.00**	**0.00**	**0.00**
376100-Mains - Steel						
Mains-Steel 2"						
Contract Payroll	$0.00	$271.60	0	0	0	0
Contractor Work	$0.00	$165.16	0	0	0	0
Department Clearings	$0.00	$234.93	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$151.82	0	0	0	0
Overheads Capitalized - General	$0.00	$87.58	0	0	0	0
Payroll Taxes	$0.00	$41.28	0	0	0	0
Retirement Value	$0.00	$0.00	0	1829	0	0
Mains-Steel 3"						
Contractor Work	$0.00	$10.52	0	0	0	0
Overheads Capitalized - General	$0.00	$4.47	0	0	0	0
Retirement Value	$0.00	$0.00	0	461	0	0
SubTotal Utility Account:	**$0.00**	**$967.36**	**0.00**	**2,290.00**	**0.00**	**0.00**

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0501-044001 JASPER CTY/JOPLIN						
380200-Services - Plastic & Copper						
Services-Plastic						
Contractor Work	$2,069.10	$243.21	0	0	0	0
Overheads Capitalized - General	$961.34	$103.36	0	0	0	0
Stores	$192.87	$0.00	0	0	0	0
SubTotal Utility Account:	**$3,223.31**	**$346.57**	**0.00**	**0.00**	**0.00**	**0.00**
SubTotal Location:	**$148,928.43**	**$2,144.08**	**2,175.00**	**2,335.00**	**0.00**	**0.00**
Total Unit Estimate:	**$148,928.43**	**$2,144.08**	**2,175**	**2,335**	**0**	**0**

***** Class Codes *****

Class Code	Value
cap_expense	capital
CWIP Property Tax Type	MO-CWIP-Distribution Real
ISRS Reason	03 - Bare Steel Replacement
isrs_recov	yes
ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod
Project Classification	both

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0501-044001 JASPER CTY/JOPLIN				
376100-Mains - Steel				
Retirement				
Contract Payroll	Mains-Steel 2"		$19.62	0
Contractor Work	Mains-Steel 3"		$568.08	0
Contractor Work	Mains-Steel 2"		$2,503.76	0
Department Clearings	Mains-Steel 2"		$16.97	0
Overheads Capitalized - Benefits	Mains-Steel 2"		$10.97	0
Overheads Capitalized - General	Mains-Steel 2"		$1,065.35	0
Overheads Capitalized - General	Mains-Steel 3"		$241.43	0
Payroll Taxes	Mains-Steel 2"		$2.98	0
Retirement Value	Mains-Steel 2"		$229.68	101

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0501-044001 JASPER CTY/JOPLIN				
376100-Mains - Steel				
Retirement				
Retirement Value	Mains-Steel 2"		$284.24	49
Retirement Value	Mains-Steel 2"		$178.68	179
Retirement Value	Mains-Steel 2"		$1,000.08	371
Retirement Value	Mains-Steel 2"		$448.33	182
Retirement Value	Mains-Steel 3"		$573.82	224
Retirement Value	Mains-Steel 2"		$831.16	767
Retirement Value	Mains-Steel 2"		$431.56	34
Retirement Value	Mains-Steel 3"		$745.17	187
Retirement Value	Mains-Steel 2"		$202.68	107
Retirement Value	Mains-Steel 2"		$90.71	23
		Retirement Total:	**$9,445.27**	**2,224**
376300-Mains - Plastic				
Addition				
Contract Payroll	Mains-Plastic 4"		$11,650.69	0
Contract Payroll	Mains-Plastic 2"		$20,970.50	0
Contractor Work	Mains-Plastic 4"		$6,172.92	0
Contractor Work	Mains-Plastic 2"		$15,540.54	0
Department Clearings	Mains-Plastic 2"		$18,139.48	0
Department Clearings	Mains-Plastic 4"		$10,077.85	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$11,722.51	0
Overheads Capitalized - Benefits	Mains-Plastic 4"		$6,512.74	0
Overheads Capitalized - General	Mains-Plastic 2"		$9,372.89	0
Overheads Capitalized - General	Mains-Plastic 4"		$4,242.68	0
Payroll Taxes	Mains-Plastic 4"		$1,770.90	0
Payroll Taxes	Mains-Plastic 2"		$3,187.52	0
Stores	Mains-Plastic 2"		$3,355.40	1,483
Stores	Mains-Plastic 4"		$2,055.41	628
		Addition Total:	**$124,772.03**	**2,111**
Retirement				
Contract Payroll	Mains-Plastic 3"		$323.38	0
Contractor Work	Mains-Plastic 3"		$10.52	0
Contractor Work	Mains-Plastic 2"		$84.16	0
Department Clearings	Mains-Plastic 3"		$279.72	0
Overheads Capitalized - Benefits	Mains-Plastic 3"		$180.77	0
Overheads Capitalized - General	Mains-Plastic 3"		$27.18	0
Overheads Capitalized - General	Mains-Plastic 2"		$35.77	0
Payroll Taxes	Mains-Plastic 3"		$49.15	0
Retirement Value	Mains-Plastic 3"		$536.23	7
Retirement Value	Mains-Plastic 2"		$231.87	32
Retirement Value	Mains-Plastic 2"		$365.51	30
Stores	Mains-Plastic 3"		$4.73	0
		Retirement Total:	**$2,128.99**	**69**

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Used In Unitization:				
0501-044001 JASPER CTY/JOPLIN				
380100-Services - Steel				
Retirement				
Contract Payroll	Services-Steel		$204.62	0
Contractor Work	Services-Steel		$10.52	0
Department Clearings	Services-Steel		$177.00	0
Overheads Capitalized - Benefits	Services-Steel		$114.38	0
Overheads Capitalized - General	Services-Steel		$17.57	0
Payroll Taxes	Services-Steel		$31.10	0
Retirement Value	Services-Steel		$27.81	15
Retirement Value	Services-Steel		$126.57	32
		Retirement Total:	**$709.57**	**47**
380200-Services - Plastic & Copper				
Addition				
Contract Payroll	Services-Plastic		$1,740.78	0
Department Clearings	Services-Plastic		$1,505.77	0
Overheads Capitalized - Benefits	Services-Plastic		$973.10	0
Overheads Capitalized - General	Services-Plastic		$279.33	0
Payroll Taxes	Services-Plastic		$264.60	0
Stores	Services-Plastic		$395.10	270
		Addition Total:	**$5,158.68**	**270**
Retirement				
Contractor Work	Services-Plastic		$10.52	0
Overheads Capitalized - General	Services-Plastic		$4.47	0
Retirement Value	Services-Plastic		$201.98	25
Retirement Value	Services-Plastic		$100.72	11
Retirement Value	Services-Plastic		$309.67	30
Retirement Value	Services-Plastic		$144.60	9
Retirement Value	Services-Plastic		$2,330.34	127
Retirement Value	Services-Plastic		$360.42	41
		Retirement Total:	**$3,462.72**	**243**

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$129,930.71	2,381	$15,746.55	2,583
Used In Unitization:	$129,930.71	2,381	$15,746.55	2,583
Unit Estimate Total:	$129,930.71	2,381	$15,746.55	2,583

Work Order Authorization Information

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	101000::Gas Plant In Service				
0501-044001 JASPER CTY/JOPLIN					
376100-Mains - Steel					
Mains-Steel 2"					
OCR		1952	URET	179	$178.68
OCR		1956	URET	767	$831.16
OCR		1959	URET	107	$202.68
OCR		1960	URET	101	$229.68
OCR		1964	URET	371	$1,000.08
OCR		1969	URET	182	$448.33
OCR		1972	URET	23	$90.71
OCR		1977	URET	49	$284.24
OCR		1993	URET	34	$431.56
Mains-Steel 3"					
OCR		1969	URET	224	$573.82
OCR		1972	URET	187	$745.17
		Utility Account Total:		**2,224**	**$5,016.11**
376300-Mains - Plastic					
Mains-Plastic 2"					
OCR		1986	URET	32	$231.87
OCR		2001	URET	30	$365.51
Mains-Plastic 3"					
OCR		2006	URET	7	$536.23
		Utility Account Total:		**69**	**$1,133.61**
380100-Services - Steel					
Services-Steel					
OCR		1960	URET	15	$27.81
OCR		1972	URET	32	$126.57
		Utility Account Total:		**47**	**$154.38**
380200-Services - Plastic & Copper					
Services-Plastic					
OCR		1987	URET	30	$309.67
OCR		1989	URET	9	$144.60
OCR		1994	URET	41	$360.42
OCR		1995	URET	127	$2,330.34
OCR		1997	URET	11	$100.72
OCR		2000	URET	25	$201.98
		Utility Account Total:		**243**	**$3,447.73**
		Location Total:		**2,583**	**$9,751.83**
		GL Account Total:		**2,583**	**$9,751.83**
		Posted Retirements:		**2,583**	**$9,751.83**
		Work Order Total:		**2,583**	**$9,751.83**

Work Order Authorization Information

Header Detail

Work Order: 801165
Work Order Title: Repl 70F 8-16S Langsford & MO Rt 7
Wo Type Description: WO-Replacement Mains & Svcs MGE
Work Order Group:
Current Revision: 2
Funding Project: F0604
Funding Project Desc: Main Replacement - ISRS (S)
Eligible for AFUDC yes Eligible for CPI: yes
Reason Code: Safety

Company: Spire Missouri Inc.
Business Segment: Missouri West
Functional Class: Distribution Plant
Department Code: 20638
Department Description: Construction & Maintenance - Region 2B - Unio
Budget Description: Replace bare steel main - safety re
Est. Annual Revenue:
Reimbursement Type: None
Retirement Type:

WO Description: Install ~40 Ft of 8in ST FP Main, ~30 Ft of 16in ST FP Main. Abandon ~40 Ft of 8in ST FP Main, ~30 Ft of 16in ST FP Main.

Major Location: 0931-Lake Lotawana
Asset Location: 0931-043044 JACKSON CTY/LOTOWANA

Status: In service

Estimated Start Date: Jun 11, 2018 Estimated Completion Date: Jun 15, 2018 Estimated In-Service Date: Jun 15, 2018

Notes: We have a 16" Bridle Valve Setting fed by Drinkwater at Langsford Rd & MO Route 7. The 16" pipe 45s above ground with a 16" valve. There are 2 - 8" valves that take off on either side of the 16" valve & then go below ground & north on MO Rte 7 to feed Blue Springs. West of the Bridle Valve Setting the 16" main is capped with an 8" side valve that then goes West on Langsford Road to feed Lees Summit. The 8" valve feeding LS is leaking & the Class 3 leak is due this August. L&M is unable to repack the valve & can't fix leak. There is not enough room b/w the 8" valve &16" pipe to stopper the 8" to replace valve. I don't believe a Bridle Valve setting is necessary as the feed is one way coming from the East. Please review the Master Plan to confirm that this will not become a two way feed. We could hire TDW Services to stopper the 16" main East of the Valve Setting and and install an 8" valve below ground to feed North and an 8" valve below ground to feed West. Please provide a design

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Muehlenkamp, Anne	$0	6/19/2018
Engineering Review-Dist S	Hoeferlin, Craig	$0	6/21/2018
VP Field Operations-MGE	Hampton, Joe	$1,000,000	6/22/2018

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376100-Mains - Steel	$126,137.89	$17,773.33	$143,911.22	$0.00	$0.00
Total Estimated Costs:	$126,137.89	$17,773.33	$143,911.22	$0.00	$0.00

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0931-043044 JACKSON CTY/LOTOV						
376100-Mains - Steel						
Mains-Steel 16"						
Contract Payroll	$782.40	$130.40	0	0	0	0
Contractor Work	$5,320.26	$6,441.30	0	0	0	0
Department Clearings	$676.78	$112.80	0	0	0	0
Overheads Capitalized - Benefits	$437.36	$72.89	0	0	0	0
Overheads Capitalized - General	$15,635.07	$2,745.90	0	0	0	0
Payroll Taxes	$118.92	$19.82	0	0	0	0
Retirement Value	$0.00	$0.00	0	90	0	0
Stores	$31,350.33	$0.00	30	0	0	0
Mains-Steel 8"						
Contract Payroll	$521.60	$130.40	0	0	0	0
Contractor Work	$9,586.88	$5,548.04	0	0	0	0
Department Clearings	$451.18	$112.80	0	0	0	0
Overheads Capitalized - Benefits	$291.57	$72.89	0	0	0	0
Overheads Capitalized - General	$21,041.73	$2,366.27	0	0	0	0
Payroll Taxes	$79.28	$19.82	0	0	0	0
Retirement Value	$0.00	$0.00	0	120	0	0
Stores	$39,844.53	$0.00	40	0	0	0
SubTotal Utility Account:	**$126,137.89**	**$17,773.33**	**70.00**	**210.00**	**0.00**	**0.00**
SubTotal Location:	**$126,137.89**	**$17,773.33**	**70.00**	**210.00**	**0.00**	**0.00**
Total Unit Estimate:	**$126,137.89**	**$17,773.33**	**70**	**210**	**0**	**0**

***** Class Codes *****

Class Code	Value
cap_expense	capital
CWIP Property Tax Type	MO-CWIP-Distribution Real
ISRS Reason	06 - Other Legacy Main Material Replacement
isrs_recov	yes
ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod
Project Classification	both

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Available for Unitization:				
0931-043044 JACKSON CTY/LOTOWANA				
376100-Mains - Steel				
Addition				
Contract Payroll	Mains-Steel 16"		$1,251.95	0
Contract Payroll	Mains-Steel 8"		$1,251.95	0
Contractor Work	Mains-Steel 8"		$16,586.90	0
Contractor Work	Mains-Steel 16"		$24,884.56	0
Department Clearings	Mains-Steel 16"		$1,840.37	0
Department Clearings	Mains-Steel 8"		$1,840.37	0
Overheads Capitalized - Benefits	Mains-Steel 16"		$1,101.72	0
Overheads Capitalized - Benefits	Mains-Steel 8"		$1,101.72	0
Overheads Capitalized - General	Mains-Steel 16"		$54,344.08	0
Overheads Capitalized - General	Mains-Steel 8"		$34,924.81	0
Payroll Taxes	Mains-Steel 8"		$190.30	0
Payroll Taxes	Mains-Steel 16"		$190.30	0
Stores	Mains-Steel 8"		$40,476.02	30
Stores	Mains-Steel 16"		$64,013.23	18
		Addition Total:	**$243,998.28**	**48**
Retirement				
Contract Payroll	Mains-Steel 8"		$35.77	0
Contract Payroll	Mains-Steel 16"		$35.77	0
Contractor Work	Mains-Steel 8"		$7,869.64	0
Contractor Work	Mains-Steel 16"		$4,070.98	0
Department Clearings	Mains-Steel 16"		$52.58	0
Department Clearings	Mains-Steel 8"		$52.58	0
Overheads Capitalized - Benefits	Mains-Steel 16"		$31.48	0
Overheads Capitalized - Benefits	Mains-Steel 8"		$31.48	0
Overheads Capitalized - General	Mains-Steel 16"		$2,486.62	0
Overheads Capitalized - General	Mains-Steel 8"		$4,803.81	0
Payroll Taxes	Mains-Steel 16"		$5.44	0
Payroll Taxes	Mains-Steel 8"		$5.44	0
Retirement Value	Mains-Steel 8"		$138.12	13
Retirement Value	Mains-Steel 8"		$169.49	5
		Retirement Total:	**$19,789.20**	**18**

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$243,998.28	48	$19,789.20	18
	Addition Dollars	**Add Qty**	**Retirement Dollars**	**Retire Qty**
Available for Unitization:	$243,998.28	48	$19,789.20	18
	Addition Dollars	**Add Qty**	**Retirement Dollars**	**Retire Qty**
Unit Estimate Total:	**$243,998.28**	**48**	**$19,789.20**	**18**

Work Order Authorization Information

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Selected Retirements:					
Missouri West	101000::Gas Plant In Service				
0931-043044 JACKSON CTY/LOTOWANA					
376100-Mains - Steel					
Mains-Steel 8"					
OCR		1964	URET	13	$138.12
OCR		1983	URET	5	$169.49
			Utility Account Total:	18	$307.61
			Location Total:	18	$307.61
			GL Account Total:	18	$307.61
			Selected Retirements:	18	$307.61
			Work Order Total:	18	$307.61

Work Order Authorization Information

Header Detail

Work Order:	801930	**Company:**	Spire Missouri Inc.
Work Order Title:	Repl 212F 4S Exposed Main Ash Grove	**Business Segment:**	Missouri West
Wo Type Description:	WO-Replacement Mains & Svcs MGE	**Functional Class:**	Distribution Plant
Work Order Group:		**Department Code:**	20921
Current Revision:	2	**Department Description:**	Region 2B - SW Missouri - Distribution - Union
Funding Project:	F0572	**Budget Description:**	Replace bare steel main - safety re
Funding Project Desc:	Main Replacement - ISRS (SW)	**Est. Annual Revenue:**	
Eligible for AFUDC	yes **Eligible for CPI:** yes	**Reimbursement Type:**	None
Reason Code:	Safety	**Retirement Type:**	

WO Description: Install ~ 212 Ft of 4 In ST FP Main due to exposure in Ash Grove.

Major Location: 0832-Ash Grove and Thomas **Status:** completed

Asset Location: 0832-034005 GREENE CTY/ASH GROVE

Estimated Start Date: Apr 02, 2018 **Estimated Completion Date:** Apr 06, 2018 **Estimated In-Service Date:** Apr 06, 2018

Notes: Abandon ~ 200 Ft of 4 In ST FP Main due to exposure in Ash Grove. Replace exposed main off of Ash Grove's supply Line. The coatinghas been deteriorated and the pipe is in poor condition resulting inleak. this is ISRS recoverable. Per Jessica Weissert the Estimate and the As Built are properly reflected with a difference in footage of 134 Feet.

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Muehlenkamp, Anne	$0	1/29/2019
Engineering Review-Dist S	Hoeferlin, Craig	$0	2/7/2019
VP Field Operations-MGE	Goodson, Timothy	$1,000,000	2/8/2019

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376100-Mains - Steel	$30,115.91	$466.92	$30,582.83	$0.00	$0.00
Total Estimated Costs:	**$30,115.91**	**$466.92**	**$30,582.83**	**$0.00**	**$0.00**

Work Order Authorization Information

******* Unit Estimate *******

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0832-034005 GREENE CTY/ASH GF						
376100-Mains - Steel						
Mains-Steel 4"						
Contract Payroll	$536.55	$35.77	0	0	0	0
Contractor Work	$12,129.54	$210.14	0	0	0	0
Department Clearings	$788.73	$52.58	0	0	0	0
Overheads Capitalized - Benefits	$472.16	$31.48	0	0	0	0
Overheads Capitalized - General	$10,729.45	$131.51	0	0	0	0
Payroll Taxes	$81.56	$5.44	0	0	0	0
Retirement Value	$0.00	$0.00	0	400	0	0
Stores	$5,377.92	$0.00	212	0	0	0
SubTotal Utility Account:	**$30,115.91**	**$466.92**	**212.00**	**400.00**	**0.00**	**0.00**
SubTotal Location:	**$30,115.91**	**$466.92**	**212.00**	**400.00**	**0.00**	**0.00**
Total Unit Estimate:	**$30,115.91**	**$466.92**	**212**	**400**	**0**	**0**

******* Class Codes *******

Class Code	Value
cap_expense	capital
ISRS Reason	07 - Cast Iron or Bare Steel Replacement - Cor
isrs_recov	yes
ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod
Project Classification	both

******* As-Built *******

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Available for Unitization:				
0832-034005 GREENE CTY/ASH GROVE				
376100-Mains - Steel				
Addition				
Contract Payroll	Mains-Steel 4"		$11,329.74	0
Contractor Work	Mains-Steel 4"		$26,739.44	0
Department Clearings	Mains-Steel 4"		$16,654.72	0
Overheads Capitalized - Benefits	Mains-Steel 4"		$9,970.17	0

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Available for Unitization:				
0832-034005 GREENE CTY/ASH GROVE				
376100-Mains - Steel				
Addition				
Overheads Capitalized - General	Mains-Steel 4"		$22,090.74	0
Payroll Taxes	Mains-Steel 4"		$1,722.12	0
Stores	Mains-Steel 4"		$7,747.57	346
		Addition Total:	$96,254.50	346
Retirement				
Contract Payroll	Mains-Steel 4"		$107.31	0
Contractor Work	Mains-Steel 4"		$13,788.60	0
Department Clearings	Mains-Steel 4"		$157.75	0
Overheads Capitalized - Benefits	Mains-Steel 4"		$94.43	0
Overheads Capitalized - General	Mains-Steel 4"		$9,433.71	0
Payroll Taxes	Mains-Steel 4"		$16.31	0
Retirement Value	Mains-Steel 4"		$3.30	334
Stores	Mains-Steel 4"		$1,660.14	0
		Retirement Total:	$25,261.55	334

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$96,254.50	346	$25,261.55	334
Available for Unitization:	$96,254.50	346	$25,261.55	334
Unit Estimate Total:	$96,254.50	346	$25,261.55	334

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	101000::Gas Plant In Service				
0832-034005 GREENE CTY/ASH GROVE					
376100-Mains - Steel					
Mains-Steel 4"					
OCR		1967	URET	334	$3.30
			Utility Account Total:	334	$3.30
			Location Total:	334	$3.30
			GL Account Total:	334	$3.30
			Posted Retirements:	334	$3.30
			Work Order Total:	334	$3.30

Work Order Authorization Information

Header Detail

Work Order: 802352
Work Order Title: Repl 1125F 2P Pennell & Hodges
Wo Type Description: WO-Replacement Mains & Svcs MGE
Work Order Group:
Current Revision: 1
Funding Project: F0572
Funding Project Desc: Main Replacement - ISRS (SW)
Eligible for AFUDC yes Eligible for CPI: yes
Reason Code: System Integrity

Company: Spire Missouri Inc.
Business Segment: Missouri West
Functional Class: Distribution Plant
Department Code: 20921
Department Description: Region 2B - SW Missouri - Distribution - Union
Budget Description: Replace bare steel main - safety re
Est. Annual Revenue:
Reimbursement Type: None
Retirement Type:

WO Description: Install ~1125 Ft of 2 In PL IP Main at Sheridan Ave and Hodges Drdue to leaking valve 1513-135N In Carl Junction.

Major Location: 0513-Carl Junction
Asset Location: 0513-044020 JASPER CTY/CARL JUNCTION

Status: In service

Estimated Start Date: Mar 04, 2019 Estimated Completion Date: Mar 22, 2019 Estimated In-Service Date: Mar 22, 2019

Notes: Abandon ~1171 Ft of 2 In ST IP Main in Alley between Pennell Stand Sheridan Ave, W of Hodges Dr in Carl Junction. Total Service Tie-Overs: 9. ISRS Recoverable due to vintage of pipe.

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Muehlenkamp, Anne	$0	2/21/2019
Engineering Review-Dist S	Hoeferlin, Craig	$0	3/10/2019
VP Field Operations-MGE	Goodson, Timothy	$1,000,000	3/11/2019

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376100-Mains - Steel	$0.00	$0.00	$0.00	$0.00	$0.00
376300-Mains - Plastic	$49,532.33	$595.51	$50,127.84	$0.00	$0.00
Total Estimated Costs:	$49,532.33	$595.51	$50,127.84	$0.00	$0.00

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0513-044020 JASPER CTY/CARL JL						
376300-Mains - Plastic						
Mains-Plastic 2"						
Contract Payroll	$1,645.42	$71.54	0	0	0	0
Contractor Work	$25,556.14	$210.14	0	0	0	0
Department Clearings	$2,418.77	$105.16	0	0	0	0
Overheads Capitalized - Benefits	$1,447.97	$62.96	0	0	0	0
Overheads Capitalized - General	$16,678.74	$134.84	0	0	0	0
Payroll Taxes	$250.10	$10.87	0	0	0	0
Stores	$1,535.19	$0.00	1125	0	0	0
SubTotal Utility Account:	**$49,532.33**	**$595.51**	**1,125.00**	**0.00**	**0.00**	**0.00**
376100-Mains - Steel						
Mains-Steel 2"						
Retirement Value	$0.00	$0.00	0	1171	0	0
SubTotal Utility Account:	**$0.00**	**$0.00**	**0.00**	**1,171.00**	**0.00**	**0.00**
SubTotal Location:	**$49,532.33**	**$595.51**	**1,125.00**	**1,171.00**	**0.00**	**0.00**
Total Unit Estimate:	**$49,532.33**	**$595.51**	**1,125**	**1,171**	**0**	**0**

***** Class Codes *****

Class Code	Value
cap_expense	capital
ISRS Reason	08 - Cast Iron or Bare Steel Replacement - Lea
Isrs_recov	yes
ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod
Project Classification	both

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Selected Retirements:					
Missouri West	101000::Gas Plant In Service				
0513-044020 JASPER CTY/CARL JUNCTION					
376100-Mains - Steel					
Mains-Steel 2"					
OCR			URET	273	$0.00

OCR URET 210 $0.00

Work Order Authorization Information

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retiro Qty	Retirement Amount
OCR			URET	252	$0.00
OCR			URET	436	$0.00
			Utility Account Total:	1,171	$0.00
			Location Total:	1,171	$0.00
			GL Account Total:	1,171	$0.00
			Selected Retirements:	1,171	$0.00
			Work Order Total:	1,171	$0.00

Work Order Authorization Information

Header Detail

Work Order: 802624
Work Order Title: Repl 200F 2P Neosho Blvd & Walnut
Wo Type Description: WO-Replacement Mains & Svcs MGE
Work Order Group:
Current Revision: 1
Funding Project: F0572
Funding Project Desc: Main Replacement - ISRS (SW)
Eligible for AFUDC yes Eligible for CPI: yes
Reason Code: Safety

Company: Spire Missouri Inc.
Business Segment: Missouri West
Functional Class: Distribution Plant
Department Code: 20921
Department Description: Region 2B - SW Missouri - Distribution - Union
Budget Description: Replace bare steel main - safety re
Est. Annual Revenue:
Reimbursement Type: None
Retirement Type:

WO Description: Install ~ 200 Ft of 2 in PL IP Main at Intersection of Walnut Drand Hwy 60 due to leaks in Neosho.

Major Location: 0806-Neosho
Asset Location: 0806-066010 NEWTON CTY/NEOSHO

Status: completed

Estimated Start Date: Feb 11, 2019 Estimated Completion Date: Mar 22, 2019 Estimated In-Service Date: Mar 22, 2019

Notes: Abandon ~ 177 Ft of 2 in ST IP Main in same location. 0 Tie-Overs. ISRS Recoverable, Bare Steel Replacement. Per Jessica Weissert the Estimate and the As Built are properly reflected with a difference in footage of 187 Feet.

Reason for Work (Justification)

Approvals

Level	Approver	Approval Limit	Date Approved
Operational Accounting	Muehlenkamp, Anne	$0	4/10/2019
Engineering Review-Dist S	Hoeferlin, Craig	$0	4/12/2019
VP Field Operations-MGE	Goodson, Timothy	$1,000,000	4/15/2019

***** Unit Estimate *****

Utility Account	Additions	Removal Cost	Total Expenditures	Retirement Value	Salvage
376100-Mains - Steel	$2,136.99	$4,391.39	$6,528.38	$0.00	$0.00
376300-Mains - Plastic	$12,662.00	$0.00	$12,662.00	$0.00	$0.00
Total Estimated Costs:	$14,798.99	$4,391.39	$19,190.38	$0.00	$0.00

Work Order Authorization Information

***** Unit Estimate *****

Asset Location / Utility Account / Retirement Unit / Est. Chg Type	Addition Dollars	Retirement Dollars	Add Qty	Retire Qty	Add Hrs	Retire Hrs
0806-066010 NEWTON CTY/NEOSH						
376300-Mains - Plastic						
Mains-Plastic 2"						
Contract Payroll	$536.55	$0.00	0	0	0	0
Contractor Work	$6,081.93	$0.00	0	0	0	0
Department Clearings	$788.73	$0.00	0	0	0	0
Overheads Capitalized - Benefits	$472.16	$0.00	0	0	0	0
Overheads Capitalized - General	$4,116.48	$0.00	0	0	0	0
Payroll Taxes	$81.56	$0.00	0	0	0	0
Stores	$584.59	$0.00	200	0	0	0
SubTotal Utility Account:	**$12,662.00**	**$0.00**	**200.00**	**0.00**	**0.00**	**0.00**
376100-Mains - Steel						
Mains-Steel 2"						
Contract Payroll	$0.00	$35.77	0	0	0	0
Contractor Work	$916.24	$2,316.30	0	0	0	0
Department Clearings	$0.00	$52.58	0	0	0	0
Overheads Capitalized - Benefits	$0.00	$31.48	0	0	0	0
Overheads Capitalized - General	$809.67	$1,618.42	0	0	0	0
Payroll Taxes	$0.00	$5.44	0	0	0	0
Retirement Value	$0.00	$0.00	0	177	0	0
Stores	$411.08	$331.40	0	0	0	0
SubTotal Utility Account:	**$2,136.99**	**$4,391.39**	**0.00**	**177.00**	**0.00**	**0.00**
SubTotal Location:	**$14,798.99**	**$4,391.39**	**200.00**	**177.00**	**0.00**	**0.00**
Total Unit Estimate:	**$14,798.99**	**$4,391.39**	**200**	**177**	**0**	**0**

***** Class Codes *****

Class Code	Value
cap_expense	capital
ISRS Reason	08 - Cast Iron or Bare Steel Replacement - Lea
isrs_recov	yes
ohbenefits	yes
ohgen_supv	yes
prod_nonprod	prod
Project Classification	both

Work Order Authorization Information

***** As-Built *****

Asset Location / Utility Account / Exp Type / Est Charge Type	Retirement Unit	Job task	Dollars	Quantity
Available for Unitization:				
0806-066010 NEWTON CTY/NEOSHO				
376100-Mains - Steel				
Retirement				
Contract Payroll	Mains-Steel 2"		$3,421.83	0
Department Clearings	Mains-Steel 2"		$5,030.09	0
Overheads Capitalized - Benefits	Mains-Steel 2"		$3,011.21	0
Overheads Capitalized - General	Mains-Steel 2"		$509.14	0
Payroll Taxes	Mains-Steel 2"		$520.12	0
Retirement Value	Mains-Steel 2"		$72.91	67
Retirement Value	Mains-Steel 2"		$171.24	123
Stores	Mains-Steel 2"		$312.96	0
		Retirement Total:	**$13,049.50**	**190**
376300-Mains - Plastic				
Addition				
Contract Payroll	Mains-Plastic 2"		$7,760.89	0
Department Clearings	Mains-Plastic 2"		$11,408.51	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$6,829.58	0
Overheads Capitalized - General	Mains-Plastic 2"		$1,486.42	0
Payroll Taxes	Mains-Plastic 2"		$1,179.66	0
Stores	Mains-Plastic 2"		$1,253.53	387
		Addition Total:	**$29,918.59**	**387**
Retirement				
Contract Payroll	Mains-Plastic 2"		$92.32	0
Department Clearings	Mains-Plastic 2"		$135.71	0
Overheads Capitalized - Benefits	Mains-Plastic 2"		$81.24	0
Overheads Capitalized - General	Mains-Plastic 2"		$8.59	0
Payroll Taxes	Mains-Plastic 2"		$14.03	0
Retirement Value	Mains-Plastic 2"		$143.07	37
Retirement Value	Mains-Plastic 2"		$672.93	105
		Retirement Total:	**$1,147.89**	**142**

	Addition Dollars	Add Qty	Retirement Dollars	Retire Qty
Location Total:	$29,918.59	387	$14,197.39	332
	Addition Dollars	**Add Qty**	**Retirement Dollars**	**Retire Qty**
Available for Unitization:	$29,918.59	387	$14,197.39	332
	Addition Dollars	**Add Qty**	**Retirement Dollars**	**Retire Qty**
Unit Estimate Total:	**$29,918.59**	**387**	**$14,197.39**	**332**

Work Order Authorization Information

***** Work Order Retirements *****

Business Segment / Asset Location / Utility Account / Retirement Unit / Asset Description	GL Account	Vintage	Activity Code	Retire Qty	Retirement Amount
Posted Retirements:					
Missouri West	101000::Gas Plant In Service				
0806-066010 NEWTON CTY/NEOSHO					
376100-Mains - Steel					
Mains-Steel 2"					
OCR		1951	URET	67	$72.91
OCR		1958	URET	123	$171.24
		Utility Account Total:		190	$244.15
376300-Mains - Plastic					
Mains-Plastic 2"					
OCR		1978	URET	37	$143.07
OCR		1995	URET	105	$672.93
		Utility Account Total:		142	$816.00
		Location Total:		332	$1,060.15
		GL Account Total:		332	$1,060.15
		Posted Retirements:		332	$1,060.15
		Work Order Total:		332	$1,060.15

Missouri Public Service Commission

POST OFFICE BOX 360
JEFFERSON CITY, MISSOURI 65102
573-751-3234
573-751-1847 (Fax Number)
http://www.psc.state.mo.us

September 6, 2001

FILED[3]
SEP 6 2001
Missouri Public
Service Commission

Mr. Dale Hardy Roberts
Secretary/Chief Regulatory Law Judge
Missouri Public Service Commission
P. O. Box 360
Jefferson City, MO 65102

RE: Case No. GO-2002-50

Dear Mr. Roberts:

Enclosed for filing in the above-captioned case are an original and eight (8) conformed copies of a **STAFF RECOMMENDATION.**

This filing has been mailed or hand-delivered this date to all counsel of record.

Thank you for your attention to this matter.

Sincerely yours,

Dennis L Frey

Dennis L. Frey
Associate General Counsel
(573) 751-8700
(573) 751-9285 (Fax)
dfrey03@mail.state.mo.us

DLF:ccl
Enclosure
cc: Counsel of Record

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Missouri Gas Energy's Application for Approval of Certain Matters Pertaining to Ongoing Cast Iron Main and Service/Yard Line Replacement as Part of its Safety Line Replacement Program.	)))))	Case No. GO-2002-50

STAFF RECOMMENDATION

COMES NOW the Staff ("Staff") of the Missouri Public Service Commission ("Commission") and for its Recommendation, respectfully states as follows:

1. On July 30, 2001, Missouri Gas Energy ("MGE"), a division of Southern Union Company, filed an Application for approval of certain matters pertaining to ongoing cast iron main and service/yard line replacement as a part of MGE's Safety Line Replacement Program ("SLRP"), pursuant to 4 CSR 240-40.030(15)(C) and (D).

2. In the attached Memorandum (Appendix A), the Staff recommends approval of the Application, with two minor modifications to which MGE has agreed; namely, the deletion of the last sentence of subparagraph 11D of the Application and the addition of the following item to the list in paragraph 14: "Number of cast iron main leaks cleared by pipe diameter;". In addition, the Staff recommends: a) that the Commission approve MGE's requested modification of the waiver granted in Case No. GO-99-302, and direct that a copy of the Commission's order in the instant case be filed in Case No. GO-99-302; and b) in the event the Commission determines that the new SLRP costs to be incurred in connection with the instant Application may be deferred under the accounting authority order ("AAO") granted in Case No. GR-2001-

292, that the Commission state, in its order in the instant case, that the terms and conditions for SLRP deferral found in said AAO are fully applicable to said new SLRP costs.

WHEREFORE, the Staff requests that the Commission approve MGE's Application, as amended in the attached Memorandum, and adopt, as applicable, the additional recommendations set forth therein.

Respectfully submitted,

DANA K. JOYCE
General Counsel

Dennis L. Frey

Dennis L. Frey
Associate General Counsel
Missouri Bar No. 44697

Attorney for the Staff of the
Missouri Public Service Commission
P. O. Box 360
Jefferson City, MO 65102
(573) 751-8700 (Telephone)
(573) 751-9285 (Fax)
e-mail: dfrey03@mail.state.mo.us

Certificate of Service

I hereby certify that copies of the foregoing have been mailed or hand-delivered to all counsel of record as shown on the attached service list this 6th day of September 2001.

Dennis L. Frey

MEMORANDUM

TO: Missouri Public Service Commission Official Case File
Case No. GO-2002-50, Missouri Gas Energy

FROM: Robert Leonberger and John Kottwitz, Energy Department – Safety/Engineering

Robert K. Leonberger 9/4/2001 Thomas R. Schwarz, Jr. 9/5/01 9.5.01
Project Coordinator / Date General Counsel's Office / Date

SUBJECT: Staff Recommendation for Approval of an Ongoing Replacement Program

DATE: September 4, 2001

Missouri Gas Energy Application

On July 30, 2001, Missouri Gas Energy (MGE) filed an APPLICATION requesting approval of certain matters pertaining to its ongoing cast iron main and service/yard line replacement programs, pursuant to 4 CSR 240-40.030 (15)(C) and (15)(D). MGE's replacement programs are also known as the Safety Line Replacement Program (SLRP). MGE's past and current replacement programs for service/yard lines have been approved in Case Nos. GO-91-239, GO-92-295 and GO-99-302, and have resulted in the replacement of more than 230,000 service/yard lines. MGE's cast iron main replacement program was approved in Case No. GO-91-277 and resulted in the replacement of nearly 300 miles of cast iron mains, but it ended in 2000. The Application includes a new long-term replacement program for cast iron mains, as required by 4 CSR 240-40.030(15)(D)2. In addition to cast iron main replacements, the Application proposes a more comprehensive program that covers the repair of cast iron joint leaks and the replacement of copper service lines, protected (cathodically-protected) bare steel mains, and unprotected (not cathodically-protected) steel service/yard lines. The Application requests that the program be scheduled and reported using MGE's fiscal year of July 1 to June 30.

The long-term cast iron main replacement program involves the minimum replacement of 5 miles per year. Past and future cast iron main fractures will be tracked and, under specific criteria, will trigger a required cast iron main replacement schedule for the main segment where fractures have occurred. A cast iron coupon (test sample) will be collected at each cast iron main fracture and will be analyzed to determine what percentage of the pipe wall exhibits graphitization (corrosion). If the percentage of graphitization exceeds the applicable criterion, this cast iron main segment will be replaced within 24 months. Special emphasis will be also given to the following cast iron mains: intermediate pressure (2 psig to 60 psig) beneath wall-to-wall pavement or near public concentrations; 3-inch diameter; in areas of disturbed soil support subject to the requirements of subsection (13)(Z); in areas of planned future developments; and in close proximity to extensive excavation, blasting, or construction activities. MGE will also place emphasis on segmenting its low-pressure (30" water column) system by extending intermediate pressure mains to areas with a history of fractures, so that replacements in those areas can be more efficient and cost-effective.

Beyond the replacement considerations in the previous paragraph, MGE proposes to repair no less than 400 leaking cast iron bell joints annually on cast iron mains that are not targeted for replacement. This will continue until leaks of this category are eliminated. Significantly more than 800 joint leaks will be repaired in the first two fiscal years ending June 30, 2003. MGE will continue to annually leak survey all 4-inch diameter and smaller cast iron mains, and to semi-annually leak survey cast iron mains in business districts.

MGE also seeks approval for several other provisions related to protected bare steel mains, copper service lines, and unprotected steel service/yard lines, including modification of the waiver granted in Case No. GO-99-302. MGE proposes to replace a minimum of 5 miles of protected bare steel mains per year, which will be triggered by a 5-5-3 program (5 leaks within 500 feet within a 3-year period). MGE proposes to replace all copper-related service lines (approximately 2,700) by June 30, 2006, and all leaking unprotected steel service/yard lines (approximately 1,200) by June 30, 2003. Instead of replacing all unprotected steel service/yard lines by December 31, 2004, as approved in Case No. GO-99-302, MGE proposes to have them all replaced by June 30, 2020 (averaging approximately 2,310 annually). Any new leaks discovered on these unprotected steel service/yard lines will be classified no lower than Class 3 and will be replaced within 5 years.

The Application includes a paragraph requesting that the costs associated with these replacements and/or rehabilitations be eligible for deferral under any current Accounting Authority Order (AAO) for SLRP related costs that has been granted by the Missouri Public Service Commission (Commission). Approval of this provision shall not be construed as requiring the Commission to grant future AAOs for these costs or to mandate subsequent rate recovery of costs deferred through current or future AAOs.

If the Application is approved, MGE will submit an annual status report to the Commission's Energy Department – Safety/Engineering Section (Staff) and the Office of Public Counsel. The report will include status information on 13 items at the end of each fiscal year ending on June 30, and will be submitted by September 24 of each year.

Staff Response

The Application is the result of extensive discussions between MGE and the Staff. These discussions began last year when the Staff requested a long-term replacement program for cast iron mains from MGE, as required by 4 CSR 240-40.030(15)(D)2. MGE's short-term cast iron replacement program required by paragraph (15)(D)1., and approved in Case No. GO-91-277, ended on December 31, 2000. The Staff recognizes and commends MGE on the effort required to complete that program and replace nearly 300 miles of cast iron main from 1992 through 2000. As a result, a large portion of the cast iron mains covered by paragraph (15)(D)1. have been replaced.

As indicated in the Application, MGE had not considered the long-term cast iron program requirement when submitting an application in 1999 to shorten the replacement deadline for unprotected steel service/yard lines from December 31, 2009 to December 31, 2004. Due to this and other factors (including copper service lines, cast iron joint leaks, and protected bare steel main leaks), the Staff has agreed with MGE that the entire system (not just cast iron) should be evaluated with regard to current leak inventory and the risk potential. This evaluation includes the fact that the replacement of all customer-owned service lines (considered by the Staff to have been the most hazardous facility in MGE's system) was completed on October 30, 2000. The remaining unprotected steel service/yard lines are either company-owned service lines or customer-owned yard lines that have a much lower risk potential, and most of the leaking lines have already been replaced. A substantial leak inventory has accumulated on cast iron bell joints and on cathodically-protected bare steel mains, and both MGE and the Staff agree this leak inventory needs to be minimized. A potential risk with copper service lines has been identified in another part of Missouri, and MGE has agreed to the Staff's request to consider replacing them. The Staff believes that MGE's proposals contained in the Application are an acceptable approach for addressing MGE's entire system.

The Staff believes that the long-term cast iron main replacement program contained in the Application is acceptable under the requirements of 4 CSR 240-40.030(15)(D)2. Most importantly, it covers each of the high-priority types of cast iron mains listed under paragraph (15)(D)1., with the greatest priority given to cast iron mains with fracture history or substantial graphitization. The highest potential for risk with cast iron mains is a fracture, and substantial graphitization indicates the pipe is weakened and more likely to fracture. The replacement criteria and schedule for cast

iron fractures are based on similar provisions contained in an ongoing replacement program for Laclede Gas Company (Laclede) that was approved by the Commission in Case No. GO-91-275. The replacement criteria and schedule for graphitization found in coupons are more stringent than ones used previously by MGE, which were based on a Kansas Corporation Commission regulation. The Staff notes a program item where a semi-annual patrol and replacement/rehabilitation emphasis are proposed, instead of scheduled replacement, for 1.6 miles of large diameter cast iron mains beneath wall-to-wall pavement or near public concentrations. This proposal corresponds to a provision that was approved by the Commission for Laclede in Case No. GO-91-275, and the Staff believes this is also acceptable for MGE due to the very low risk of fracture associated with large diameter cast iron pipe. For cast iron mains that are not prone to fracture and are not targeted for replacement, the Staff agrees with MGE's proposal to repair the leaking bell joints and significantly reduce its leak inventory. Low-pressure bell joint leaks have a low potential for risk.

The Staff believes that the request in the Application to modify the waiver granted in Case No. GO-99-302 should be approved. This will extend the replacement deadline for unprotected steel service/yard lines from 2004 to 2020 and reduce the average number of annual replacements to approximately 2,310. The Staff recognizes that this involves an abnormally long extension of the replacement deadline, but the Staff believes it is justified by the increased attention on facilities with a higher risk potential (copper-related service lines and protected bare steel mains, discussed further below) and the fact that Laclede has already been granted a deadline of 2020 for unprotected steel service/yard lines in Case No. GO-99-155. Also, MGE previously had a later deadline under its first waiver, which extended the replacement deadline from 1999 to 2009 and was granted by the Commission in Case No. GO-92-295. As discussed above (and in previous waivers for MGE, Laclede, and AmerenUE), the risk for these remaining lines is low because the yard lines operate at low-pressure and the service lines were installed using better materials and installation practices by the gas company (one of MGE's predecessors, in this case) instead of the customer. All existing leaks on these service/yard lines will be replaced by June 30, 2003, and any new leak will be classified no lower than Class 3, which requires replacement within 5 years. In addition, these unprotected steel service/yard lines will continue to be annually leak surveyed as required under subsections (13)(M) and (15)(C).

The Staff believes that the replacement program for copper-related service lines contained in the Application should be approved. In the wake of the copper service line problems experienced by Laclede that have resulted in an extensive leak survey and replacement program, the Staff has requested that other Missouri gas system operators with copper service lines consider a leak survey and replacement program for copper service lines. The Staff appreciates the fact that MGE has brought forward a copper service line replacement program in this Application.

The Staff believes that the replacement program for cathodically-protected bare steel mains contained in the Application should be approved. These bare steel mains were not cathodically protected for many years following installation and then from 1992 to 1997, cathodic protection was added to these mains under a program approved by the Commission in Case No. GO-91-277. A large number of leaks have accumulated on these mains and the Staff agrees that a replacement program is needed. The annual reporting of leaks and replacements of these protected bare steel mains will allow MGE and the Staff to monitor the appropriate level of replacements for these mains. The 5-5-3 criterion is one that was used by MGE's predecessors for many years and is a good initial criterion for this program.

MGE's request that the SLRP costs to be incurred as a result of Commission approval of this Application be allowed deferral treatment pursuant to the SLRP AAO granted by the Commission in its Order in Case No. GR-2001-292, dated July 5, 2001, is acceptable to the Staff, under the condition that the terms and conditions for a SLRP deferral found in the Order in Case No. GR-2001-292 are deemed to be fully applicable to new SLRP costs incurred if this Application is approved.

During the Staff's review of the Application as compared to Staff's discussions with MGE, two minor errors were noted. The Staff has discussed the two items with MGE, and MGE agrees that these two items should be corrected.

Since they are minor changes, MGE agreed that Staff should address them in this recommendation instead of amending the Application. First, in subparagraph 11D on page 8 of the Application, the last sentence "In addition, in an effort ..." should be deleted. This sentence incorrectly states that existing Class 4 leaks on unprotected steel service/yard lines will be re-classed to Class 3 and repaired within 5 years. Instead, all unprotected steel service/yard lines that have an existing leak (including all existing Class 4 leaks) will be repaired no later than June 30, 2003 in accordance with subparagraph 11B on page 7 of the Application. For new leaks discovered on unprotected steel service/yard lines in the future, MGE will no longer use the Class 4 leak classification that does not include a repair deadline. Second, an item was inadvertently left out of the Status Report list in paragraph 14 on page 9 of the Application. The item should have followed item J and should have stated "Number of cast iron main leaks cleared by pipe diameter;".

Staff Recommendations

The Staff recommends that the Commission approve the Application with the two following modifications that are agreeable to MGE. The first modification is to delete the last sentence of subparagraph 11D on page 8 of the Application. The second modification is to add the following item to the list in paragraph 14 on pages 9 and 10 of the Application: Number of cast iron main leaks cleared by pipe diameter.

The Staff recommends that the Commission approve a modification of the waiver granted in Case No. GO-99-302, as requested in the Application. If this modification of the waiver is granted by the Commission, the Staff further recommends that a copy of the Order in this case or a Notice to Case No. GO-99-302, or both, be filed in Case No. GO-99-302 to reflect the change.

If the Commission approves the Application and MGE's request in the Application that the SLRP costs to be incurred as a result be allowed deferral treatment pursuant to the SLRP AAO granted by the Commission in its Order in Case No. GR-2001-292, dated July 5, 2001, the Staff recommends that the Commission include a condition or finding that the terms and conditions for a SLRP deferral found in the Order in Case No. GR-2001-292 are fully applicable to new SLRP costs incurred if this Application is approved.

Service List for
Case No. GO-2002-50
Verified: September 5, 2001 (ccl)

Office of the Public Counsel
P. O. Box 7800
Jefferson City, MO 65102

Robert J. Hack
Missouri Gas Energy
3420 Broadway
Kansas City, MO 64111

MISSOURI GAS ENERGY
3420 Broadway • Kansas City, MO • 64111-2404 • (816) 360-5755

ROBERT J. HACK
Vice President, Pricing & Regulatory Affairs

September 6, 2001

Mr. Dale Hardy Roberts
Secretary/Chief Regulatory Law Judge
Missouri Public Service Commission
200 Madison Street, Suite 100
P.O. Box 360
Jefferson City, Missouri 65102-0360

RE: Case No. GO-2002-50, Missouri Gas Energy

Dear Mr. Roberts:

Enclosed for filing in the above-referenced matter, please find an original and eight (8) conformed copies of **Missouri Gas Energy's Response to Staff Recommendation.**

A copy of this filing has been mailed or hand-delivered this date to counsel of record.

Thank you for bringing this matter to the attention of the Commission. Please call me if you have any questions regarding this matter.

Sincerely,

Robert J. Hack

C: Dennis L. Frey
Douglas E. Micheel
Steve Holcomb
Jim Gorman

Enclosures

FILED[3]
SEP 7 2001
Missouri Public Service Commission

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of Missouri Gas Energy's Application for approval of certain matters Pertaining to ongoing cast iron main and Service/yard line replacement as a part of Safety Line Replacement program.	)))))	Case No. GO-2002-50

MISSOURI GAS ENERGY'S RESPONSE TO STAFF RECOMMENDATION

Comes now Missouri Gas Energy ("MGE"), a division of Southern Union Company, by and through counsel and for its response to the recommendation filed by the Commission's Staff herein on or about September 6, 2001, respectfully states as follows:

1. MGE has reviewed the Staff Recommendation and hereby states its agreement to the two (2) modifications recommended by the Staff on page 4.

Wherefore, MGE respectfully request that the Commission issue its order approving the provisions of paragraphs 10, 11, 12, 13 and 14 of the Application as modified in the two respects suggested at page 4 of the Staff Recommendation.

Respectfully submitted,

Robert J. Hack MBE #36496
3420 Broadway
Kansas City, MO 64111
(816)360-5755
FAX: (816)360-5536
e-mail: rob.hack@southernunionco.com

ATTORNEY FOR MISSOURI
GAS ENERGY

Schedule JAR-D-8
10/34

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing have been mailed or hand-delivered this 6th day of September, 2001, to:

Dennis L. Frey
Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102

Douglas E. Micheel
Office of the Public Counsel
P.O. Box 7800
Jefferson City, MO 65102

STATE OF MISSOURI
PUBLIC SERVICE COMMISSION
JEFFERSON CITY
September 20, 2001

CASE NO: GO-2002-50

Office of the Public Counsel
P.O. Box 7800
Jefferson City, MO 65102

General Counsel
Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102

Robert J. Hack
3420 Broadway
Kansas city, MO 64111

Enclosed find certified copy of an ORDER in the above-numbered case(s).

Sincerely,

Dale Hardy Roberts

Dale Hardy Roberts
Secretary/Chief Regulatory Law Judge

STATE OF MISSOURI
PUBLIC SERVICE COMMISSION

At a Session of the Public Service Commission held at its office in Jefferson City on the 20th day of September, 2001.

In the Matter of Missouri Gas Energy's Application for Approval of Certain Matters Pertaining to Ongoing Cast Iron Main and Service/yard Replacement as a Part of its Safety Line Replacement Program	))))	Case No. GO-2002-50

ORDER APPROVING APPLICATION

On July 30, 2001, Missouri Gas Energy (MGE), a division of Southern Union Company, filed an application asking the Commission to approve certain modifications to its ongoing cast iron main, and service line and yard line replacement, as a part of its Safety Line Replacement Program. This order approves that application.

The Commission issued an Order and Notice on August 1, giving notice of MGE's application to the County Commission of the counties in MGE's service territory, to the members of the general assembly who represent the counties in MGE's service territory, and to the newspapers that serve the counties in MGE's service territory. That order also directed that any person wishing to intervene should file an application to intervene no later than August 21. No applications to intervene were filed.

The requirement for a hearing is met when the opportunity for hearing has been provided and no proper party has requested the opportunity to present evidence.[1] Since

[1] *State ex rel. Rex Deffenderfer Enterprises, Inc. v. Public Service Commission*, 776 S.W.2d 494, 496 (Mo. App. 1989).

5

no one has asked permission to intervene, or requested a hearing, the Commission may grant the relief requested based on the application.

On September 6, 2001, the Staff of the Commission filed its Recommendation and Memorandum. Staff indicates that MGE's line replacement programs are referred to as its Safety Line Replacement Program, known by the acronym SLRP. MGE's past and current replacement programs for service and yard lines have resulted in the replacement of more than 230,000 service and yard lines. MGE's cast iron main replacement program resulted in the replacement of nearly 300 miles of cast iron mains, but the program ended in 2000. MGE's application includes a new long-term replacement program for cast iron mains, as required by 4 CSR 240-40.030(15)(D)2. In addition to cast iron main replacements, the application proposes a more comprehensive program that covers the repair of cast iron joint leaks and the replacement of copper service lines. The application also affects the inspection and replacement of protected bare steel mains and unprotected steel service and yard lines.

Staff indicates that it finds MGE's proposal to be generally acceptable. Staff does, however, recommend two modifications to MGE's proposal. The first modification is to delete the last sentence of subparagraph 11D on page 8 of the application. That sentence refers to efforts to eliminate Class 4 leaks over unprotected steel service and yard lines. Under Commission rule 4 CSR 240-40.030(14)(c)4, class 4 leaks are those that are confined or localized and are considered to be completely non-hazardous. The gas company is not required to take any further action regarding a class 4 leak. Staff indicates that the sentence in question incorrectly states that existing Class 4 leaks on unprotected steel service and yard lines will be re-classed to Class 3 and repaired within 5 years.

Instead, all unprotected steel service and yard lines that have existing leaks, including all leaks that are currently classified as Class 4 leaks, will be replaced no later than June 30, 2003. MGE proposes this repair schedule in subparagraph 11B on page 7 of the Application. For new leaks discovered on unprotected steel service and yard lines, MGE will no longer use the Class 4 leak classification. Such leaks will be classified as Class 3 or higher, meaning that they will have an established repair deadline.

The second modification proposed by Staff refers to an item that was inadvertently left out of the Status Report list in paragraph 14 on page 9 of the application. The item should have followed item J and should have stated "Number of cast iron main leaks cleared by pipe diameter." Staff states that the two modifications are agreeable to MGE, and on September 7, MGE filed a response indicating its agreement to the modifications.

Staff recommends that the Commission approve the application with the two modifications previously indicated. Staff also recommends that the Commission approve a modification of the waiver granted in Case No. GO-99-302, as requested in the application. Staff recommends that a copy of this order, or a notice to the case, or both, then be filed in Case No. GO-99-302 to reflect the change. Finally, Staff recommends that the Commission approve MGE's request that the Safety Line Replacement Program costs to be incurred as a result of the approved program be allowed deferral treatment pursuant to the Safety Line Replacement Program Accounting Authority Order granted by the Commission in Case No. GR-2001-292.

The Commission has considered the application filed by MGE, along with the Recommendation and Memorandum filed by Staff. The Commission concludes that

MGE's proposed changes to its existing Safety Line Replacement Program will enhance the safety of its gas distribution system. The application should be approved.

IT IS THEREFORE ORDERED:

1. That the application filed by Missouri Gas Energy, a division of Southern Union Company, on July 30, 2001 is approved with the following modifications:

   a. The last sentence of subparagraph 11D on page 8 of the application is deleted; and

   b. The following item is added to the list of information, found in paragraph 14 on page 9 and 10 of the application: "Number of cast iron main leaks cleared by pipe diameter."

2. That the waiver granted in Case No. GO-99-302 is modified as requested by Missouri Gas Energy in paragraph 11 of its application filed on July 30, 2001.

3. That a copy of this order shall be filed in Case No. GO-99-302.

4. That the costs associated with replacements and rehabilitations called for under the provisions of paragraphs 10, 11, and 12 of the application filed by Missouri Gas Energy on July 30, 2001, are eligible for deferral under any Accounting Authority Order granted by the Commission to Missouri Gas Energy, including the Accounting Authority Order granted by the Commission in Case No. GR-2001-292.

5. That the deferral approved in paragraph 4 of this order shall not be construed as requiring the Commission to grant an Accounting Authority Order with regard to Missouri Gas Energy's Safety Line Replacement Program in the future. Nor shall it be construed as requiring the Commission to permit subsequent rate recovery of Safety Line Replacement Program costs deferred through issuance of an Accounting Authority Order.

6. That this order shall become effective on September 30, 2001.

BY THE COMMISSION

Dale Hardy Roberts

Dale Hardy Roberts
Secretary/Chief Regulatory Law Judge

(SEAL)

Simmons, Ch., Murray and Lumpe, CC., concur
Gaw, C., dissents

Woodruff, Senior Regulatory Law Judge

AJJ/Secretary: Woodruff/Boyce

Date Circulated: 9-14

CASE NO. GO-2002-50

Simmons, Chair: KS

Murray, Commissioner: Conc

Lumpe, Commissioner: Agree

Gaw, Commissioner: Agree

Commissioner

Agenda Date: 9-20

Action taken: 3-1 AS (Gaw NO)

Must Vote Not Later Than

STATE OF MISSOURI

OFFICE OF THE PUBLIC SERVICE COMMISSION

I have compared the preceding copy with the original on file in this office and I do hereby certify the same to be a true copy therefrom and the whole thereof.

WITNESS my hand and seal of the Public Service Commission, at Jefferson City, Missouri, this 20th day of Sept. 2001.

Dale Hardy Roberts

Dale Hardy Roberts
Secretary/Chief Regulatory Law Judge

MISSOURI GAS ENERGY
3420 Broadway • Kansas City, MO • 64111-2404 • (816) 360-5755

ROBERT J. HACK
Vice President, Pricing & Regulatory Affairs

July 27, 2001

FILED
JUL 30 2001
Missouri Public
Service Commission

Mr. Dale Hardy Roberts
Secretary/Chief Regulatory Law Judge
Missouri Public Service Commission
200 Madison Street, Suite 100
P.O. Box 360
Jefferson City, Missouri 65102-0360

RE: Case No. GO-2002-50, Missouri Gas Energy

Dear Mr. Roberts:

Enclosed for filing in the above-referenced matter, please find an original and eight (8) conformed copies of Missouri Gas Energy's **Application**.

A copy of this filing has been mailed or hand-delivered this date to counsel of record.

Thank you for bringing this matter to the attention of the Commission. Please call me if you have any questions regarding this matter.

Sincerely,

Robert J. Hack

C: F. Jay Cummings
Thomas R. Schwarz, Jr.
Douglas E. Micheel
Steve Holcomb
Jim Gorman

Enclosures

FILED

JUL 3 0 2001

Missouri Public Service Commission

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of Missouri Gas Energy's)
Application for approval of certain matters)
Pertaining to ongoing cast iron main and) Case No. GO-2002-50
Service/yard line Replacement as a part of its)
Safety Line Replacement program.)

APPLICATION

Comes now Missouri Gas Energy ("MGE"), a division of Southern Union Company, by and through counsel and for its application for approval of certain matters pertaining to ongoing cast iron main and service/yard line replacement as a part of MGE's Safety Line Replacement Program, pursuant to 4 CSR 240-40.030(15)(C) and (D), respectfully states as follows:

I. General Matters

1. The name and address of Applicant are: Missouri Gas Energy, 3420 Broadway, Kansas City, Missouri, 64111.

2. MGE is an operating division of Southern Union Company which is duly incorporated under the laws of the State of Delaware, and conducts business in Missouri under the name of Missouri Gas Energy. The articles of incorporation of Southern Union Company have previously been provided to the Commission in Case No. GM-94-40.

3. MGE is a gas corporation and a public utility engaged in the distribution of natural gas at retail to approximately 491,000 customers in Andrew, Barry, Barton, Bates, Buchanan, Carroll, Cass, Cedar, Christian, Clay, Clinton, Cooper, Dade, Dekalb, Greene, Henry, Howard, Jackson, Jasper, Johnson, Lafayette, Lawrence, McDonald,

Moniteau, Newton, Pettis, Platte, Ray, Saline, Stone and Vernon counties in Missouri, subject to the jurisdiction of the Missouri Public Service Commission ("Commission").

4. Although uncertain precisely what information the Commission seeks by 4 CSR 240-2.060(1)(K), MGE provides the following in an attempt to comply therewith. MGE is unaware of any pending action or final unsatisfied judgments or decision against MGE from any state or federal agency or court which involve customer service or rates, which action, judgment or decision has occurred since June 6, 1998. Nevertheless, since that time MGE has been involved in a number of judicial review proceedings, filed against the Commission, involving MGE's rates. The Commission itself should be aware of all such cases.

5. No annual report or assessment fees pertaining to MGE are overdue.

6. All correspondence, communications, notices, orders and decisions of the Commission with respect to this matter should be sent to:

Steve Holcomb
Director,
Field Operations
Missouri Gas Energy
3420 Broadway
Kansas City, MO 64111
816/360-5605
Fax: 816/360-5541
e-mail: steve.holcomb@southernunionco.com

Robert J. Hack
Vice President, Pricing
& Regulatory Affairs
Missouri Gas Energy
3420 Broadway
Kansas City, MO 64111
816/360-5755
FAX: 816/360-5536
e-mail: rob.hack@southernunionco.com

II. Purpose of Filing

7. Since 1990 MGE (and its predecessor in interest) has been engaged in a substantial infrastructure replacement project know as the Safety Line Replacement Program ("SLRP"). MGE's SLRP has been undertaken pursuant to Commission rule (4 CSR 240-40.030), many of the details of which have been administered through orders in

various Commission cases (e.g., Case Nos. GO-91-277, GO-91-239, GO-91-295 and GO-99-302). MGE's SLRP has so far entailed the replacement of more than 230,000 service lines and nearly 300 miles of cast iron main lines.

8. The cast iron main replacement component of MGE's SLRP, as approved by Commission order in Case No. GO-91-277, concluded on or about December 31, 2000. Commission rule, 4 CSR 240-40.030(15)(D)2, requires that operators who have cast iron mains (such as MGE) to develop a long-term, organized replacement program and schedule for cast iron pipelines not identified as being high priorty.

III. Explanation and Specific Approvals Requested

9. Since 1990, MGE's SLRP has been a significant undertaking. This lengthy construction project has required substantial capital resources, has commanded significant management attention and, on occasion, has also inconvenienced customers. These significant costs have resulted in significant safety improvements throughout the MGE system. MGE's objective through this filing is to make certain changes to the existing SLRP, including the implementation of an ongoing cast iron main replacement program, which will continue to achieve significant safety improvements while deploying capital in an efficient and cost-effective fashion.

10. Consistent with the provisions of 4 CSR 240-40.030(15)(D)2, MGE seeks approval of the following provisions for a long-term, organized cast iron replacement program and schedule:

A. MGE will replace a minimum of 5 miles of cast iron main per year, targeting for replacement those segments for which breakage history currently exists. Replacement standards and criteria shall be as follows: i) MGE shall, on an ongoing

basis, keep a current record of cast iron breaks (excluding those caused by third party damage) and plot them on a mapping system; ii) MGE shall utilize all break records dating back to January 1, 1995, and in addition any older breakage history that is readily available such as that in the MGE mapping system for MGE's Kansas City Central division (which has been observed by the Commission's gas safety staff personnel); iii) any new break (excluding those caused by third party damage) after July 1, 2001, within 500 feet of a previously recorded break triggers a minimum replacement of 500 feet of main within five years of the discovery date of the new break; iv) any additional break on a segment of pipe targeted for replacement will accelerate the completion date to within 24 months of the discovery date of the additional break, or five years from the original trigger date, whichever causes the replacement to be completed sooner.

B. MGE shall collect a coupon[1] at every cast iron main break (excluding those caused by third party damage). Each coupon shall be analyzed for graphitization.[2] Cast iron mains exceeding the following percent of graphitization shall be scheduled for replacement: 3-, 4- and 6-inch diameter pipe at 50%; and 8-inch and greater diameter at 75%. (These revised criteria are more stringent than those currently in place: 60% for 3- and 4-inch diameter pipe; 75% for 6- and 8-inch diameter pipe; and 90% for 10-inch and greater diameter pipe.) Any coupon found which shows graphitization in excess of the above revised criteria shall trigger replacement of approximately 500 feet of cast iron main within 24 months.

---

1 A "coupon" is a small sample of pipe.

2 "Graphitization" means the degree of corrosion on cast iron pipe.

C. MGE will place emphasis on rehabilitating or replacing intermediate pressure cast iron mains (2# to 60#) where the main is below pavement in wall-to-wall pavement applications or near public concentrations (e.g., a school, church, hospital, day-care facility, etc.). MGE will continue to patrol such existing intermediate pressure cast iron main systems on a semi-annual basis. Current records indicate that MGE has approximately 1.6 miles of cast iron main 12 to 24 inches in diameter operating in this pressure range in such locations.

D. MGE will place emphasis on replacing the existing 3-inch cast iron main system in Independence, Missouri.

E. MGE will place emphasis on cast iron mains as required by 4 CSR 240-40.030(13)(Z).

F. MGE will place emphasis on replacing or rehabilitating sections of cast iron main in areas of planned future development projects, such as city, county or state highway construction and relocations. Urban renewal and public improvement projects would be monitored as well.

G. MGE will place emphasis on replacing segments of cast iron mains in close proximity to extensive excavation, blasting or construction activities.

H. MGE will place emphasis on segmenting its current low-pressure, 30-inch water column system to extend intermediate-pressure lines into existing low-pressure neighborhoods where the lines have a history of breakage. This will allow for more cost-effective replacement of existing cast iron pipe by utilizing smaller diameter pipes. By deploying capital in this fashion, MGE would be able to provide a more customer friendly remedial action to problems on the cast iron main system in the

future. By segmenting the low-pressure, 30-inch water column system with smaller diameter intermediate-pressure systems (2# to 60#), MGE will be able to replace existing large diameter cast iron mains (low-pressure, 30-inch water column operating at approximately 1# of pressure) with much smaller diameter pipelines. Replacing main in this fashion causes significantly less damage to customers' property and the public right-of-way. Size-on-size replacement of cast iron main is significantly less-cost-effective than utilizing smaller diameter pipe. Moreover, using smaller diameter pipe should also reduce ancillary damage and associated customer complaints.

I. MGE will make greater use of encapsulation[3] to rehabilitate cast iron mains not prone to breakage. Specifically, MGE will encapsulate no less than 400 leaking bell joints annually until leaks of this category are eliminated, on cast iron main that is not targeted for replacement. For the first two years of this program (i.e., until June 30, 2003), MGE will repair by encapsulation significantly more than the minimum pledged. This will significantly reduce MGE's leak inventory.

J. MGE will continue its annual leak survey of all cast iron mains of 4-inch diameter and smaller (approximately 124 miles as of January 1, 2001).

K. MGE will continue its semi-annual leak survey of cast iron mains in business districts.

L. MGE does not have any cast iron service lines.

---

[3] "Encapsulation" is a process whereby a mixture of chemicals within a sleeve sets up to a very hard consistency forming a permanent repair of a joint or fitting with a minimum life expectancy of 50 years.

M. To the extent so desired by the Commission or the Commission's Staff, MGE is willing to re-evaluate the effectiveness of the foregoing long-term cast replacement program after two years of implementation.

11. Consistent with the long-term cast iron replacement program as proposed in paragraph 10 herein as well as the objectives of achieving significant safety improvements while deploying capital in an efficient and cost-effective fashion, MGE seeks approval of the following provisions with respect to replacement of service lines and yard lines and modification of the waiver granted to MGE in Case No. GO-99-302[4]:

A. MGE shall replace all copper-related service lines (approximately 2700) no later than June 30, 2006, with priority given to replace any leaking service lines first. MGE shall continue to leak survey such service lines on an annual basis as recommended by the Commission's Gas Safety Staff in a letter to all operators dated January 16, 2001.

B. MGE shall replace all unprotected steel service lines and yard lines that currently have leakage on them (approximately 1200) no later than June 30, 2003.

---

[4] In considering this Application, MGE wants to make sure the Commission is aware that the current deadline for replacement of unprotected steel service lines and yard lines is December 31, 2004. This was approved by Commission order in Case No. GO-99-302. MGE made that proposal to the Commission in good faith at a time when it was replacing 36 miles of cast iron main annually. When that proposal was made, MGE did not consider the implications of the development and implementation, after the year 2000, of a long-term cast iron main replacement program. The proposals made in this Application are comprehensive and believed by MGE to consider adequately future developments. This Application also offers a re-evaluation after two years if such is believed to be appropriate by the Commission or its Gas Safety Staff (See, paragraph 10.M. herein).

C. MGE shall replace all unprotected steel service lines and yard lines no later than June 30, 2020. On average, therefore, MGE shall replace approximately 2310 unprotected steel service lines and yard lines annually .

D. MGE shall continue its annual leak survey of unprotected steel service lines and yard lines as provided by Commission rule, 4 CSR 240-40.030(13)(M)2.B.(I). Any leak discovered on an unprotected steel service line or yard line shall be classified no lower than a class 3 leak and repaired within no longer than a 5-year time frame. In addition, in an effort to eliminate class 4 leaks over unprotected steel service lines and yard lines, MGE will re-classify all such existing leaks as class 3, as a minimum, and repair them accordingly.

12. Consistent with the long-term cast iron replacement program as proposed in paragraph 10 herein, the service line replacement program as proposed in paragraph 11 herein, as well as the objectives of achieving significant safety improvements while deploying capital in an efficient and cost-effective fashion, MGE seeks approval of the following provisions with respect to replacement of bare steel mains:

A. MGE shall replace a minimum of 5 miles of protected bare steel mains that will be triggered by use of what is known as a 5-5-3 program (that is, 5 leaks within 500 feet within a 3-year period of time triggers replacement).

13. The costs (e.g., depreciation expense, property taxes and carrying costs) associated with replacements and/or rehabilitations called for under the provisions of paragraphs 10, 11 and 12 herein shall be eligible for deferral under any Accounting Authority Order ("AAO") granted by the Commission to MGE, including the AAO granted by the Commission in Case No. GR-2001-292 in its order dated July 5, 2001.

Commission approval of this paragraph 13 herein shall not be construed as requiring the Commission to grant an AAO with respect to MGE's SLRP in the future or as requiring the Commission to permit subsequent rate recovery of SLRP costs deferred through issuance of an AAO.

14. MGE requests that its SLRP reporting requirements be changed from the current calendar-year based reporting to reporting based on MGE's fiscal year (July through June). Therefore, following Commission approval of this application, MGE shall submit its SLRP Status Report to the Commission's Gas Safety Staff (as well as the Office of the Public Counsel) no later than September 24 of each year, which report shall cover MGE's fiscal year (the first such report shall cover the period of July 1, 2001 through June 30, 2002). Each Status Report shall include the following information:

A. Miles of cast iron main eliminated by pipe diameter;

B. Miles of protected bare steel main eliminated;

C. Number of unprotected steel service lines and yard lines eliminated;

D. Number of copper-related service lines eliminated;

E. Number of cast iron bell joint leaks encapsulated by pipe diameter;

F. Number of miles patrolled semi-annually over intermediate pressure cast iron pipe in public areas;

G. Cast iron coupon analysis report on graphitization; and

H. Number of cast iron main breaks by pipe diameter (excluding third party damage);

I. Number of cast iron main leaks found by pipe diameter;

J. Number of cast iron main leaks repaired by pipe diameter;

K. Number of protected bare steel main leaks found;

L. Number of protected bare steel main leaks repaired; and

M. Number of protected bare steel main leaks cleared.

IV. Conclusion

15. The above proposal is specifically targeted to reducing leakage on MGE's piping system in a systematic and organized fashion. As a result, MGE believes that the above proposal will enhance gas safety. In addition, the above proposal has been designed to prioritize capital expenditures on the basis of need and therefore results in efficient and cost-effective capital deployment.

Wherefore, MGE respectfully request that the Commission issue its order approving the provisions of paragraphs 10, 11, 12, 13 and 14 of this Application.

Respectfully submitted,

Robert J. Hack MBE #36496
3420 Broadway
Kansas City, MO 64111
(816)360-5755
FAX: (816)360-5536
e-mail: rob.hack@southernunionco.com

ATTORNEY FOR MISSOURI
GAS ENERGY

VERIFIED EXPLANATION OF STEVE HOLCOMB

STATE OF MISSOURI)
) ss
COUNTY OF JACKSON)

I, Steve Holcomb, having been duly sworn upon my oath, state that I am the Director of Field Operations for Missouri Gas Energy, that I am duly authorized to make this verification on behalf of Missouri Gas Energy ("MGE") and that the matters set forth in the foregoing Application are true and correct to the best of my information, knowledge and belief. In addition, Steve Holcomb further states as follows:

1. I have been employed by MGE, or its predecessors in interest, for 25 years. As Director of Field Operations for Missouri Gas Energy, I am responsible for ensuring that MGE's operational activities are conducted in accordance with established company policies and procedureas and are in conformance with applicable governmental rules and regulations, including pipeline safety regulations.

2. Pursuant to paragraph 10 of the foregoing Application, MGE proposes to implement a long-term, organized replacement program and schedule for cast iron pipeline that is not high priority for replacement. The replacement criteria proposed for cast iron mains are rigorous, and should result in the replacement of cast iron main at the appropriate time. The use of replacement criteria makes sense to MGE because the criteria will focus capital expenditures where they are needed. Because this is a new program for MGE, it is presently not know with precision how much cast iron main will be called for replacement under these criteria. Thus, MGE has proposed the possibility for re-evaluation of the program after two years of experience.

3. Pursuant to paragraph 11 of the foregoing Application, MGE proposes to replace all copper-related service lines no later than June 30, 2006; to replace all unprotected steel service lines and yard lines that currently have leakage no later than June 30, 2003; and to replace all unprotected steel service lines and yard lines no later than June 30, 2020. In the process, MGE will give priority to any leaking service lines first. Although MGE has not experienced increased leakage history with the relatively limited number of copper-related service lines on its system, I understand that the Commission's Gas Safety Staff has expressed concerns regarding copper-related service lines with respect to another Missouri operator. In light of those expressed concerns, MGE proposes to eliminate copper-related service lines from its system, where there is no current requirement to do so. With respect to unprotected steel service lines and yard lines, MGE's belief, based on experience, is that replacing all such lines by year-end 2004 will result in significant capital expenditures without a corresponding benefit in gas safety improvement. This is because the vast majority of such service lines are not leaking and will not leak prior to December 30, 2004. MGE will continue its annual leak survey of unprotected steel service lines and yard lines.

4. Pursuant to paragraph 12 of the foregoing Application, MGE proposes to replace a minimum of 5 miles of protected bare steel mains per year using a 5-5-3 program, whereby replacement will be triggered by the occurrence of 5 leaks within 500 feet within a 3-year period. These replacement

criteria are, in my opinion based on my experience, reasonable and will result in replacement of protected bare steel mains at the appropriate time.

5. The reporting provisions of paragraph 14 are designed to provide the Commission with relevant information on a timely basis and to reconcile MGE's Commission-approved SLRP operating and reporting obligations with MGE's fiscal year (July to June).

6. In total, the foregoing Application improves MGE's current SLRP requirements from both the gas safety perspective and the perspective of efficient and cost-effective deployment of capital resources. MGE will continue to address safety concerns by utilizing flame ionization devices to leak survey the entire service on each service order that currently requires a minimum number of leak checks at the property line and where the pipe enters the building. This MGE practice exceeds the requirements of the current Commission rule on this topic, 4 CSR 240-40.030(14)(B).

7. I hereby swear and affirm that the information presented herein is true and correct to the best of my information, knowledge and belief.

Steve Holcomb

Subscribed and sworn before me this 27th day of JULY, 2001.

KIM W. HENZI
Notary Public - Notary Seal
State of Missouri
Jackson County
My Commission Expires Feb 3, 2003

Notary Public

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing have been mailed or hand-delivered this 30th day of July, 2001, to:

Thomas R. Schwarz, Jr.
Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102

Douglas E. Micheel
Office of the Public Counsel
P.O. Box 7800
Jefferson City, MO 65102

Form 9

CASE NO. GU-41-275

Folder #1

STATE OF MISSOURI

PUBLIC SERVICE COMMISSION

1. Motion To Establish Docket For Commission Acknowledgement And Approval of Pipeline Replacement Program	2/8/91
2. Notice	2/13/91
3. Laclede Gas Company's Cast-Iron Replacement Program	6/21/93
4. Staff's Recommendation	7/13/93
5. Order Approving Main Replacement Program	8/27/93

STATE OF MISSOURI
PUBLIC SERVICE COMMISSION
JEFFERSON CITY

August 27, 1993

CASE NO: GO-91-275

Richard W. French, Assistant General Counsel, Laclede Gas Company,
720 Olive Street, St. Louis, MO 63101

Enclosed find certified copy of ORDER in the above-numbered case(s).

Sincerely,

David L. Rauch
Executive Secretary

Uncertified Copy:

Office of the Public Counsel, P.O. Box 7800, Jefferson City, MO 65102

STATE OF MISSOURI
PUBLIC SERVICE COMMISSION

At a Session of the Public Service Commission held at its office in Jefferson City on the 27th day of August, 1993.

In the matter of the review and approval of cast iron main program for Laclede Gas Company.) CASE NO. GO-91-275

ORDER APPROVING MAIN REPLACEMENT PROGRAM

On May 1, 1990, Laclede Gas Company (Laclede) filed its cast iron replacement program pursuant to 4 CSR 240-40.030(15)(D). On February 13, 1991, the Commission established Case No. GO-91-275 to receive the cast iron main replacement program and to receive subsequent filings concerning said program. On June 21, 1993, Laclede filed a revised main replacement program. On July 13, 1993, the Staff of the Commission (Staff) filed a memorandum consisting of its recommendations regarding Laclede's revised main replacement program.

Staff stated that Laclede's program complies with the majority of subsection (15)(D), yet allows Laclede some flexibility to effectively schedule the necessary replacements. In addition, the program contains provisions that will result in the replacement of larger quantities of cast iron mains if the mains begin to experience increased fracture rates.

Staff indicated that Laclede has conducted an extensive records search of all historical fractures, updated its fracture maps and established a computer database to implement the program. Staff also noted that Laclede's accelerated replacement of cast iron mains in the 1960s and 1970s eliminated large quantities of cast iron mains that would be high priority replacements under the current regulations. Staff stated that while a few requirements will not be completely met, it believes that Laclede has adequately addressed such requirements in its program and has explained why the program's approach is appropriate.

For example, subparagraphs (15)(D)1.A. and B. require expedited replacement of all high-pressure cast iron mains beneath continuous pavement and/or near concentrations of the general public. Laclede's program provides an expedited schedule for the small remaining amounts of six-inch diameter mains. The program explains that expedited replacement for ten-inch diameter and larger mains is not justified because of the low fracture potential for the larger mains. Laclede has agreed to conduct semi-annual patrols of the ten-inch diameter and larger mains. Staff stated that it believes Laclede's approach is prudent.

Also, subparagraphs (15)(D)1.C. and G. require expedited replacement of all cast iron mains that are small diameter and/or which exhibit a history of fractures or graphitization. Laclede's program provides an expedited schedule for all small diameter mains that operate at high pressure and provides for replacement of low-pressure cast iron mains based upon the number of fractures and other criteria contained in the program. Staff indicated that the majority of the fracture criteria replacements will be of small diameter because small diameter mains have a greater fracture potential. Staff stated that this approach is appropriate because the potential for hazard is considerably less for distribution systems that operate at low-pressure and the provisions in the program will require the amount of replacement to increase if the fracture rate increases.

Staff recommends that the Commission approve Laclede's revised main replacement program. Staff notes that Laclede indicates a preference to commence its program on October 1, 1993, the beginning of its fiscal year, and that Staff has no objection to the program commencing on that date.

Upon review of Laclede's revised main replacement program and Staff's recommendation, the Commission finds that Laclede's revised program adequately addresses the requirements contained in 4 CSR 240-40.030(15)(D). The Commission

also finds that October 1, 1993, the beginning of Laclede's fiscal year, is a reasonable point at which to commence the program. Thus, the Commission determines that Laclede's revised main replacement program is reasonable and should be approved.

IT IS THEREFORE ORDERED:

1. That Laclede Gas Company's revised main replacement program as contemplated by this Order is hereby approved.

2. That the main replacement program approved in Ordered Paragraph 1 shall commence on or before October 1, 1993.

3. That this Order shall become effective on September 8, 1993.

BY THE COMMISSION

David L. Rauch

David L. Rauch
Executive Secretary

(S E A L)

Mueller, Chm., McClure, Kincheloe,
and Crumpton, CC., Concur.
Perkins, C., Absent.

Southwest Gas - Ducatt

CASE NO. GC-91-275

Chairman

Commissioner

Commissioner absent

Commissioner

Commissioner 4-0 AS

Agenda 8/25

STATE OF MISSOURI

OFFICE OF THE PUBLIC SERVICE COMMISSION

I have compared the preceding copy with the original on file in this office and I do hereby certify the same to be a true copy therefrom and the whole thereof.

WITNESS my hand and seal of the Public Service Commission, at Jefferson City, Missouri, this 27th day of August, 1993.

David L. Rauch

David L. Rauch
Executive Secretary

MEMORANDUM

FILED
JUL 13 1993
MISSOURI PUBLIC SERVICE COMMISSION

TO: Missouri Public Service Commission Official Case File
Case No. GO-91-275
Laclede Gas Company

FROM: John D. Kottwitz and Robert R. Leonberger RRL/jdm
Energy Department - Gas Safety

SUBJECT: Staff's Recommendation for Approval of the Cast Iron Replacement Program Filed on June 21, 1993

DATE: July 9, 1993

Reviewed By: Steve Gilmore 7/12/93 Utility Operations Division/date Penny G Baker 7/12/93 General Counsel's Office/date

Subsection (15)(D) of 4 CSR 240-40.030 required each natural gas operator in the State to develop a cast iron replacement program to be submitted with an explanation to the Commission by May 1, 1990, for review and approval. Laclede Gas Company (Laclede) originally submitted its cast iron replacement program on May 1, 1990. Case No. GO-91-275 was established for receipt of Laclede's cast iron replacement program and for receipt of subsequent filings concerning this program. Extensive discussions between Laclede and the MoPSC Gas Safety Staff (Staff) culminated in the cast iron replacement program that was filed by Laclede on June 21, 1993 (PROGRAM). The PROGRAM contains numerous revisions to the original program submitted by Laclede.

The Staff has determined that the PROGRAM is in compliance with the majority of subsection (15)(D), yet allows Laclede some flexibility to efficiently schedule the necessary replacements. In addition, the PROGRAM contains provisions that will result in the replacement of larger quantities of cast iron mains if the mains begin to experience increased fracture rates. Laclede has conducted an extensive records search of all historical fractures, updated its fracture maps, and established a computer database to implement the PROGRAM. Also, Laclede's accelerated replacement of cast iron mains in the 1960's and 1970's eliminated large quantities of cast iron mains that would be high priority replacements under the current regulations. There are a few requirements that will not be completely met, but the Staff believes that Laclede has adequately addressed these requirements in the PROGRAM and has explained why the PROGRAM's approach is appropriate. These requirements are discussed below.

Subparagraphs (15)(D)1.A. and B. - Requires expedited replacement of all high-pressure cast iron mains beneath continuous pavement and/or near concentrations of the general public. The PROGRAM provides an expedited schedule for the small remaining amounts of six-inch diameter mains in these two categories, and explains why expedited replacement is not justified for the ten-inch diameter and larger mains in these two categories. The Staff agrees that the fracture potential for these larger mains is low, as evidenced by Exhibits 2 and 3, which were attached to the PROGRAM. Laclede has agreed to conduct semi-annual patrols of the ten-inch diameter and larger mains in these categories

4.

X

(which represents a small amount at about 2.5 miles). Considering these added patrols and the other items listed in the PROGRAM, the Staff believes Laclede's approach is prudent.

Subparagraphs (15)(D)1.C. and G. - Requires expedited replacement of all cast iron mains that are small diameter and/or which exhibit a history of fractures or graphitization. The PROGRAM provides an expedited schedule for all small diameter mains that operate at high-pressure (about five remaining miles of six-inch diameter mains), and provides for replacement of low-pressure cast iron mains based upon the number of fractures and other criteria contained in the PROGRAM. Since small diameter mains have a greater fracture potential, the vast majority of these fracture criteria replacements will be small diameter. The Staff agrees that this approach is appropriate because the potential for hazard is considerably less for distribution systems that operate at low-pressure, and the provisions in the PROGRAM will require the amount of replacements to increase if the fracture rate increases.

In addition to the PROGRAM, Laclede filed a response in Case No. GS-91-267 on July 30, 1991, that states:

> The Company's cast iron replacement criteria has and will continue to give a higher priority, all other things being equal, to those mains within areas of debris/fill.

Recommendation:

The Staff recommends that the Commission approve the PROGRAM filed by Laclede on June 21, 1993. On page 6 of the PROGRAM, Laclede indicates a preference to commence the PROGRAM at the beginning of its fiscal year, which starts October 1, 1993. The Staff has no objection to the PROGRAM commencing at the beginning of Laclede's fiscal year.

copies: Director-Utility Operations Division
Director-Policy & Planning Division
Assistant to the Director-Utility Services Division
Manager-Financial Analysis Department
Manager-Accounting Department
Manager-Energy Department
Office of the Public Counsel
Richard N. French (Laclede)
J. Gerald Hofer (Laclede)

Laclede Gas Company

City of St. Louis

Land Clearance for Redevelopment Authority

Major Urban Renewal Projects

Name of Project	Year Started	Mileage C.I.
Plaza Square	1953	1.3
Mill Creek Valley	1958	6.0
Kosciusko	1959	3.4
Civic Center (Stadium)	1961	1.4
Grandel	1964	1.3
West End	1964	4.8
DeSoto - Carr	1969	1.4
LaSalle - Park	1969	1.6
Murphy - Blair	1969	0.8
Convention Plaza	1974	0.8
Dr. M.L. King Ind. Park	1975	1.5
Washington U. Med. Ctr.	1975	1.9
St. Louis Centre	1978	1.0
Mill Creek North	1981	1.2
	TOTAL	28.4

EXHIBIT 1

LACLEDE GAS COMPANY
CAST IRON MAIN BREAKS
BREAKS PER MILE PER YEAR VS. SIZE

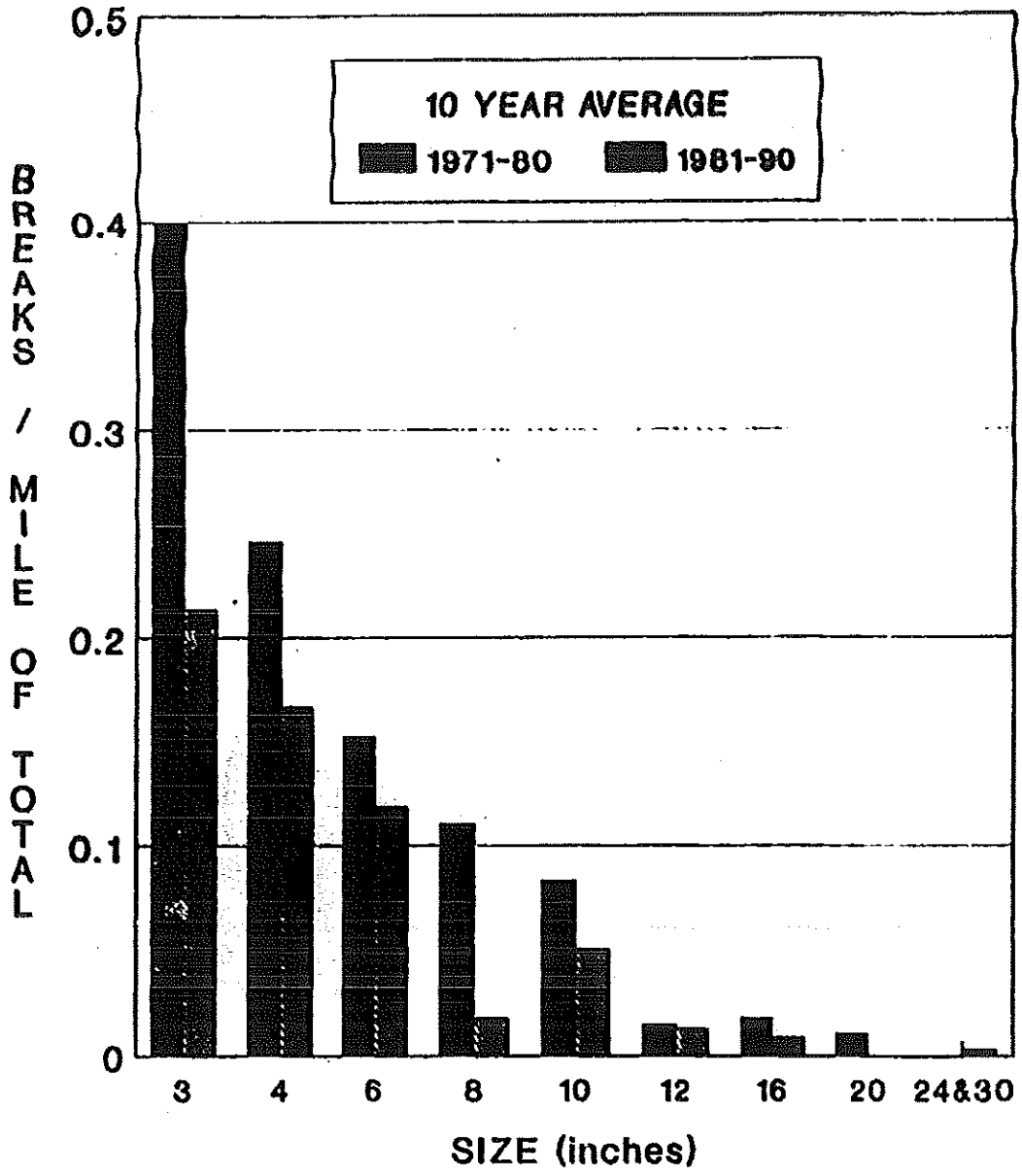


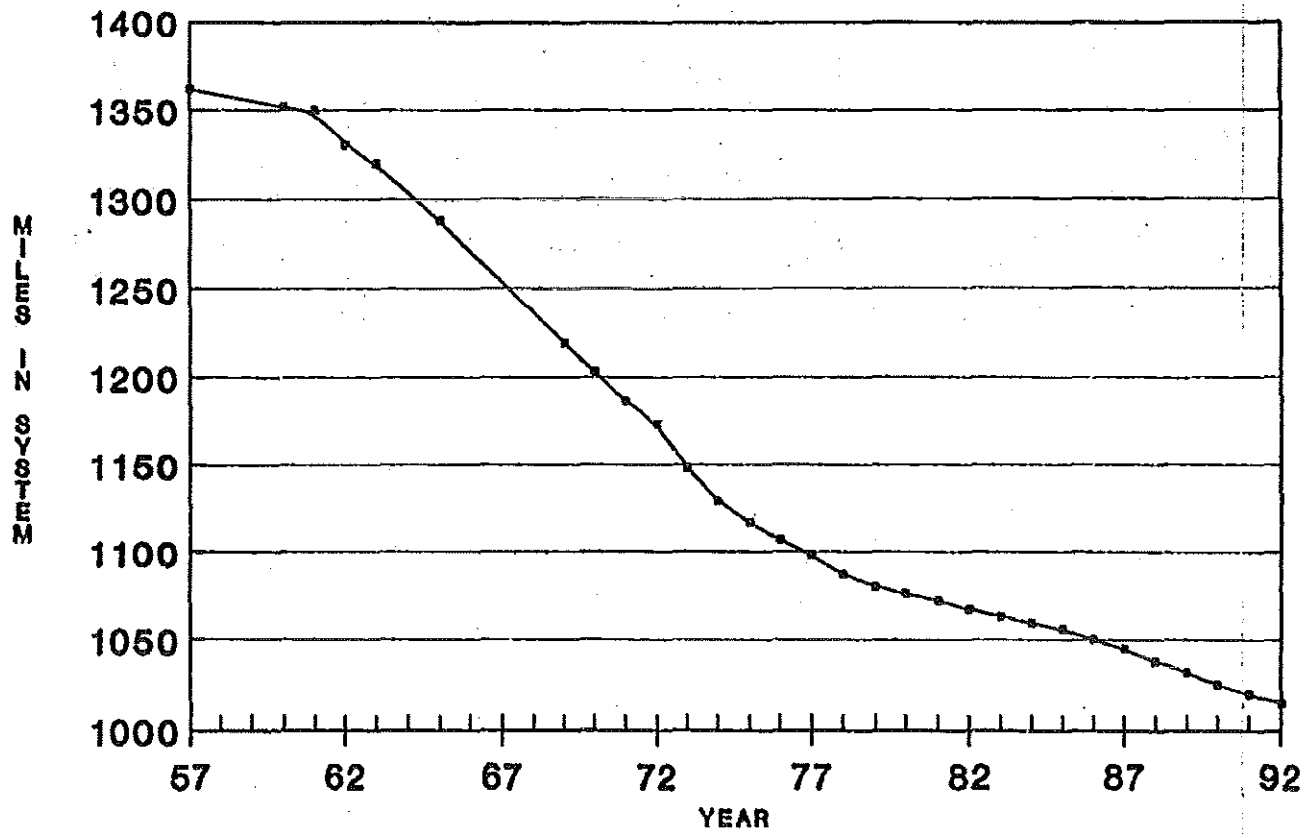
EXHIBIT 2

LACLEDE GAS COMPANY
CAST IRON BROKEN MAIN SUMMARY

CALENDAR YEAR 1970 - 1992

C.Y.	3"	4"	6"	8"	10"	12"	16"	20"	24"&30"	TOTAL
70	13	148	93	1	5	3	0	0	0	263
71	12	158	113	2	2	3	0	0	0	290
72	6	114	83	6	1	0	0	0	0	210
73	4	82	60	1	3	1	0	0	0	151
74	2	95	55	0	2	1	1	1	0	157
75	3	82	43	0	3	0	0	0	0	131
76	6	86	67	1	2	3	0	0	0	165
77	9	131	111	5	4	5	0	0	0	265
78	4	76	66	0	2	1	0	0	0	149
79	2	73	84	0	4	2	2	0	0	167
80	1	66	64	0	2	3	0	0	0	136
81	4	57	53	0	3	1	0	0	0	118
82	0	89	67	0	2	4	0	0	0	162
83	1	42	35	0	3	1	0	0	0	82
84	0	77	82	0	2	1	2	0	0	164
85	1	82	76	0	1	3	0	0	0	163
86	6	51	49	0	1	3	0	0	0	110
87	6	40	48	1	1	2	0	0	0	98
88	1	53	45	0	0	1	0	0	1	101
89	3	50	43	0	1	0	0	0	0	97
90	0	48	47	1	0	0	0	0	0	96
91	2	31	41	0	0	3	0	0	0	77
92	0	29	28	0	0	0	0	0	1	58

LACLEDE GAS COMPANY
TOTAL CAST IRON MAINS IN SYSTEM
AT END OF YEAR FOR
1957 - 1992



BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the matter of the review and approval of the cast iron main program for Laclede Gas Company.) CASE NO. GO-91-275

NOTICE

Donald L. Godiner, General Counsel and Vice President, Laclede Gas Company, 720 Olive Street, St. Louis, Missouri 63101
William M. Shansey, Assistant General Counsel, Missouri Public Service Commission, P. O. Box 360, Jefferson City, Missouri 65102
Uncertified copy to:
Office of Public Counsel, P. O. Box 7800, Jefferson City, Missouri 65102

Case No. GO-91-275 has been established for receipt of the cast iron main program for Laclede Gas Company and for receipt of subsequent filings concerning this program.

BY THE COMMISSION

Brent Stewart

Brent Stewart
Executive Secretary

(S E A L)

Dated at Jefferson City, Missouri,
on this 13th day of February, 1991.

2.

Missouri Public Service Commission

POST OFFICE BOX 360
JEFFERSON CITY, MISSOURI 65102
314 751-3234
314 751-1847 (Fax Number)

February 8, 1991

See

Mr. Charles Brent Stewart
Executive Secretary
Missouri Public Service Commission
P.O. Box 360
Jefferson City, Missouri 65102

RE: Case No. GO-91-275 -- In the matter of the Review and Approval of the Cast Iron Main Program for Laclede Gas Company.

Dear Mr. Stewart:

Enclosed for filing by the Commission Staff in the above-captioned case is an original and fourteen (14) copies of a MOTION TO ESTABLISH DOCKET FOR COMMISSION ACKNOWLEDGEMENT AND APPROVAL OF PIPELINE REPLACEMENT PROGRAM. Copies have been sent this date to all parties of record.

Thank you for your attention to this matter.

Sincerely yours,

William M. Shansey

William M. Shansey
Assistant General Counsel

WMS:rsn

Enclosures

cc: Parties of Record

FILED

FEB 8 1991

PUBLIC SERVICE COMMISSION

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of the Review and)
Approval of the Cast Iron Main)
Program for Laclede Gas Company.)

Case No. GO-91-275

MOTION TO ESTABLISH DOCKET FOR COMMISSION ACKNOWLEDGEMENT AND APPROVAL OF PIPELINE REPLACEMENT PROGRAM

Comes now the Staff of the Missouri Public Service Commission ("Staff") and for its Motion states as follows:

1. Commission Rule 4 CSR 240-40.030(15)(D), adopted by order of this Commission effective December 15, 1989, required the operators of natural gas transportation systems in the State of Missouri having facilities which contain cast iron transmission lines, feeder lines or mains to establish and submit replacement programs to this Commission by May 1, 1990 for Commission review and approval.

2. In compliance with this rule, Laclede Gas Company ("Laclede") submitted its program to this Commission for review and approval. A copy of this program is attached and hereby incorporated by reference as Staff's Exhibit 1.

3. On December 27, 1990, after reviewing all programs submitted by operators in the State of Missouri in compliance with the Commission rules, Staff submitted its Motion to Establish Docket for Commission Acknowledgement and Approval of Pipeline Replacement Programs.

4. In paragraph 6.e. of Staff's Motion, Staff stated its intention to seek the establishment of separate dockets for review and acceptance of the submitted programs of certain

operators with whom Staff continued to work concerning certain items in their programs.

5. Staff is continuing to work with Laclede concerning certain items in its submitted program.

6. Staff therefore moves this Commission to establish a docket to receive KPL's cast iron main program, Staff's ultimate recommendation and the Commission's review and subsequent order concerning approval.

WHEREFORE the Staff of the Public Service Commission respectfully requests this Commission issue its order establishing a docket for the receipt of the cast iron main and program of Laclede Gas Company and for receipt of subsequent filings concerning this program.

Respectfully submitted,

William M. Shansey

William M. Shansey
Assistant General Counsel

Attorney for the Staff of the
Missouri Public Service Commission
P. O. Box 360
Jefferson City, MO 65102
314-751-8702

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing have been mailed or hand-delivered to all parties of record on this 8th day of February, 1991.

William M. Shansey

LACLEDE GAS COMPANY
SAINT LOUIS

3950 FOREST PARK BOULEVARD
ST. LOUIS, MISSOURI 63108

314/658-5479
FAX No. 314/535-9414

May 1, 1990

W. R. Ellis
Pipeline Safety Program Manager
Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102

Re: 4 CSR 240-40.030(15)(B)-(E)
Replacement Program Filing

Dear Mr. Ellis:

Pursuant to the requirements of 4 CSR 240-40.030(15)(B)-(E) of the Commission Rules ("Rules"), Laclede Gas Company ("Laclede") hereby submits the attached Written Replacement Programs ("Programs"). Such Programs are submitted herewith only for the purpose of compliance with the currently existing aforementioned Rules and for no other purpose. Such filing should not be construed as an acceptance of, or an acquiescence in, the substance of such Rules, any such acceptance or acquiescence being specifically withheld by Laclede. Furthermore, Laclede reserves all of its rights regarding such rules, including without limitation its right to petition the Commission to amend or rescind such Rules, to apply for waivers from such Rules and to otherwise take such action with respect to such Rules as Laclede deems appropriate in the circumstances.

Very truly yours,

J. Gerald Hofer
Superintendent
Engineering and
Support Services

LACLEDE GAS COMPANY

PROPOSED REPLACEMENT PROGRAM FOR
CAST IRON PIPING
PURSUANT TO 4 CSR 240-40.030(15)(D)

Section (15)D of the MoPSC's Safety Regulations requires that all operators who have cast iron pipe in their distribution systems develop and submit a systematic replacement program. The regulations specify that the program be prioritized to identify and eliminate that cast iron piping which presents the greatest potential for hazard. Seven high priority categories are identified in the regulations.

Laclede already has an effective maintenance and replacement program for cast-iron mains. The Company's program is based upon using a thirty to forty year history of leak repairs, main condition reports, age, soil condition, customer interruption problems, street paving projects as well as all criteria listed in the regulations.

Laclede's procedures to implement a cost effective cast-iron replacement program has achieved outstanding results. Major accomplishments are;

1) All 4" and smaller medium-pressure cast-iron mains have been replaced.

2) All cast-iron services have been replaced.

3) All 10" and larger medium pressure AGA bell and spigot cast iron joints have been reinforced with bell joint clamps.

4) Thirty-nine (39) miles of bell and spigot low pressure and medium pressure cast-iron mains were internally sealed between 1961 and 1970 in high maintenance areas and areas of continuous pavement.

5) All cast iron mains in the downtown area of the City of St. Louis have been replaced with the exception of one large diameter (24") main.

6) A total of 315 miles of cast iron main has been eliminated since the mid-1950's.

Laclede's cast-iron replacement program is based on on-going monitoring of the condition of cast-iron mains and is accomplished by the following practices and procedures:

(1) Whenever a cast-iron main is exposed for any reason, a pipe condition report is submitted to the Maintenance Engineering Section.

(2) Whenever a cast-iron main is repaired, a pipe condition and repair report is submitted to Maintenance Engineering.

(3) All cast_iron main breaks are reported to Maintenance Engineering on a specially designed Cast Iron Broken Main Report.

(4) All repairs, breaks, and pipe condition reports are entered on maps of the cast-iron system.

(5) All 6" medium pressure cast-iron mains are incorporated in a spacial study file which is reviewed periodically to determine priority for replacement.

(6) All 4" and 6" low pressure cast iron mains with two or more breaks in 500 feet are placed in study files for monitoring and spacial review.

(7) Information contained in the maintenance history file is supplemented on a current basis with reports from the field on service outages caused by water problems, freeze-ups and/or customer complaints.

(8) Since 1962, flame ionization leak surveys have been conducted annually on the entire cast-iron system with additional spacial surveys conducted when weather/ground conditions are severe.

In view of the foregoing, Laclede plans to continue its present cast iron replacement program for the foreseeable future. We estimate this will consist of replacing approximately 40 miles of cast-iron main in the next ten (10) years in the following categories:

1) 3.5 miles of 6" medium pressure mains in continuous pavement areas and areas of public assembly such as schools, hospitals and business districts.

2) 4.0 miles of 4" and 6" low pressure cast-iron in break areas as indicated by existing study files.

3) 32.0 miles of various sizes of low pressure cast-iron mains in areas which are susceptible to breaks.

LACLEDE GAS COMPANY
720 OLIVE STREET
ST. LOUIS, MO 63101

AREA CODE 314
342-0550

RICHARD W FRENCH
ASSISTANT GENERAL COUNSEL

June 18, 1993

Mr. C. Brent Stewart
Executive Secretary
Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102

Re: Case No. GO-91-275

Dear Mr. Stewart:

Enclosed for filing on behalf of Laclede Gas Company please find the original and fourteen copies of Laclede Gas Company's Cast-Iron Replacement Program in the above-captioned cause. Please see that this filing is brought to the attention of the appropriate Commission personnel.

Please file-stamp the additional copy of such filing and return the same in the pre-addressed, stamped envelope provided.

Thank you for your consideration in this matter.

Sincerely,

Richard W. French

RWF:dv

Enclosures

cc: Office of the Public Counsel

FILED
JUN 21 1993
MISSOURI
PUBLIC SERVICE COMMISSION

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of the review and approval of the cast-iron main program for Laclede Gas Company.	)))	Case No. GO-91-275

LACLEDE GAS COMPANY'S CAST-IRON REPLACEMENT PROGRAM

Comes now Laclede Gas Company ("Laclede"), by its counsel, and for the filing, and seeking approval, of Laclede's Cast-Iron Replacement Program ("Program") states that:

1. By its Order of Rulemaking in Case No. GX-89-220 filed with the Secretary of State of the State of Missouri on November 9, 1990, the Missouri Public Service Commission ("Commission") issued certain revised gas safety rules ("Rules"), including the Rules contained in 4 CSR 240-40.030. Commission Rule 4 CSR 240-40.030(15)(D) required that Laclede develop a replacement program for cast-iron transmission lines, feeder lines and mains, and submit said program to the Commission by May 1, 1990 for Commission review and approval.

2. On May 1, 1990, Laclede filed its initially Proposed Replacement Program for Cast-Iron Piping with the Commission. Subsequently, on February 8, 1991, the Commission Staff filed a Motion to Establish a Docket For Commission's Acknowledgment and Approval of Laclede's Cast-Iron Pipeline Replacement Program. In said Motion, the Commission Staff stated that it was continuing to work with

Laclede concerning certain items in Laclede's initially Proposed Replacement Program for Cast-Iron Piping and requested that the Commission establish a docket to deal with Laclede's finally proposed Program, as well as the Commission Staff's recommendation and the Commission's subsequent order concerning approval of the Program.

3. By an Order dated February 13, 1991, the Missouri Public Service Commission established this docket for the receipt of Laclede's Program and for subsequent filings concerning the Program.

4. Laclede and the Commission Staff have held ongoing discussions concerning the ultimate content of Laclede's finally proposed Program. These discussions have resulted in the formulation of the Program which is attached hereto as Schedule 1, and is incorporated by reference herein for all purposes. The Commission Staff has indicated that it is in general agreement with the attached Program.

WHEREFORE, Laclede respectfully requests that the Commission issue an order approving the Program set forth in Schedule 1 hereto.

Respectfully submitted,

Richard W. French
Assistant General Counsel
Laclede Gas Company
720 Olive Street, Rm. 1517
St. Louis, Missouri 63101
314-342-0530

CERTIFICATE OF SERVICE

Richard W. French, Assistant General Counsel of Laclede Gas Company, hereby certifies that the foregoing Filing of Laclede Gas Company's Cast-Iron Replacement Program in Case No. GO-91-275 has been duly served upon the Office of the Public Counsel, Post Office Box 7800, Jefferson City, Missouri 65102 by placing a copy thereof in the United States mail, postage prepaid on this 18th day of June, 1993.

Richard W. French

Schedule 1

Laclede Gas Company

CAST-IRON REPLACEMENT PROGRAM
PURSUANT TO 4 CSR 240-40.030(15)(D)

4 CSR 240-40.030(15)(D) of the MoPSC's Pipeline Safety Regulations ("Subsection (15)(D)") requires that all operators who have cast-iron pipe in their distribution systems develop and submit a systematic replacement program. The regulations specify that the program be prioritized to identify and eliminate that cast-iron piping which presents the greatest potential for hazard. Seven high priority categories are identified in the regulations.

Laclede formulated a systematic maintenance and replacement program for cast-iron pipe in the early 1950's. This program has been reviewed periodically and the priority criteria revised as necessary so as to replace and eliminate cast-iron pipelines that have a history of leaks and a potential for breaks.

Laclede's comprehensive Cast-Iron Maintenance, Monitoring, and Replacement Program in effect for the past forty years, has resulted in the following actions and policies:

1. Reinforcement by clamping or sealing of all AGA bell and spigot joints operating at medium pressure. (3 to 25 psig).[1]

2. Prohibition of upgrading low pressure cast-iron mains to medium pressure.

3. Elimination of cast-iron mains not specifically required to maintain the capacity of the system.

4. Replacement or elimination of cast-iron mains in areas affected by heavy equipment, blasting, major demolition and/or urban renewal and development.

5. Annual flame-ionization mobile leak survey of all cast-iron mains with additional special surveys conducted when weather/ground conditions warrant.

6. A comprehensive report on the pipe condition, pipe environment, traffic loading, depth of cover, repair type, leak cause, etc. is originated for every

---

[1]The MoPSC's Pipeline Safety Regulations solely defines "high" and "low" pressure distribution systems. Only Laclede's medium pressure distribution system contains cast-iron pipe which falls within the definition of a "high pressure" distribution system set forth in Section 4 CSR 240-40.030(1)(B)10.--namely one where the pressure is higher than an equivalent to 14 inches water column.

excavation where a cast-iron main is exposed. This report along with the maintenance history for that section of main is reviewed and evaluated by Maintenance Engineering to determine replacement requirements and priorities.

7. Replacement of all cast-iron service lines with the highest priority being schools, churches and buildings of public assembly.

8. Replacement or elimination of cast-iron mains affected by major street or highway construction, reconstruction, paving , or relocation.

9. Replacement or elimination of cast-iron main where construction activity that could have a detrimental effect due to vibration, settlement or added loading, occurs in close proximity.

10. Replacement or elimination of all cast-iron mains with unreinforced bell and spigot joints in the downtown City of St. Louis business district.

11. Replacement or elimination of 4-inch and 6-inch cast-iron medium pressure mains.

12. Replacement or elimination of cast-iron mains that have a history of breaks, leaks or graphitization.

The above long-standing policies and procedures for maintaining and replacing cast-iron pipelines have achieved outstanding results. Major accomplishments are:

1. Reinforcement by clamping or sealing of all 49 miles of AGA bell and spigot joints in the medium pressure system.

2. All cast-iron service lines have been replaced as a result of a program begun in 1961 to replace cast-iron and bare steel services to schools, churches, hospitals and other buildings of public assembly.

3. Replacement of all 8 miles of 4-inch and 5 miles of 6-inch medium pressure cast-iron mains.

4. Replacement of 30 miles of cast-iron low pressure mains in the downtown business area east of Twelfth St. (Tucker Blvd.) in the City of St. Louis.

5. Replacement or elimination of 28 miles of cast-iron mains in major urban renewal projects as shown on Exhibit 1.

The St. Louis Land Clearance for Redevelopment Authority approved 70 plans for urban redevelopment between 1953 and 1980, and over 340 plans since 1981. Most of these plans were reviewed by Laclede in the normal course of business for consideration of cast-iron main abandonment or replacement, providing service to the project, and relocation of existing facilities in conflict with the project but required for system integrity.

6. A significant reduction in the cast-iron break frequency during the 1980's as compared to the 1970's is shown in Exhibit 2. The statistical history of circumferential main breaks by size over the past 21 years is shown in Exhibit 3. As can be seen from these exhibits, the number and frequency of breaks on large-diameter cast-iron mains (8-inch and larger) is such that they do not warrant consideration for replacement based upon potential for breakage.

7. Elimination of a total of 331 miles of cast-iron mains from 1957 to 1990 as shown on Exhibit 4. As the curve on Exhibit 4 shows, Laclede's aggressive program eliminated large amounts of cast-iron with a leak/break history during the 1950's and 1960's. During the 1970's and 1980's, the rate of elimination slowed as the leak/break history of remaining cast-iron mains improved. It is important to point out that Laclede is

not now just beginning to develop a cast-iron replacement program, but we are continuing to implement and enhance a plan that is both cost-effective and comprehensive.

Laclede's Cast-Iron Replacement Program, which contains a Specific Priority Schedule, and an Ongoing and a Long-Term Program, will eliminate those high priority categories of cast-iron pipe identified in paragraph (15)(D)1. as presenting the greatest potential for hazard. Prioritization within the categories set out below will take into account all available information about the areas for replacement consideration. This information will reflect, but not be limited to, soil type and condition, traffic loading, depth of cover, operating pressure, leak cause, and pipe condition including indications of graphitization.

Provided that this program is approved by the Commission in a timely manner, such program's first year will begin with the commencement of Laclede's 1994 fiscal year on October 1, 1993, and will end with such fiscal year's conclusion on September 30, 1994. Successive program years will correspond with Laclede's fiscal year.

SPECIFIC PRIORITY REPLACEMENT SCHEDULE

This schedule applies to specific predetermined facilities that have been identified at the time of submission of this program.

1. Six-inch medium pressure cast-iron main located beneath pavement which is continuous to building walls will be replaced or eliminated within the first year of the program (approximately 0.5 miles).

2. Cast-iron low pressure main areas having three (3) or more breaks with at least one of these breaks occurring within the previous ten years will be replaced or eliminated within the first three years of the program (approximately 20.2 miles).

3. Six-inch medium pressure cast-iron main near concentrations of the general public will be replaced or eliminated within the first five years of the program (approximately 2.5 miles).

4. Cast-iron low pressure main areas having two (2) breaks, where at least one of these breaks have occurred within the last ten years, will be replaced or eliminated within the first eight years of the program (approximately 22.6 miles)

5. Cast-iron low pressure main areas having three or more breaks, all of which occurred more than ten years ago, will be replaced or eliminated within the first eight years of the program (approximately 6.3 miles).

6. All other 6-inch medium pressure cast-iron main will be replaced or eliminated within the first ten years of the program (approximately 2.1 miles).

Laclede's break history data for large diameter (10 inch and larger) cast-iron medium pressure mains in areas identified in subparagraphs (15)(D)1.A. and B. ("Categories A and B"), does not justify replacement of these mains for the following reasons:

1. Main Condition Reports are favorable.

2. Very low frequency of breaks on these types of Laclede mains.

3. Mobile leak surveys are conducted annually.

It is Laclede's position based on its experience and record of operating cast-iron distribution systems ranging in size from 3-inches to 30-inches, that small diameter cast-iron mains which have exhibited a history of breaks should receive a higher replacement priority than large diameter cast-iron

medium pressure mains which have no history of breaks, but are located in areas included in Categories A and B. Laclede believes that its replacement efforts should address those areas where experience indicates a higher probability of breaks, rather than areas in Categories A and B which specify general location conditions of perceived high risk without consideration of breakage potential.

Laclede will, however, institute semi-annual patrols of these large diameter, medium pressure mains in Categories A and B to supplement its annual mobile leak survey.

Special consideration will be given to replacement of any cast-iron medium pressure main section that should experience a break.

ONGOING REPLACEMENT PROGRAM

This schedule applies to facilities that are identified subsequent to the submission of this program.

1. Cast-iron low pressure main areas with two or more existing breaks will be replaced or eliminated within three years of the discovery of a new break.

2. Cast-iron low pressure main areas with one existing break will be replaced or eliminated within five years of the discovery of a new break.

3. Sections of cast-iron main will be replaced, as required, where extensive excavation, blasting or construction activities have occurred in close proximity to such main.

4. Sections of cast-iron main will be replaced as required by 4 CSR 240-40.030(13)(Z) ("Protecting Cast-Iron Pipelines").

5. Unspecified newly identified priority replacement sections or areas will be replaced or eliminated as required.

LONG-TERM REPLACEMENT PROGRAM

Laclede will continue cast-iron main replacements with special long-term replacement consideration given to the following:

- Cast-iron low pressure main areas with two existing breaks which occurred more than ten (10) years ago.

- Cast-iron low pressure main areas with one break which occurred less than ten (10) years ago.

- Six-inch and smaller cast-iron low pressure mains under pavement which is continuous to building walls.

- Sections of cast-iron main which demonstrate significant graphitization.

As stated previously, Laclede has already replaced its cast-iron service lines.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Liberty Utilities Verified Application for Approval of PVC Pipe Replacement Program and Recovery of Associated Costs Through ISRS Mechanism	))))	File No. GO-2019-0091

STAFF RECOMMENDATION

COMES NOW the Staff of the Missouri Public Service Commission ("Staff"), by and through undersigned counsel, and for its *Recommendation* states:

1. On September 28, 2018, Liberty Utilities (Midstates Natural Gas) Corp. d/b/a Liberty Utilities ("Liberty" or "Company") filed a verified application for approval of a PVC pipe replacement program and recovery of the associated costs through an ISRS mechanism ("Application").

2. On October 1, 2018, the Commission issued its Order Directing Notice and Setting an Intervention Date, in which any person wishing to intervene was ordered to file an application to intervene no later than October 31, 2018; no applications to intervene were filed.

3. On November 13, 2018, the Commission issued its Order Directing Filing of Staff Recommendation, in which Staff was ordered to review and file its recommendation regarding the Application no later than December 28, 2018.

4. On November 19, 2018, Staff filed a Request for Clarification and on November 21, 2018, the Commission ordered Liberty to respond to the Request for Clarification.

5. Liberty filed its Declaration in Response to Staff's Motion for Clarification on November 26, 2018, and made clear that the Company did not intend to pursue an ISRS filing or seek an increase in rates or charges in this proceeding.

6. On December 19, 2018, Staff filed a Motion for Extension of Time and a Commission order granting the request, allowing an extension until January 16, 2019, was entered on December 21, 2018.

7. Staff's *Recommendation*, filed concurrently as Appendix A, concludes in part that the Company need not obtain an Order from the Commission in order to replace the PVC pipe described in the Application.

8. To the extent Company seeks Commission approval of ISRS eligibility before filing an ISRS application, Staff cannot recommend such predetermination of eligible cost recovery through the ISRS mechanism.[1]

WHEREFORE, Staff respectfully submits its *Recommendation* for the Commission's consideration.

[1] *See* Matter of Mason-Cassilly, Inc., 23 Mo. P.S.C. (N.S.) 303 (Nov. 30, 1979) ("But it is the utility which bears the ultimate responsibility for quality and cost of service, and this Commission will not undertake to evaluate and thereupon essentially predetermine design characteristics and material selection for a respective utility. To do so would be to undertake management responsibilities."); In Re Missouri Gas Energy, 2001 WL 1149990 (May 29, 2001) ("The Staff stated in its memorandum that by approving one of the two proposals, the Commission would be preapproving the expenditures and thereby deeming them to be made in a prudent manner. Staff further indicated that by approving one of these proposals the Commission would be assuming the decision-making role that should be performed by MGE's management team."); In Re Middle Fork Water Co., 2007 WL 923935, at *5 (Mar. 20, 2007) ("[T]he Commission does not decide hypothetical issues and 'will not render an advisory opinion where there is no case in controversy'".).

Respectfully submitted,

/s/ Alexandra L. Klaus
Alexandra L. Klaus
Legal Counsel
Missouri Bar No. 67196
Attorney for the Staff of the
Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102
573-751-1854 (Voice)
573-751-9285 (Fax)
lexi.klaus@psc.mo.gov

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing have been mailed, hand-delivered, transmitted by facsimile, or electronically mailed to all parties and/or counsel of record on this 8th day of January, 2019.

/s/ Alexandra L. Klaus

MEMORANDUM

TO: Missouri Public Service Commission Official Case File
Case No. GO-2019-0091

FROM: Kathleen A. McNelis, PE - Utility Regulatory Engineering Manager,
Safety Engineering Department

/s/ Jamie S. Myers 1/09/2019
Commission Staff Division / Date

/s/ Robert S. Berlin 1/09/2019
Staff Counsel's Office / Date

SUBJECT: Staff's Recommendation In the Matter of Liberty Utilities Application For Approval of PVC Pipe Replacement Program and Recovery of Associated Costs Through ISRS Mechanism

DATE: January 9, 2019

Background

Liberty Utilities ("Liberty") raised an issue in its most recent rate case proceeding, File No. GR-2018-0013, regarding replacement of the remaining Polyvinyl Chloride (PVC) pipes in its distribution system.[1] The parties agreed in Paragraph 17 of the Unanimous Stipulation and Agreement[2] approved by the Commission[3], that Liberty could file, within 3 months of the effective date of the order in the rate case, an application requesting that the Commission approve a safety-related replacement program for PVC pipes and may propose that such replacement costs be included in and recovered through the Company's ISRS mechanism. The Order Approving Stipulation and Agreement had an effective date of June 16, 2018.

On September 28, 2018, Liberty filed an application with the Missouri Public Service Commission requesting approval of a PVC pipe replacement program and recovery of the associated costs through its Infrastructure System Replacement Surcharge (ISRS). The Commission published notice of the application and set an October 31, 2018, deadline for interested persons to request intervention. No applications to intervene were filed.

The Commission directed its Staff to review and file a recommendation regarding Liberty's application no later than December 28, 2018. On December 19, 2018, Staff filed a motion

[1] GR-2018-0013, Direct testimony of Michael D. Beatty filed September 29, 2017 and Surrebuttal testimony of Michael D. Beatty filed May 9, 2018.

[2] GR-2018-0013, file date 5/24/2018.

[3] GR-2018-0013, file date 6/6/2018.

requesting an extension until January 16, 2019. This request was granted by a Commission Order Extending Time on December 21, 2018.

Staff Recommendation:

Based on Staff's analysis, the safety concerns discussed in Liberty's application can be addressed by: 1.) an alternative to replacing the pipe, or 2.) an existing pipeline safety regulation. Further, Liberty has indicated that it will replace the pipe in the absence of a Commission order. In response to a Staff data request[4] asking the Company to describe any potential detriments to public safety and the safety, integrity and reliability of the Company's system if the Commission does not order the requested PVC replacement program, the Company stated: "Liberty Utilities will always address any safety related conditions with respect to all facilities, including PVC Pipe, therefore the primary detriment from not approving the proposed replacement program would be financial in that certain efficiencies would be lost."

Staff therefore does not find any safety related reason to recommend that the Commission order replacement of Liberty's PVC pipe.

Basis for Recommendation:

Liberty described several safety concerns in its application.[5] However, Liberty also points out that past Commission orders and regulations requiring replacement programs "...were a response to the occurrence of serious natural gas incidents that resulted in a loss of life, serious injuries and/or significant property damage."[6] In this case, there has been no incident or precipitating event other than the filing of this Application that caused Staff to consider an order to replace PVC pipe. Instead, Liberty is seeking a Commission order to replace its PVC pipe so that it may recover costs through ISRS.

In order to evaluate the safety concerns raised by Liberty in its application in the absence of an incident or other precipitating event, Staff needed to develop a basis to recommend either for or against a Commission order to replace the PVC pipe. To do this, Staff considered what criteria it would use if there had been a safety-related precipitating event.

- First, there needs to be a safety concern related to the PVC pipe. In the absence of such concern, there is no need to recommend replacement of the pipe.

[4] Staff Data Request No. 0006.

[5] Paragraphs 11-14 of the Application.

[6] Paragraph 8 of the Application.

- Second, if there is an alternative way to address the safety concern that does not involve pipe replacement, it would be premature to recommend in favor of pipe replacement without a thorough evaluation of the alternative.

- Finally, if there is an existing pipeline safety regulation that already addresses the safety concern, it is not necessary for the Commission to order Liberty to replace the pipe.

Therefore, Staff would only recommend in favor of the Commission ordering Liberty to replace its PVC pipe for safety reasons if the following conditions are met:

Condition 1: Evidence presented by Liberty of a pipeline safety concern that could only be addressed by replacement of the pipe;[7] and

Condition 2: No existing pipeline safety regulations address Liberty's identified safety concerns.

Staff Conclusions:

1. Condition 1: Safety Concerns identified by Liberty:
    - Age of PVC Pipe (Paragraph 11 of Application)
    - Ability to Readily Locate PVC Pipe When Third Parties are Excavating Nearby (Paragraph 12 of Application)
    - Ability to Maintain PVC Pipe in Safe Condition due to lack of materials (Paragraph 13 of Application)
    - Brittle Failure of PVC Pipe (Paragraph 14 of Application)

    Staff does not consider the age of pipe alone to be a safety related concern, provided that the pipe has been maintained in accordance with applicable pipeline safety regulations and is in good condition.

    The ability to readily locate pipe in advance of excavation is a safety concern, however in its application Liberty mentions an alternative to pipe replacement to address this concern (exposing pipe and placement of markers).

    The ability to maintain pipe in safe condition is a safety concern, however in its application Liberty mentions an alternative to replacing the pipe (a repair fitting).

[7] Staff has not given consideration to the cost effectiveness of alternative means to address safety concerns.

Brittle failure of pipe is a safety concern; however Liberty has not provided evidence of this type of failure on its PVC pipe. Staff has therefore considered this as a potential threat in its analysis.

2. Condition 2: Existing Pipeline Safety Regulations:

4 CSR 240-40.030(17) addresses all of the safety concerns identified by Liberty. Since August 2, 2011, each natural gas distribution operator has been required to implement a Distribution Integrity Management Program (DIMP). 4 CSR 240-40.030(17) requires among other things that an operator identify the characteristics of the pipeline, consider past design, operation and maintenance information, identify threats (existing and potential), evaluate and rank risks, identify and implement measures to address risk, measure performance, monitor results and effectiveness, and perform periodic evaluations and improvements. 4 CSR 240-40.030(17)(D)2. specifically requires that the threats (existing and potential) of natural forces, excavation damage and material and joint failures be considered. This regulation addresses Liberty's concerns related to:

- Age of PVC Pipe,
- Ability to Readily Locate PVC Pipe When Third Parties are Excavating Nearby,
- Ability to Maintain PVC Pipe in Safe Condition, and
- Brittle Failure of PVC Pipe.

Staff's conclusion is that each safety concern Liberty mentions in its application is already addressed by an existing pipeline safety regulation, therefore no Commission order is necessary.

Staff Analysis of Liberty Identified Safety Concerns:

In its application, Liberty identified certain safety concerns regarding its PVC pipelines. A summary of Staff's analysis of these safety concerns is provided as follows:

1. Safety Concern: Age of PVC Pipe.

In paragraph 11 of its application, Liberty states:

> There are multiple, safety-related justifications for systematically replacing such PVC pipe over a reasonable period of time. First, the PVC piping was installed in Liberty Utilities' natural gas distribution systems in Missouri in the late 60's and so much of it is already a half century or

> more old. While age is not necessarily a determining factor in whether specific facilities need to be replaced, it is worthwhile noting that these are not new facilities.

Staff Analysis: Age of PVC pipe does not meet the criteria used in Staff's evaluation because the age of pipe is not necessarily a safety concern; provided that the pipe is in good condition. If the pipe is not in good condition, existing pipeline safety regulations require the removal of plastic pipe when the serviceability is impaired by a leak, imperfection or damage.[8]

2. Safety Concern: Ability to Readily Locate PVC Pipe When Third Parties are Excavating Nearby.

In paragraph 12 of its application, Liberty states:

> Second, approximately 40% of the installed PVC piping is un-locatable because it was either installed without tracer wire or was installed with galvanized tracer wire or other wire that has since corroded away. Obviously, this raises serious concerns regarding the ability to locate such facilities when third parties are excavating nearby. Since third party damage is already the largest single cause of natural gas incidents, this inability to readily locate the Company's underground piping is particularly concerning. The Company does utilize Electronic Marker System Ball Markers and other related technology to provide repeatable locating once the non-locatable PVC is exposed and verified.

Staff Analysis: While the ability to locate pipe in advance of excavation is a safety concern, it does not meet Staff's criteria for recommending that the Commission order a replacement program because this concern is addressed by existing pipeline safety regulations and Liberty has identified an alternative to replacement of the pipe.

The damage prevention program requirements in the Missouri pipeline safety regulations, 4 CSR 240-40.030(12)(I), require among other things that an operator "provide for temporary marking of buried pipelines in the area of excavation activity before, as far as practical, the

[8] 4 CSR 240-40.030(13)(AA) states: "Each leak, imperfection or damage that impairs the serviceability of a plastic pipe must be removed, except that heat fusion patching saddles may be used to repair holes that have been tapped into the main for service installations, and full-encirclement heat fusion couplings may be used to repair and reinforce butt fusion joints. These patching saddles and couplings shall not be used for the repair of any imperfections or third-party damage sustained by the plastic pipe." Because PVC pipe is not joined by heat fusion, the exceptions related to repair by heat fusion patching saddles and full-encirclement heat fusion couplings do not apply to PVC pipe.

activity begins."[9] Therefore, existing pipeline safety regulations require that Liberty must take actions to ensure that it can locate all of its buried pipelines.

Existing pipeline safety regulations also require each operator of a natural gas distribution system to have and implement a Distribution Integrity Management Program (DIMP). The required elements of a DIMP include among other things identifying the characteristics of the pipeline,[10] consideration of past design, operation and maintenance information,[11] identification of threats (existing and potential),[12] evaluation and ranking of risk,[13] identification and implementation of measures to address risk,[14] measurement of performance, monitoring of results and effectiveness[15] and periodic evaluation and improvement.[16] Evaluation of the risks associated with excavation damage to pipelines is specifically required.[17] If the threat of third-party excavation damage to PVC pipe is an immediate safety concern, existing pipeline safety regulations already provide for implementation of additional measures to address the risks.

Additionally, information provided in paragraph 12 of Liberty's application indicates that there is at least one alternative to address this concern that does not require replacement of the pipe (exposing pipe and placement of markers).

Staff also considered if Liberty's statement regarding the approximately 40% of its installed PVC piping being un-locatable represented a probable violation of pipeline safety regulations requiring installation of corrosion resistant tracer wire with plastic pipe.[18] Based on Liberty's statement in paragraph 11 of its application that its PVC pipe was installed in the late 1960s, this pipe was likely installed before the effective dates that pipeline safety regulations required installation of tracer wire[19] with new plastic main lines being readied for service after March 12, 1971.[20] The requirement to install tracer wire with plastic service lines first

[9] 4 CSR 240-40.030(12)(I)3.G.

[10] 4 CSR 240-40.030(17)(D)1.A.

[11] 4 CSR 240-40.030(17)(D)1.B.

[12] 4 CSR 240-40.030(17)(D)2.

[13] 4 CSR 240-40.030(17)(D)3.

[14] 4 CSR 240-40.030(17)(D)4.

[15] 4 CSR 240-40.030(17)(D)5.

[16] 4 CSR 240-40.030(17)(D)6.

[17] 4 CSR 240-40.030(17)(D)2. and 3.

[18] 4 CSR 240-40.030(7)(K)5 requires that plastic pipe that is not encased must have an electrically conductive wire or other means of locating the pipe while it is underground. Tracer wire may not be wrapped around the pipe and contact with the pipe must be minimized but is not prohibited. Tracer wire or other metallic elements installed for pipe locating purposes must be resistant to corrosion damage, either by use of coated copper wire or other means.

[19] 49 CFR 192.13, adopted as 4 CSR 240-40.030(1)(G).

[20] 49 CFR 192.321(e), adopted as 4 CSR 240-40.030(7)(K)5.

became effective in Missouri in 1998.[21] The requirement for tracer wire to be corrosion resistant (effective September 15, 2003) became effective after Missouri pipeline safety regulations were amended to restrict the use of PVC pipe to repair existing facilities constructed of the same material and fittings, valves, or other appurtenances attached to the pipe (effective December 15, 1989).[22] The absence of tracer wire on the PVC pipe in Liberty's system is therefore not evidence of a probable violation of 4 CSR 240-40.030(7)(K)5, since the requirement to install corrosion resistant tracer wire with plastic pipe was not retroactive[23] to existing plastic pipe.

3. Safety Concern: Ability to Maintain PVC Pipe in Safe Condition.

In paragraph 13 of its application, Liberty states:

> Third, it is increasingly difficult to maintain PVC piping in a safe condition. Currently there is no PVC pipe or PVC glue manufactured today that is rated for use in a natural gas distribution system. The Company has been able to source a repair fitting from Continental Industries of Tulsa Oklahoma. The Scope® Expandable Repair Joint is available in a Polyethylene pipe to PVC design.

Staff Analysis: Since Liberty has been able to secure a source for repair fittings, it appears that there is a means to repair the pipe that does not require replacement. Staff therefore does not view this as sufficient reason to recommend that the Commission order Liberty to replace its PVC pipe. Further, existing pipeline safety regulations require the removal of plastic pipe when the serviceability is impaired by a leak, imperfection or damage.[24]

4. Brittle Failure of PVC Pipe.

In paragraph 14 of its application, Liberty states:

---

[21] Initially required by 4 CSR 240-40.030(8)(M)6. in 1998, then amended to (8)(G)7. after amendments to federal regulation 49 CFR 192 required installation of tracer wire with plastic services.

[22] 4 CSR 240-40.030(2)(B)4. states that: "Only of steel or polyethylene for pipe for the underground construction of pipelines, except that other previously qualified materials may be used for A. Repair of existing facilities constructed of the same material; and B. Fittings, valves, or other appurtenances attached to the pipe."

[23] 4 CSR 240-40.030(1)(G)4.

[24] 4 CSR 240-40.030(13)(AA) states: "Each leak, imperfection or damage that impairs the serviceability of a plastic pipe must be removed, except that heat fusion patching saddles may be used to repair holes that have been tapped into the main for service installations, and full-encirclement heat fusion couplings may be used to repair and reinforce butt fusion joints. These patching saddles and couplings shall not be used for the repair of any imperfections or third-party damage sustained by the plastic pipe." Because PVC pipe is not joined by heat fusion, the exceptions related to repair by heat fusion patching saddles and full-encirclement heat fusion couplings do not apply to PVC pipe.

> Fourth, the chemical composition of PVC pipe has resulted in becoming unacceptably brittle over time. This has a number of detrimental safety implications. For example, while polyethylene ("PE") pipe can be safely squeezed off to stop the flow of natural gas, the brittleness of PVC piping means that it can only be squeezed off under emergency conditions and then with limited success. Because of the brittleness of PVC piping, it also is more susceptible to breakage due to natural forces, including earth movement and tree root growth that stresses the pipe and induces brittle cracking.

Staff Analysis: For this analysis, Staff reviewed three aspects of Liberty's statement: A). Support for the statement that the pipe has become unacceptably brittle over time, B). The safety concern related to stopping the flow of gas under emergency conditions, and C). The safety concern regarding susceptibility to breakage due to natural forces.

A. Data Supporting Pipe Brittleness

While brittle failure of pipe is a safety concern, Liberty has not provided any data to support that the PVC pipe in its system has become unacceptably brittle over time. To support its concern regarding PVC pipe brittleness, Liberty quoted text from a preamble to a federal Pipeline and Hazardous Materials Safety Administration (PHMSA) rulemaking in paragraph 15 of its application. The text cited by Liberty was contained in a May 21, 2015 notice of proposed rulemaking (NPRM) published in the Federal Register[25] in what is known as the "Plastic Pipe Rule":

> ...PHMSA is also looking to address some issues surrounding PVC pipe and components used for repair situations. Historically, PVC pipe and components have technically been allowed by code, including for repair, but industry has slowly been phasing out the installation and use of PVC piping, including for repair, in favor of other newer and better-performing plastic materials. PVC components are still used to a larger extent, however, as they are not as susceptible to the same issues of brittle-like cracking as PVC piping. To align with this shift, PHMSA is proposing to add a new § 192.59(e) to explicitly prohibit the use of PVC pipe for new installations after the effective date of the rule, including for repairs. This new requirement would not prevent the use of previously installed PVC pipe, nor would it preclude the use of PVC components for the repair of existing PVC pipe...

[25] Link to federal register: https://www.federalregister.gov/documents/2015/05/21/2015-12113/pipeline-safety-plastic-pipe-rule.

In paragraph 16 of its application, Liberty states that "[a]lthough PHMSA has not yet completely banned the use of PVC for future installations, its statements certainly illuminate the ongoing concerns by both industry and safety officials regarding its continued use."

Subsequent to the filing of Liberty's application, the Plastic Pipe Rule has been published as a final rule, with an effective date of January 22, 2019.[26] In the preamble to the final rule, PHMSA stated that it did not prohibit the use of PVC pipe for new installations:

> PHMSA has removed the restrictions on PVC pipe after considering the public comments and the recommendations of the GPAC. PHMSA notes that the use of PVC pipe has decreased since the mid-1980s without regulatory intervention due, in large part, to operator preferences. Gas distribution annual reports also show operators are phasing-out this material in the absence of a regulatory restriction.

Staff does not find the information provided by Liberty in its application to be convincing evidence that Liberty's PVC pipe has become "unacceptably brittle over time".

Staff notes that since December 15, 1989, Missouri pipeline safety regulations[27] have restricted the use of PVC pipe (a "previously qualified material") for natural gas use as follows:

> 4 CSR 240-40.030(2) Materials: ...
>
> (B) General. (192.53)
> Materials for pipe and components must be—
>
> .....
>
> 4. Only of steel or polyethylene for pipe for the underground construction of pipelines, except that other previously qualified materials may be used for—
>
> A. Repair of existing facilities constructed of the same material; and
>
> B. Fittings, valves, or other appurtenances attached to the pipe.
>
> 5. Other piping materials may be used with approval of the commission.

However, 4 CSR 240-40.030(2)(B) does not require the removal of existing PVC pipe.

[26] https://www.federalregister.gov/documents/2018/11/20/2018-24925/pipeline-safety-plastic-pipe-rule.

[27] 4 CSR 240-40.030(2)(B), effective date of 12/15/1989.

B. Stopping the Flow of Gas in Emergency Conditions

With respect to Liberty's concern regarding stopping the flow of gas in emergency conditions, since March 13, 1971,[28] pipeline safety regulations have required that valves be installed in each high pressure distribution system, spaced so as to reduce the time to shut down a section of main in an emergency.[29] Stopping the flow of gas using valves would be an alternative to squeezing off the pipe. In the event there are not sufficient valves currently installed in the legacy piping system, additional valves could be installed as needed to address the concern with squeezing off pipe.

Additionally, the final Plastic Pipe Rule[30] adds standards incorporated by reference to 49 CFR 192.7 for PVC pipe and solvent cement:

- ASTM F2817-10, "Standard Specification for Poly (Vinyl Chloride) (PVC) Gas Pressure Pipe and Fittings for Maintenance or repair; and
- ASTM D2564-12 "Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems".

These may facilitate Liberty's ability to find additional sources of materials.

C. Natural Force Damage

With respect to the susceptibility of PVC pipe to breakage due to natural forces, existing pipeline safety regulations require natural gas pipeline operators to identify the characteristics of the pipeline, consider past design, operation and maintenance information, identify threats (existing and potential), evaluate and rank risks and identify and implement measures to address risk.[31] Evaluation of the risks associated with natural forces damages to pipelines is specifically required.[32] If the threat of natural forces

[28] The Natural Gas Pipeline Safety Act was enacted on August 12, 1968. It required the Secretary of Transportation to adopt, within 3 months, the then existing State safety standards for gas pipelines as interim regulations and to establish within 24 months, minimum Federal safety standards. The interim standards were issued on November 7, 1968, as Part 190 of Title 49 of the Code of Federal Regulations and became effective on December 13, 1968. With the adoption of these minimum Federal standards in Part 192, the interim standards are no longer necessary. Therefore, the interim standards are revoked on the date that Part 192 becomes effective, except for those provisions applicable to design, installation, construction, initial inspection, and initial testing of new pipelines which will remain in effect until March 13, 1971..

[29] 4 CSR 240-40.030(4)(V)1.

[30] https://www.federalregister.gov/documents/2018/11/20/2018-24925/pipeline-safety-plastic-pipe-rule.

[31] 4 CSR 240-40.030(17)(D).

[32] 4 CSR 240-40.030(17)(D) 2. and 3.

damages to PVC pipe is an immediate safety concern that needs to be addressed by additional measures to reduce risks, existing pipeline safety regulations already provide for implementation of measures to address the risks.

5. Existing Commission Orders that Address the Identified Safety Concerns.

In paragraph 7 of its application, Liberty states:

> Over the past three decades, this Commission has authorized or affirmatively mandated a number of programs designed to replace natural gas distribution facilities that pose a risk to public safety. These have included more generally-applicable programs aimed at replacing aging facilities such as those set forth in the Commission's rules relating to cast iron and bare steel facilities. They have also included programs approved for specific gas utilities with unique safety-related issues, such as the direct buried, soft-copper service line replacement program authorized for Laclede Gas Company years ago.

In Paragraph 8 of its application, Liberty states:

> Unfortunately, all of these programs share a common origin, namely, they, or the regulations that mandated them, were a response to the occurrence of serious natural gas incidents that resulted in a loss of life, serious injuries and/or significant property damage....

Staff notes that in addition to the mandated replacement programs for certain metallic materials identified by Liberty in its application, the Commission has also ordered certain limited scope plastic pipe replacements following incidents, including:

- Following a June 18, 2003, incident in which an employee of the Ozark Empire Fairgrounds was killed,[33] the Commission ordered[34] City Utilities of Springfield to replace certain polyethylene (PE) plastic pipe.[35] Staff's investigation into this incident determined that the leak was the result of

[33] Case No. GS-2004-0040.

[34] Case No. GS-2004-0257.

[35] The primary focus of the replacement program is on "high pressure" DuPont Aldyl A® polyethylene piping that was manufactured before 1985 that is installed in a rock backfill. DuPont Aldyl A® operating at other pressures and manufactured at a later time may also be included in the required replaced mileage under circumstances specified in the Case.

rock impingement on this plastic pipe that caused the pipe to fail.[36] This was not PVC pipe, but a different plastic material.

- Following an August 29, 1991, incident in Madison, Missouri, that involved the failure of a PVC service line, the Commission ordered replacement of sections of PVC pipe that had been bent during installation to accomplish a change in direction.[37] Staff's investigation in this case determined that the cause had been a combination of the installation method (stresses resulting from bending of the PVC pipe during installation) and ground movement. The Commission did not order the replacement of all PVC pipe as a result of this incident, only PVC that had been bent to achieve a change of direction.

6. Liberty intends to replace the PVC in the absence of a Commission order.

Information provided by Liberty in response to a Staff data request indicates that Liberty intends to replace the PVC pipe[38] whether or not the Commission orders it to do so; however the replacement under ISRS would be more efficient and cost effective and performed annually as opposed to every 3rd or 4th year:

> Liberty Utilities will always address any safety related conditions with respect to all facilities, including PVC Pipe, therefore the primary detriment from not approving the proposed replacement program would be financial in that certain efficiencies would lost. Liberty Utilities believes it is more efficient and cost effective to replace PVC pipe annually, using the ISRS, based on a competitive bidding process, with a multi-year replacement process, instead of a larger PVC pipe replacement every 3rd to 4th year.

Liberty's anticipated schedule for completion of replacements in the absence of a Commission Order is 28 years.[39]

Since the pipe will be replaced in the absence of a Commission order, no order is needed to address the safety concerns identified by Liberty in its application.

---

[36] Case No. GS-2004-0040.

[37] Case Nos. GS-92-33 and GC-92-166.

[38] Response to Staff Data Request No. 0006.

[39] Response to Staff Data Request No. 0008.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Liberty Utilities Verified Application For Approval of PVC Pipe Replacement Program and Recovery of Associated Costs Through ISRS Mechanism	))))	Case No. GO-2019-0091

AFFIDAVIT OF KATHLEEN A. McNELIS, PE

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW KATHLEEN A. McNELIS, PE and on her oath declares that she is of sound mind and lawful age; that she contributed to the foregoing Staff Recommendation in Memorandum form; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.

KATHLEEN A. McNELIS, PE

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 9th day of January 2019.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: December 12, 2020
Commission Number: 12412070

Notary Public

Public Utility

Depreciation Practices

August 1996

Compiled and Edited by

Staff Subcommittee on Depreciation of

The Finance and Technology Committee

of the

National Association of Regulatory Utility Commissioners

Published by

National Association of Regulatory Utility Commissioners
1101 Vermont Avenue, N.W., Suite 200
Washington, DC 20005
Telephone (202) 898-2200
Facsimile (202) 898-2213

CHAPTER II

CURRENT CONCEPTS OF DEPRECIATION

The preceding chapter outlined a number of different historical utility depreciation methods and concepts. This chapter presents two current depreciation concepts—value and cost allocation—and discusses several associated issues and considerations.

In everyday speech, depreciation generally means a decrease in the value or worth of an asset. The goal of depreciation is to allocate or assign a dollar amount to the reduction in worth or value occurring in each accounting period. This reduction starts when the asset is placed in service and usually continues throughout its life. The value of an asset is considered as being used up or consumed in the production of service. Consequently, a charge is made to the cost of production, over the asset's life, by some equitable method of allocation. Thus, depreciation accounting is fundamentally a process of allocating in a systematic and rational manner the value of a depreciable asset over its life.

Value Concept

The value concept assumes that all depreciable plant, due to forces such as obsolescence, wear and tear, and inadequacy, tends to diminish in value or worth with the passage of time. This value reduction may be dramatic—as when one purchases a new automobile. The new owner needs to do little more than drive it off the dealer's lot in order to put it in the classification of a "used car" with a value often substantially less than the purchase price. On the other hand, the reduction in value may occur much more slowly. For example, heavy duty manufacturing machinery will continue to perform the same operations in the same efficient manner for many years. Depreciation, in this sense, may not be consistent. If manufacturing machinery were producing a product that was in heavy demand for many years and suddenly lost its market, the machinery would rapidly lose value.

All other things being equal, on the day before this sharp demand decrease, the machinery would be nearly as valuable in the production of goods as the day it was first installed (assuming it had been kept in good repair). However, the day after the market disappeared the machine would be practically worthless or valueless.

Similarly, the installation of a new technology offering new or different services may cause existing plant to have little or no customer value. For example, a computerized supervisory control and data acquisition system (SCADA) may make the existing use of chart and pen recorders and the manual operation of gas city gate station valves unnecessary and uneconomical.

This situation suggests that depreciation can be determined through a series of periodic appraisals or estimates of plant value. The decrease in value between such estimates is regarded as a measure of the depreciation attributable to the period between estimates. The estimates could be based on the reproduction cost, market value, or earnings value of the property. Estimates may recognize the changing purchasing power of the dollar or they may be confined

strictly to original cost terms. In all cases, some measure of depreciation occurring between estimates can be determined. The customary method is for a competent appraiser to study the effect of factors such as obsolescence, inadequacy, and public requirements, as well as to conduct a physical inspection of the property, or a scientific sample of it, to determine its loss in value since it was first constructed. Regardless of the method employed, in order to achieve consistency, the successive estimates must be made in the same way.

It would, however, be a staggering undertaking to attempt such estimates on an annual basis for complex and extensive utility plant. Therefore, the practice of conducting annual estimates has found little application in the utility industry. It is particularly cumbersome and inadequate because utilities need to record depreciation on a monthly basis for earnings and expense reports. A further complication, of course, is that major technological improvements tend to make questionable any year-to-year measure of depreciation that is determined by this process.

Cost Allocation Concept

This concept recognizes the original cost of the asset as a prepaid expense. As such, it must be allocated to specific accounting periods and realized on income statements during the time the asset is providing service. The unallocated amount, often called net plant or net book (gross plant less accumulated depreciation), is recorded on the asset side of the balance sheet. The cost allocation concept satisfies the accounting principle of matching expense and revenues.

On the income statement, the inflow of resources is revenue. The outflow is expense. Using up the productive capacity of assets in an accounting period is recorded in accounting records as depreciation expense.

As used above, "cost" is based on the cost valuation principle of accounting, with cost being a surrogate for value. The amount of money used to purchase the asset is the basis for the entry in accounting records. This amount is regarded as being definite and immediately determinable. The accounting objectives of verifiability and neutrality are also satisfied.

Equally important to the proper estimation of current net income is the recovery of the investment over its useful life. Depreciation accounting cannot, automatically and of itself, result in the recovery of investment in property. However, if revenues are adequate to cover depreciation expense in addition to other current expense, the investment will be recovered. On the other hand, if revenues are not sufficient to cover the depreciation expense, the investment will not be fully recovered. Recognition of depreciation merely records the fact that costs are being incurred.

Definitions

Before proceeding into an investigation of some of the associated procedures and problems, let us examine some important definitions of depreciation.

According to the Supreme Court of the United States:

> Broadly speaking, depreciation is the loss; not restored by current maintenance, which is due to all the factors causing the ultimate retirement of the property. These factors embrace wear and tear, decay, inadequacy and obsolescence. Annual depreciation is the loss which takes place in a year.[1]

The Interstate Commerce Commission defines depreciation as:

> Depreciation is the loss in service value not restored by current maintenance and incurred in connection with the consumption or prospective retirement of property in the course of service from causes against which the carrier is not protected by insurance, which are known to be in current operation, and whose effect can be forecast with a reasonable approach to accuracy.[2]

The National Association of Railroad and Utilities Commissioners in 1958 sanctioned the following definition:

> 'Depreciation,' as applied to depreciable utility plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of utility plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand, and requirements of public authorities.[3]

The Federal Communications Commission uses a definition in Part 32 of its rules that is almost identical to NARUC's, except that it applies to "telephone plant" instead of "utility plant," and it requires that the causes of depreciation "can be forecast with a reasonable approach to accuracy."

The definitions used by the Federal Energy Regulatory Commission for electric (Part 101 of the Code of Federal Regulations) and gas (Part 201 of the Code of Federal Regulations) companies are essentially the same as that used by NARUC. The only difference is that the definition for gas companies recognizes the exhaustion of natural resources as a cause of depreciation for natural gas companies.

Sec. 167 of the Internal Revenue Code states:

---

[1] *Lindheimer v. Illinois Bell Telephone Company,* 292 U.S. 151, 167 (1934).

[2] 177 ICC 351, 422 (1931), 14700 Depreciation Charges of Telephone Companies, 15100 Depreciation Charges of Steam Railroad Companies.

[3] *Uniform System of Accounts for Class A and Class B Electric Utilities,* 1958, rev., 1962.

> There shall be allowed as a depreciation deduction a reasonable allowance for the exhaustion, wear and tear (including a reasonable allowance for obsolescence)—(1) of property used in the trade or business, or (2) the property held for the production of income.

Some of the definitions refer to depreciation as a loss in service value. "Service value" is used in a special sense, meaning the cost of plant less net salvage (net salvage is gross salvage less the cost of removal). The Uniform System of Accounts for electric utilities recommended by NARUC defines "service value" as follows:

> The difference between the original cost and the net salvage value of the utility plant.

"Loss in service value," therefore, must be understood and construed in light of its specially defined meaning.

The American Institute of Certified Public Accountants in Accounting Research and Terminology Bulletin #1 defines depreciation accounting as follows:

> Depreciation accounting is a system of accounting which aims to distribute cost or other basic value of tangible capital assets, less salvage (if any), over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. It is a process of allocation, not of valuation. Depreciation for the year is the portion of the total charge under such a system that is allocated to the year. Although the allocation may properly take into account occurrences during the year, it is not intended to be a measurement of the effect of all such occurrences.

This definition of depreciation accounting brings the "allocation of cost" concept into much clearer focus. It de-emphasizes the concept of depreciation expense as a "loss in service value" or an "allowance" and emphasizes the concept of depreciation expense as the cost of an asset which is allocable to a particular accounting period. This definition also clearly illustrates that the goal is recognizing cost, not providing funds for replacement of the asset.

Factors Which Affect the Retirement of Property

The sole reason for concern about depreciation is that all plant devoted to the pursuit of a business enterprise will ultimately reach the end of its useful life. Several factors cause property to be retired. They include:

1. Physical Factors
   a. Wear and tear
   b. Decay or deterioration
   c. Action of the elements and accidents

2. Functional Factors
   a. Inadequacy
   b. Obsolescence
   c. Changes in the art and technology
   d. Changes in demand
   e. Requirements of public authorities
   f. Management discretion

3. Contingent Factors
   a. Casualties or disasters
   b. Extraordinary obsolescence

Physical factors are the most readily observed causes of retirement. However, functional factors sometimes are the more frequent causes.

Inadequacy is a lack of capacity to supply what is required or demanded. For example, a telephone company's central office switch may not have sufficient capacity to process the traffic generated, or it may be unable to provide certain information services desired by customers. Thus, it may be more prudent to replace the entire switch in lieu of making additions.

Obsolescence may bring about retirements by rendering plant uneconomical, inefficient, or otherwise unfit for service because of improvements in technology or because of changes in function. Equipment manufacturers may contribute to obsolescence by discontinuing production of replacement parts or de-emphasizing maintenance, software, or other kinds of support for older equipment.

Technological advances have increased the frequency in which obsolescence causes the retirement of utility plant. Computers, the electronic chip, remote controlled operation and supervision of power distribution stations and natural gas regulating equipment, remote meter reading, fiber optic cable, as well as interest in nonutility power production and demand-side management are technological developments that have impacted utility operations.

Changes in demand reflect changing customer preferences requiring the replacement of plant which no longer permits the utility to fulfill its obligation to provide service. An example is the replacement of electric kilowatt hour meters with meters that also record usage by time of day.

Public authorities may require utility plant to be relocated because of its interference with public uses, such as highway relocations. They also may require utility plant to be replaced or refurbished because its design fails to meet current service, environmental, or safety standards. An example is the imminent expiration of operating licenses for hydraulic production plants. This has often resulted in an extensive review of the safety, environmental, recreational, as well as power generation aspects of these projects. Substantial requirements for additional maintenance and capital expenditures may be required to satisfy the concerns of regulatory agencies and their constituencies.

Although not included in the previous definitions, management discretion clearly is also a factor in the retirement of plant. This can occur when management decides to:

1. Retire production plant, rather than extend its life;

2. Sell and lease back plant to affect cash flow;

3. Replace aging plant with new plant to enhance the corporate image;

4. Contract out functions which were formerly done by utility personnel and equipment in an effort to reduce costs;

5. Place surplus plant in storage in anticipation of future growth in demand; and

6. Retain removed plant that would normally be scrapped in anticipation of repairing it for reuse.

The advent of competition in markets that were historically monopolistic adds a new dimension to property retirements, particularly for incumbent public utilities. Competition may influence some or all of the functional factors. For example, a competitor may deploy modern technology, which may render the incumbent's equipment inadequate or obsolete because it cannot duplicate the competitor's new services or match a lower price enabled by the new, low-cost technology. Competition provides incentives to look for new technologies to provide enhanced or less costly services. Competition can also affect the demand for services if the competitor succeeds in obtaining a significant share of existing markets or creates new markets. And finally, because of competition, public authorities may require companies to do things that otherwise would not be done. For example, the FCC required local telephone companies to offer equal access interconnection to all long distance companies so that the companies could compete on equal terms.

Contingent causes are associated with such things as casualties and extraordinary obsolescence. Remote contingencies are not properly considered in establishing depreciation rates. For example, it would not be proper to include, as a cost of operation, a charge for depreciation because an earthquake might destroy property in a location where such a phenomenon is a rare occurrence. On the other hand, property retirements from ordinary storm damages, recurring more or less continually, are properly considered in estimating service lives.

Usually, any given retirement is a result of the inseparable action of a number of underlying causes. Public authorities, for example, may require that a fish ladder be installed at an existing dam, making retirement of some plant necessary. Physical deterioration of certain parts may take place such that high maintenance charges justify replacement of the whole with a more modern and more durable material or design. Reduction of the carrying capacity of water mains resulting from interior deposit buildup may cause them to become inadequate for the required loads. Shifting load centers may result in under-utilization of the facilities. This, in turn, may result in economic justification for substituting smaller, more efficient, or more economical facilities. The possibility of price increases, labor shortages, or functional changes may cause prudent management to replace large blocks of plant before physical deterioration or other factors materialize. What appears to be the cause may be only the final straw.

Methods of Allocating Depreciation Expense to the Accounting Period

Having developed the "allocation of cost" concept as being the most appropriate for day-to-day utility operation; having compared this concept to standard definitions of depreciation and found it to be compatible with them; and having discussed many of the factors that cause plant retirements, we can now consider the determination of the actual amount of depreciation expense to be recorded for a utility.

There are many ways, of course, to allocate the cost of property to the various accounting periods. One method is to charge to expense the total cost at the time of installation. This is known as "expense" accounting, which is used in lieu of depreciation, and is generally applicable to inexpensive and short-lived items. At the other extreme is "retirement" accounting which charges the cost of the property to expense in a lump sum at the time of its retirement from service.

The expense and retirement accounting methods fail to achieve the goal of distributing costs to the accounting periods during the property's life. Therefore, they would not properly match revenues and costs, and the accounting representation of net income would be distorted. Furthermore, the appropriate customer would not pay a fair share of the cost, assuming depreciation expense is included in the cost of service. Generally accepted accounting principles require expenses, such as depreciation, to be allocated by systematic and rational procedures to the periods during which the related assets are expected to provide benefits.[4] The simplest and most logical way to accomplish this is to use a method that distributes the cost of property in a reasonable and consistent manner to all the accounting periods in which the property is providing utility service.

Several methods for distributing these costs are explained in detail in other chapters. Generally these methods may be grouped as follows:

1. The deferred method assigns more depreciation expense to the later years of the life of the plant by applying compound interest formulas. Among the several variations of this approach are the "annuity," "sinking fund," and "compound interest" procedures.

2. The accelerated method assigns more depreciation expense to the earlier years of the plant's life. These methods have been allowed by the Internal Revenue Code for income tax purposes. "Sum-of-the-years-digits" and "declining balance" are two methods in this category. (see Chapter V).

3. The straight line method distributes the cost of property in equal annual amounts, as nearly as is practicable, over its life. This includes the "average service life" and "remaining life" procedures.

---

[4] *Statement of Financial Accounting Concepts No. 5,* Financial Accounting Standards Board, December 1984.

Costs may also be distributed over production rather than over service life. This method, the unit of production method, distributes the costs as units are produced using a rate per unit developed from the total estimated units to be produced. It is similar to the straight-line method but is a function of production rather than a function of time.

Salvage Considerations

Under presently accepted concepts, the amount of depreciation to be accrued over the life of an asset is its original cost less net salvage. Net salvage is the difference between the gross salvage that will be realized when the asset is disposed of and the cost of retiring it. Positive net salvage occurs when gross salvage exceeds cost of retirement, and negative net salvage occurs when cost of retirement exceeds gross salvage. Net salvage is expressed as a percentage of plant retired by dividing the dollars of net salvage by the dollars of original cost of plant retired. The goal of accounting for net salvage is to allocate the net cost of an asset to accounting periods, making due allowance for the net salvage, positive or negative, that will be obtained when the asset is retired. This concept carries with it the premise that property ownership includes the responsibility for the property's ultimate abandonment or removal. Hence, if current users benefit from its use, they should pay their pro rata share of the costs involved in the abandonment or removal of the property and also receive their pro rata share of the benefits of the proceeds realized.

This treatment of net salvage is in harmony with generally accepted accounting principles and tends to remove from the income statement any fluctuations caused by erratic, although necessary, abandonment and removal operations. It also has the advantage that current consumers pay or receive a fair share of costs associated with the property devoted to their service, even though the costs may be estimated.

The practical difficulties of estimating, reporting, and accounting for salvage and cost of retirement have raised questions as to whether more satisfactory results might be obtained if net salvage were credited or charged, as appropriate, to current operations at the time of retirement instead of being provided for over the life of the asset. The advocates of such a procedure contend that salvage is not only more difficult to estimate than service life but, for capital intensive public utilities, it is typically a minor factor in the entire depreciation picture. The obvious exception, of course, is the huge retirement cost of decommissioning nuclear power plants. The advocates of recording salvage at the time of retirement further contend that salvage could properly be accounted for on the basis of known happenings at the date of retirement rather than on speculative estimates of factors, such as junk material prices, future labor costs, and environmental remediation costs in effect at the time of retirement.

One of the practical difficulties of estimating net salvage is that reported salvage is a mixture of salvage on items retired and reused internally, salvage on items sold externally as functional equipment, and salvage on items junked and sold as scrap. Because the likelihood of reuse is greater for items that are retired at early ages, the historical salvage is usually higher than the future salvage to be realized when the account begins to decline and there is little opportunity for reuse. Therefore, under these circumstances, book salvage may overstate the average salvage realized over the entire life of the account. This has led to the proposal to

Depreciation Systems

FRANK K. WOLF

W. CHESTER FITCH

amount of plant in service are inputs to the system, and the accumulated provision for depreciation is a measure of the state of the system at any time. The process of calculating the accumulated provision for depreciation is determined by the factors needed to define the system. The initial input to the system is estimates of the life and salvage, which are combined in an accrual rate. Dynamic forces affect the life and salvage, and revision of the original life and salvage estimates are the result of the monitoring process. These revisions to the initial input initiate feedback in the form of adjustments to the accumulated provision for depreciation. The goal of the system is recovery of capital in a timely manner.

One consideration that complicates this discussion is that many options can be combined to form many different depreciation systems. Whether the depreciation is for book, tax, valuation, or other purposes, each of these factors must be considered when discussing and defining a depreciation system.

DEFINING A DEPRECIATION SYSTEM

Below is a list of the factors needed to define a depreciation system. Each factor contains two or three options, and the complete definition of a system requires the selection of one option from each factor. The order of the list is arbitrary, but the last four factors are those whose options are varied when discussing depreciation systems commonly used to calculate book depreciation.

1. The depreciation concept, including (a) physical condition, (b) decrease in value, or (c) cost of operation
2. Depreciation over (a) time or (b) units of production
3. Depreciation of (a) a unit of property or (b) a group of property
4. Methods of allocation, including (a) the straight line method, (b) an accelerated method, or (c) a decelerated method
5. Procedures for applying the method of allocation including (a) the average life procedure, (b) the equal life group procedure, or (c) the probable life procedure
6. Adjustment using (a) the amortization method or (b) the remaining life method
7. Use of (a) the broad group model or (b) the vintage group model

The mathematically astute reader who multiplies the number of options in each factor will find that there are 432 combinations of options, each of which is a potential depreciation system. However, not all of these combinations are feasible, and some are unimportant. Only a few of these combinations are of major interest when considering systems of book depreciation currently being used.

Concepts of Depreciation

Three options are available when defining the concept of depreciation. These include (a) physical condition, (b) decrease in value, or (c) cost of operation. Though all have been used by utilities to determine book value, the cost of operation is, with few exceptions, the concept in current use.

Physical condition is, perhaps, the first option a lay person would think of if asked to define depreciation. An early reference to the relationship between depreciation and physical condition is from the 1588 textbook by John Mellis who referred to a debit to the profit and loss account because "implements of householde I doe find at this day to be consumed and worn." A later reference is in the 1833 annual report of the Baltimore and Ohio Railroad, which reported that an annuity was established "to provide for the replacement of oak sills and sleepers and yellow pine stringpieces."

Two problems arise when using the concept of physical condition as a measure of depreciation. First, wear and tear do not account for all retirements; in fact, they are often a minor reason for the retirement of property. Second, physical condition can be difficult to measure. Though it is possible to measure directly the wear of railroad track and the corrosion of cast iron pipe, easily measurable wear is not characteristic of most industrial property.

The concept of loss of value is also a common depreciation concept, and the lay person often uses it to explain the difference between the purchase price and the current market value of an automobile or major household appliance. The definition from the Supreme Court case *Lindheimer v. Illinois Bell Telephone* (1934) is often quoted: "Broadly speaking, depreciation is the loss, not restored by current maintenance, which is due to all the factors causing the ultimate retirement of the property. These factors embrace wear and tear, decay, inadequacy, and obsolescence."

In contrast to the concept of physical depreciation, the Lindheimer definition recognizes that factors other than wear and tear cause or contribute to the retirement of property. The definition refers to the "loss" but does not clearly state what is "lost" or how the "loss" should be measured. A 1935 definition by the Federal Communications Commission was similar to the Lindheimer definition but referred to "loss in service value," where service value is equated to the original cost less salvage.

Use of the concept of loss of value to determine annual depreciation charges might imply the need for an annual valuation of the property owned by the organization, particularly if the rate of loss in value was not

uniform or readily defined. The process of determining a value is complex, depending on the purpose of the valuation and type of property. Thus, an annual valuation of a utility could be such an expensive and time-consuming process that it would not be a practical approach to use in determining annual depreciation.

Many types of property provide a constant level of service until they are retired. The intrinsic physical value of this type of property is only that it functions. A gas meter is a common example of a type of property that may provide a constant level of service throughout its life. If value is measured by the level of service provided, the meter would retain full value until retirement because its value to the utility would depend on its function rather than its age. This concept ignores the consumption of future service and would result in an annual depreciation charge that would be zero until the final year of service. Then the charge would equal the full value and would result in deferring all depreciation charges until the final year of service. A concept that better matches depreciation to service rendered and weighs it in relation to the total service potential might be preferable for purposes of both book and valuation depreciation. That is, a quantitative measure of value, such as service-years, is generally preferable to a functional measure.

The third concept is that depreciation represents an allocated cost of capital to operation. This concept recognizes that depreciation is a cost of providing service and that an organization should recover the capital invested in equipment and other property needed to provide the required service. In fact, the term *capital recovery* is often used in connection with depreciation. An early reference to depreciation is by the Roman Marcus Vitrurius Pollio, who in 27 B.C. wrote of "walls which are built of soft and smooth-looking stone, that will not last long." He calculated that the walls would not last more than eighty years and suggested that, for purposes of valuation, one-eightieth part of their original cost be deducted each year. Pollio not only raised several issues concerning depreciation but seemed to be equating depreciation to a cost of operation.

The definition of *depreciation accounting* by the American Institute of Certified Public Accountants (1961, par. 56) reflects the concept of depreciation as a cost: "Depreciation accounting is a system of accounting that aims to distribute cost or other basic value of tangible capital assets, less salvage (if any), over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. It is a process of allocation, not of valuation." This definition does not use the term *loss of service value* because it is defining depreciation accounting rather than depreciation itself. The definition emphasizes that the purpose of depreciation accounting is a means of distributing cost in a rational manner during the service life, in turn providing for the systematic recovery of capital. By use of the term *useful life,* the definition encompasses all causes of retirement. By referring to the distribution of cost less salvage, this definition recognizes that salvage should be considered when developing depreciation charges.

Historically, all three concepts of depreciation have been used by utilities to determine the book value of industrial property. Of these, the concept of depreciation as the allocation of cost has proven to be the most useful and most widely used concept.

Time versus Unit of Production

Useful life can be measured in units of time or units of production (also called units of service). Measurement of life in years is a common and familiar concept. Measurement of life in units of production can be applied to some types of property such as a truck, whose life can be measured in miles (e.g., a useful life of 100,000 miles). A feeder pipeline connecting an oil field to a transmission line will be in service until the field is no longer productive. If the only function of the feeder line is to transport oil from the field to the transmission line, the life of the feeder line is determined by the reserves of the oil field that must eventually pass through the pipeline. Annual depreciation could be measured in units of production, such as barrels of oil. A railroad might depreciate rail as a function of the accumulated weight that the rail has carried.

Suppose a truck is to be depreciated over its life as measured in miles. First, the life must be estimated, say 100,000 miles. Second, the number of miles the truck will be driven during the next year, say 27,000 miles, must be forecast to have sufficient information to budget the annual depreciation charge. Third, at the end of the year when the budgeted annual depreciation becomes an accounting entry, the amount would be calculated to reflect the actual miles driven.

The most common measure of life is in units of time rather than units of production. Most types of property (e.g., poles, buildings, wire) do not have a measure of production associated with them. If the life can be measured in some unit of production and the rate of production is constant from year to year, measurement of life in either units of time or production will result in the same annual accruals. The unit of production has strong appeal in situations where use varies significantly over time and the life can be measured in units of production. But these two conditions are not often met, and usually life is measured over time.

Depreciation of an Individual Unit versus a Group

Accounting records of transactions relating to depreciable property can be kept on either a unit or a group basis. An individual unit of property has a single life, while the units in a group of property display a range, or

INTRODUCTION TO DEPRECIATION

For Public Utilities and Other Industries

Edison Electric Institute

Power by Association

American Gas Association

that the portion of the stub curve starting at about age 30 years, extending to 44 years, which stays above the empirical curve in the chart, may drop to match it as time goes on. In many cases, the amount of information contained in the lowest portion of the curve will contain very little information on which to base a decision. At times, only one or two retirement transactions will drive the shape of the "tail" of the curve.

Based on these considerations, the historical average service life for the property reflected by the specific graph in Chart 6-1 is 23 years, the same as that for the smooth empirical curve. In addition, the shape of the curve (called the "retirement dispersion curve") also yields important information, which will be discussed later.

The service life of a unit of property is the number of years elapsing from the time a unit of property is placed in service until it is removed or abandoned. Average service life for an account, then, is the average of the lives of all such units within a plant account.

The process of life estimation is complicated by the fact that average service life is just that, an average. It is the average service life of a group of units that may number anywhere from a hundred or so in one group to several million units in another group. Similar equipment in such groups does not always last the same length of time. One unit may fail in service after only six months of use, while another apparently identical unit may last for fifty years. As a practical matter, the equipment grouped in a plant account cannot possibly consist of identical units. Thus, it follows that the various units will be retired at dissimilar ages. This phenomenon of the various units within a group of similar, but not identical, units being retired at different ages is modeled with the "retirement dispersion." Further discussion of retirement dispersion will appear later.

Estimates of Future Life Characteristics

Before examining the statistical tools used to support estimates of lives and retirement dispersion patterns for a group of property, it is important to emphasize that such analysis is based on history, whereas life estimates for depreciation purposes are estimates of the future. As a result, the statistical analysis of historical data is useful as a tool only to the degree that the past will be representative of the future. In any depreciation study, the intended result is an estimate of *future* life characteristics for a group of property. Thus, it is critical that those conducting depreciation studies incorporate the appropriate judgment and information from subject matter experts in order to assess whether the results of analyses of historical data will be representative of the future.

As an example, a depreciation study that uses the methods described in this chapter may determine that the historical life analysis for electric FERC Account 370, Meters indicates that a 30-year average service life and a dispersion pattern as described by the R2 survivor curve is the best representation of the historical data. If meters are expected to experience similar life characteristics in the future as in the past, then this 30-R2 survivor curve may be a good life estimate for the account.

However, if the historical data will not be representative of future experience for meters, then the 30-R2 survivor curve estimate is no longer valid as an estimate of property currently in service. Instead, it may be determined throughout the course of conducting the depreciation study that the historical analysis consists of the statistical history of lives and retirement experience of electromechanical meters, which were robust units of property that had relatively long lives. The current population of meters in service today may instead be primarily solid state electric meters, which are subject to much higher failure rates, and are also perhaps subject to obsolescence as newer technologies emerge. These types of meters are not expected to remain in service as long as the earlier technology electromechanical meters. As a result, the life characteristics

Attachment 4
Laclede Gas Company - GR-2013-0171
Depreciation Rates

Account Number	Account Description	Depreciation Rate	Service Life	Net Salvage
	Manufactured Gas Plant - LPG			
305	Structures and improvements	1.67%	60	0%
307	Other power equipment	3.50%	30	-5%
311	Equipment	3.71%	35	-30%
311.1	Storage caverns	1.11%	90	0%
	Underground Storage Plant			
351.2	Compressor station structures	3.33%	45	-50%
351.4	Other structures	2.18%	55	-20%
352	Wells - underground storage	1.22%	90	-10%
352.2	Reservoirs	1.22%	90	-10%
352.3	Non-recoverable gas	1.11%	90	0%
352.4	Wells - oil and vent gas	1.22%	90	-10%
353	Lines	1.17%	90	-5%
354	Compressor station equipment	1.22%	90	-10%
355	Measuring and regulating equipment	1.79%	56	0%
356	Purification equipment	2.38%	42	0%
357	Other equipment	4.55%	20	0%
	Transmission Plant			
367.7	Mains - Monat	1.44%	80	15%
371.7	Other equipment - Monat	2.33%	45	-5%
	Distribution Plant			
375.1	Structures and improvements	3.00%	45	-35%
375.2	Service centers	3.00%	45	-35%
375.3	Garage	3.00%	45	-35%
375.4	Other small structures	3.00%	45	-35%
376.1	Mains - steel	1.44%	80	-15%
376.2	Mains - cast iron	3.31%	80	-165%
376.3	Mains - plastic and copper	1.57%	70	-10%
378.1	Measuring and regulating station equip. (general)	3.71%	35	-30%
379.1	Measuring and regulating station equip. (CGCS)	3.71%	35	-30%
380.1	Services - steel	5.23%	44	-130%
380.2	Services - plastic and copper	3.75%	44	-65%
381.1	Meters	2.37%	38	10%
383.1	House regulators	2.00%	50	0%
385.1	Industrial meas. and regulating equipment	3.25%	40	-30%
386.1	Other property on customers' premises	7.14%	14	0%
387.1	Other equipment	2.78%	36	0%
	General Plant			
390.1	Structures and improvements	3.00%	35	-5%
391.0	Office furniture and equipment	3.33%	30	0%
391.1	Data processing systems	20.00%	5	0%
391.2	Mechanical office equipment	10.00%	10	0%
391.3*	Data processing software	20.00%	5	0%
391.4	Data processing equipment	10.00%	10	0%
391.5	Enterprise Information Management System	7.00%	15	-5%
392.1	Transportation Equipment - automobiles	14.17%	6	15%
392.2	Transportation Equipment - trucks	8.18%	11	10%
392.7	Transportation Equipment - automobiles - Monat	14.17%	6	15%
392.71	Transportation Equipment - trucks - Monat	8.18%	11	10%
393.1	Stores equipment	2.22%	45	0%
394.1	Tools, shop and garage equipment	2.63%	38	0%
395.1	Laboratory equipment	3.57%	28	0%
396.1	Power operated equipment	6.92%	13	10%
397.1	Communication equipment	5.00%	20	0%
398.1	Miscellaneous equipment	3.45%	29	0%

* Account 391.3 will be amortized rather than depreciated.

Missouri Gas Energy
Depreciation Rates

Account Number	Description	Depreciation Rate	ASL (Years)	Net Salvage (%)	Life Only Rate	Net Salvage Rate
	Distribution					
374.2	Land Rights	2.08%	48.0	0.00%	2.08%	0.00%
375.0	Structures and Improvements	2.13%	47.0	0.00%	2.13%	0.00%
376.0	Mains	1.78%	50.0	11.00%	2.00%	0.22%
378.0	Measuring and Regulating Eq.	2.86%	35.0	0.00%	2.86%	0.00%
379.0	Measuring and Regulating Eq.-City Gate	2.63%	38.0	0.00%	2.63%	0.00%
380.0	Services	2.68%	40.0	-7.20%	2.50%	-0.18%
381.0	Meters	2.86%	35.0	0.00%	2.86%	0.00%
382.0	Meter Installation	2.86%	35.0	0.00%	2.86%	0.00%
383.0	House Regulators	2.44%	41.0	0.00%	2.44%	0.00%
385.0	Measuring and Regulating Eq.-Industrial	3.33%	30.0	0.00%	3.33%	0.00%
	General (Including Corporate)					
390.1	Structures and Improvements	2.13%	47.0	0.00%	2.13%	0.00%
391.0	Office Furniture and Eq.	9.09%	11.0	0.00%	9.09%	0.00%
391.5	Enterprise Information Management System	7.00%	15.0	-5.00%	6.67%	-0.33%
392.1	Transportation Eq. [Cars & Small Trucks]	13.28%	6.0	20.30%	16.67%	3.38%
392.2	Transportation Eq. [Large Trucks]	8.06%	10.0	19.40%	10.00%	1.94%
393.0	Stores Eq.	3.57%	28.0	0.00%	3.57%	0.00%
394.0	Tool, Shop, and Garage Eq.	5.26%	19.0	0.00%	5.26%	0.00%
396.0	Power Operated Eq.	10.00%	10.0	0.00%	10.00%	0.00%
397.1	Electronic Reading - ERT	5.26%	19.0	0.00%	5.26%	0.00%
397.2	Communication Eq.	6.25%	16.0	0.00%	6.25%	0.00%
398.0	Miscellaneous Eq.	4.35%	23.0	0.00%	4.35%	0.00%

August 19, 2019

VIA ELECTRONIC MAIL
opcservice@ded.mo.gov

Ms. Lera Shemwell and Mr. John Clizer
Office of the Public Counsel
200 Madison Street
Jefferson City, MO 65101

Re: GO-2019-0356 and GO-2019-0357; Objection to DRs 8503, 8504, 8507, 8508

Dear Lera and John:

Spire Missouri Inc. ("Spire") received DRs 8501-8517 from the Office of Public Counsel ("OPC") on August 9, 2019 for both Spire East and Spire West. Spire objects to the four DRs referenced above for the reasons set forth below.

DR8503

Please provide the pipe tolerances for inner diameter and outer diameter for each main type and size that Spire currently has in use in each service territory.

Objection: Spire objects to this data request as being overly broad and unduly burdensome and not reasonably calculated to lead to the discovery of admissible information relevant to the issues in this proceeding. Spire does not generally track and maintain the information sought in this data request because it does not have a business reason for doing so. Spire also does not believe that the resulting information would be relevant to the issues in this proceeding because it does not in any way bear on the eligibility of the facilities costs included in the ISRS filings. Notwithstanding such objection, as part of Spire's current processes and procedures, Spire utilizes pipes with inner diameters and outer diameters that comply with any applicable industry or regulatory standards for their intended use. Please see Attachment OPC DR8503 for a summary of pipe sizes purchased since 2012.

DR 8504

Please provide the pipe tolerances for inner diameter and outer diameter for each service type and size that Spire currently has in use in each service territory.

Objection: Spire objects to this data request as being overly broad and unduly burdensome and not reasonably calculated to lead to the discovery of admissible information relevant to the issues in this proceeding. Spire does not generally track and maintain the information sought in this data request because it does not have a business

reason for doing so. Spire also does not believe that the resulting information would be relevant to the issues in this proceeding because it does not in any way bear on the eligibility of the facilities costs included in the ISRS filings. Notwithstanding such objection, as part of Spire's current processes and procedures, Spire utilizes pipes with inner diameters and outer diameters that comply with any applicable industry or regulatory standards for their intended use. Please see Attachment OPC DR8503 for a summary of pipe sizes purchased since 2012.

DR 8507
Please list by size and type of main in use in each service territory the average corrosion rate of mains that Spire experiences annually.

a. Please provide all documentation related to the same.

Objection: This question is vague, in that it is unknown what is meant by "average corrosion rate" or what information the question is asking Spire to provide. Until and unless the intended meaning of this term is clarified, it is not possible for Spire to provide a response.

DR 8508
Please list by size and type of service in use in each service territory the average corrosion rate of services that Spire experiences annually.

a. Please provide all documentation related to the same.

Objection: This question is vague, in that it is unknown what is meant by "average corrosion rate" or what information the question is asking Spire to provide Until and unless the intended meaning of this term is clarified, it is not possible for Spire to provide a response.

Please do not hesitate to contact me if you would like to discuss any other these objections.

Sincerely,

/s/Goldie T. Bockstruck
Goldie T. Bockstruck MoBar#58759
Director, Associate General Counsel
Spire Missouri Inc.
700 Market Street, 6th Floor
St. Louis, MO 63101
314-342-0533 Office
314-421-1979 Fax
Goldie.Bockstruck@spireenergy.com

/s/Michael C. Pendergast
Michael C. Pendergast
Of Counsel
Fischer & Dority, P.C.
423 South Main Street (R)
Saint Charles, MO 63301
(314) 288-8723
Mcp2015law@icloud.com

cc: Wes Selinger
Scott Weitzel
David Abernathy

8501. Please provide by type and size the total number of miles of main currently in use in each service territory.
a. If Spire is incapable of determining any of these numbers, please provide the best possible approximations in its answer.
b. Please provide all documentation Spire relies on to support its answers.

Please see Attachment OPC DR8501a and OPC DR8501b.

8502. Please provide by type and size the total number of miles of services currently in use in each service territory.
a. If Spire is incapable of determining any of these numbers, please provide the best possible approximations in its answer.
b. Please provide all documentation Spire relies on to support its answer.

Please see Attachment OPC DR8501a and OPC DR8501b.

8503. Please provide the pipe tolerances for inner diameter and outer diameter for each main type and size that Spire currently has in use in each territory.

Please see objections dated August 19, 2019. Notwithstanding such objection, as part of Spire's current processes and procedures, Spire utilizes pipes with inner diameters and outer diameters that comply with any applicable industry or regulatory standards for their intended use. Please see Attachment OPC DR8503 for a summary of pipe sizes purchased since 2012.

8504. Please provide the pipe tolerances for inner and outer diameter for each service type and size that Spire currently has in use in each service territory.

Please see objections dated August 19, 2019. Notwithstanding such objection, as part of Spire's current processes and procedures, Spire utilizes pipes with inner diameters and outer diameters that comply with any applicable industry or regulatory standards for their intended use. Please see Attachment OPC DR8503 for a summary of pipe sizes purchased since 2012.

8505. For each main type and size that Spire currently has in use in each service territory, what is the average age of mains in the system?

a. If Spire is incapable of determining the average of any of the main types, please provide Spire's best possible approximations of the average age.
b. Please provide all documentation Spire relies on to support its answer.

The average service life of the mains in Spire's distribution system was thoroughly examined and determined by competent depreciation professionals in the depreciation studies submitted in Spire's last general rate cases, GO-2017-0215 and GO-2017-0216. No

party to those cases challenged these studies or raised issues questioning the validity of those studies. In addition, the footage and vintage of all mains and services retired with ISRS projects is provided to the Public Service Commission Staff and OPC in the supporting work papers in each of Spire's ISRS filings.

8506. For each service type and size that Spire currently has in use in each service territory, please provide the average age of services in the system.
a. If Spire is incapable of determining the average age of any of the services, provide Spire's best possible approximations of the average age.
b. Please provide all documentation Spire relies on to support its answer.

The average service life of the services in Spire's distribution system was thoroughly examined and determined by competent depreciation professionals in the depreciation studies submitted in Spire's last general rate cases, GO-2017-0215 and GO-2017-0216. No party to those cases challenged these studies or raised issues questioning the validity of those studies. In addition, the footage and vintage of all mains and services retired with ISRS projects is provided to the Public Service Commission Staff and OPC in the supporting work papers in each of Spire's ISRS filings.

8507. Please list by size and type of main in use in each service territory the average corrosion rate of mains that Spire experiences annually.

Corrosion rate is the speed at which any metal in a specific environment deteriorates. It also can be defined as the amount of corrosion loss per year in thickness. The speed or rate of deterioration depends on the environmental conditions and the type and condition of the metal under reference.

Mils per year or MPY is used to give the corrosion rate in a pipe, a pipe system or other metallic surfaces. It is used to calculate the material loss or weight loss of a metal surfaces.
Corrosion rates are usually expressed as a penetration rate in "inches per year" or "melts per year (MPY)" (where a melt = 10^-3 inches).

Average is a number expressing the central or typical value in a set of data, in particular the mode, median, or (most commonly) the mean, which is calculated by dividing the sum of the values in the set by their number.

a. Please provide all documentation related to the same.

Spire Missouri does not track the average corrosion rate of its mains and therefore such information is not available.

8508. Please list by size and type of service in use in each service territory the average corrosion rate of services that Spire experiences annually.

Corrosion rate is the speed at which any metal in a specific environment deteriorates. It also can be defined as the amount of corrosion loss per year in thickness. The speed or rate of

deterioration depends on the environmental conditions and the type and condition of the metal under reference.

Mils per year or MPY is used to give the corrosion rate in a pipe, a pipe system or other metallic surfaces. It is used to calculate the material loss or weight loss of a metal surfaces.
Corrosion rates are usually expressed as a penetration rate in "inches per year" or "melts per year (MPY)" (where a melt = 10^-3 inches).

Average is a number expressing the central or typical value in a set of data, in particular the mode, median, or (most commonly) the mean, which is calculated by dividing the sum of the values in the set by their number.

a. Please provide all documentation related to the same.

Spire Missouri does not track the average corrosion rate of its services and therefore such information is not available.

8509. Please provide the plant-in-service values and accumulated depreciation reserve values for main accounts and service accounts as of 12/31/2018 and 6/30/2019.

Please see Attachment OPC DR8509.

8510. What is Spire's evaluation of the current general condition of its distribution system both as a whole and by main type?

The current general condition of Spire's distribution system is reflected in a variety of reports that Spire or the Gas Safety Staff of the Missouri Commission prepare on an annual basis. These include, among others, the annual Gas Distribution Report that the Company submits to PHMSA and the annual report that the Gas Safety Staff prepares based on its annual safety audit of the Company's safety practices and distribution facilities. One metric of particular note is the reduction in the backlog of leaks waiting to be eliminated or repaired at year end on the gas distribution systems of operators in the state of Missouri. ***See*** **https://portal.phmsa.dot.gov/analyticsSOAP/saw.dll?Portalpages**
The Company believes that this reduction in leaks is largely attributable to the Company's systematic replacement program as well as the safety related investments made by other Missouri utilities as result of the ISRS mechanism. Such results demonstrate that the ISRS mechanism is working as intended to make gas distribution systems in Missouri safer. While significant progress has been made, however, it is critical from a public safety standpoint that the ISRS mechanism continue to be allowed to operate in accordance with this underlying statutory purpose so that additional progress can be made in the future.

8511. Is it Spire's position that PHMSA's Distribution Integrity Management Program (DIMP) requires Spire to replace all its cast iron mains?

The DIMP prepared by Spire in compliance with the Commission's gas safety rules is designed to identify and rank the various risks to public safety involving its distribution

system. The threats of Cast Iron Graphitization, Cast Iron Fractures, and Bell Joint Repairs are identified as high risk in the Company's DIMP Plan and the Company's systematic cast iron replacement program is the primary measure for mitigating and ultimately eliminating this risk. As discussed in the Company's response to OPC DR 8515, the requirement to replace such facilities also arises from multiple other sources and authorities, including the Company's obligation to maintain safe and adequate service, the Commission's rules requiring the replacement of such facilities, the recommendations of federal and state pipeline safety officials that such facilities should be replaced on an accelerated basis, the observations of Company personnel over many years regarding the condition of such facilities, and explicit findings of this Commission regarding the condition of such facilities in prior ISRS cases.

a. If so, please identify all portions of Spire's DIMP on which it relies to support its position.

Please see the Company's response to OPC DR 8511.

8512. Is it Spire's position that the DIMP proves that its cast iron mains are worn out or in a deteriorated condition as those terms are used in §393.1009(5)(a)?

It is Spire's position that the ISRS eligibility of its cast iron mains, including the fact that such facilities are in a worn out or deteriorated condition as those terms are used in §393.1009(5)(a), has been proven on multiple occasions based on evidence presented in multiple ISRS proceedings. As discussed in its response to OPC DR's 8511 and 8515, this conclusion, which has been explicitly endorsed by the Commission, arises from multiple sources and authorities. The Company's DIMP, and its ranking of the risks posed by such facilities, is fully consistent with and supportive of this conclusion.

a. If so, please identify all portions of Spire's DIMP on which it relies to support its position.

Please see the Company's response to OPC DR 8512.

8513. Is it Spire's position that the DIMP requires replacement of non-protected steel mains?

The DIMP prepared by Spire in compliance with the Commission's gas safety rules is designed to identify and rank the various risks to public safety involving its distribution system. The threat of bare steel service corrosion is identified as high risk and the Company's systematic replacement program for these facilities is the primary measure for mitigating and ultimately eliminating this risk. As discussed in the Company's response to OPC DR 8515, the requirement to replace such facilities also arises from multiple other sources and authorities, including the Company's obligation to maintain safe and adequate service, the Commission's rules requiring the replacement of such facilities, the recommendations of federal and state pipeline safety officials that such facilities should be replaced on an accelerated basis, the observations of Company personnel over many years regarding the condition of such facilities, and explicit findings of this Commission regarding the condition of such facilities in prior ISRS cases.

a. If so, please identify all portions of Spire's DIMP on which it relies to support its position.

Please see the Company's response to OPC DR 8513

8514. Is it Spire's position that he DIMP proves that its non-protected steel mains are worn out or in a deteriorated condition as those terms are used in §393.1009(5)(a)?

It is Spire's position that the ISRS eligibility of its bare steel service facilities, including the fact that such facilities are in a worn out or deteriorated condition as those terms are used in §393.1009(5)(a), has been proven on multiple occasions based on evidence presented in multiple ISRS proceedings. As discussed in its response to OPC DR8515, this conclusion, which has been explicitly endorsed by the Commission, arises from multiple sources and authorities. The Company's DIMP, and its ranking of the risks posed by such facilities, is fully consistent with and supportive of this conclusion.

a. If so, please identify all portions of Spire's DIMP on which it relies to support its position.

Please see the Company's response to OPC DRs 8513, 8512 and 8515.

8515. Does Spire rely on any other documentation beyond the DIMP to prove that its pipes are worn out or in a deteriorated condition as those terms are used in §393.1009(5)(a)?

Yes. Please see the Direct Testimony and Schedules filed by a Craig R. Hoeferlin in this proceeding which summarizes the findings and recommendations of federal and state safety officials attesting to the worn out or deteriorated condition of these facilities as well as the statutory and rule provisions that require the elimination of such facilities. Also please see the Commission's Report and Orders in the Company's 2018 and 2019 ISRS cases that confirm the worn out or deteriorated condition of these facilities. Also see the material that OPC attached to its testimony in the Company's most recent ISRS proceedings which demonstrated that cast iron and unprotected steel facilities were already in a worn-out or deteriorated condition more than 7 decades ago when the Company first began to implement replacement programs to eliminate such facilities. In short, the fact that such facilities are in a worn out or deteriorated condition has been repeatedly confirmed.

a. If so, please provide a copy of all such documentation.

Please see the response to OPC DR 8515.

8516. Does Spire believe that all of the cast iron mains currently in use in each service territory are worn out or in a deteriorated condition as those terms are used in §393.1009(5)(a)?

Yes. They are without question in a worn out or deteriorated condition as those terms are used in§393.1009(5)(a).

a. If not, how does Spire distinguish which cast iron mains are worn out from those that are not?

N/A

8517. Does Spire believe that all of the non-protected steel mains currently in use in each service territory are worn out or in a deteriorated condition as those terms are used in §393.1009(5)(a)?

Yes to the extent this question is applicable to bare steel services.

a. If not, how does Spire distinguish which non-protected steel mains are worn out from those that are not?

N/A

Steel Iron Main - Plant and Reserve Balances

Company	Plant Account	End Date		Plant Balance		Reserve Balance
Missouri East	376100-Mains - Steel	12/31/2018	$	237,514,163.87	$	140,154,562.04
Missouri East	376100-Mains - Steel	6/30/2019	$	240,000,416.05	$	140,122,755.27
Missouri West	376100-Mains - Steel	12/31/2018	$	235,446,129.69	$	104,420,483.46
Missouri West	376100-Mains - Steel	6/30/2019	$	240,445,700.48	$	102,442,960.89

Plastic Main - Plant and Reserve Balances

Company	Plant Account	End Date	Plant Balance	Reserve Balance
Missouri East	376300-Mains - Plastic	12/31/2018	$ 564,354,114.30	$ 86,389,474.42
Missouri East	376300-Mains - Plastic	6/30/2019	$ 596,106,968.31	$ 88,509,763.78
Missouri West	376300-Mains - Plastic	12/31/2018	$ 456,716,558.39	$ 83,194,534.16
Missouri West	376300-Mains - Plastic	6/30/2019	$ 497,768,148.50	$ 85,097,303.87

Cast Iron Main - Plant and Reserve Balances

Company	Plant Account	End Date	Plant Balance	Reserve Balance
Missouri East	376200-Mains - Cast Iron	12/31/2018	$ 25,389,658.63	$ (920,285.63)
Missouri East	376200-Mains - Cast Iron	6/30/2019	$ 29,146,658.20	$ (1,744,094.95)
Missouri West	376.20 - Mains - Cast Iron	12/31/2018	$ 36,559,010.24	$ 7,627,215.96
Missouri West	376.20 - Mains - Cast Iron	6/30/2019	$ 36,436,284.33	$ 6,457,911.03

Services - Plant and Reserve Balances

Company	Plant Account	Retirement Unit	End Date	Plant Balance	Reserve Balance
Missouri East	380100-Services - Steel	Services - Steel	12/31/2018	$ 39,189,716.83	$ 36,333,748.94
Missouri East	380200-Services - Plastic & Copper	Services - Plastic	12/31/2018	$ 701,649,399.62	$ 253,830,369.97
Missouri East	380200-Services - Plastic & Copper	Services - Copper	12/31/2018	$ 8,415,951.05	$ 9,729,795.71
				$ 749,255,067.50	$ 299,893,914.62
Missouri East	380100-Services - Steel	Services - Steel	6/30/2019	$ 39,150,138.39	$ 36,176,747.15
Missouri East	380200-Services - Plastic & Copper	Services - Plastic	6/30/2019	$ 724,950,058.35	$ 257,593,814.33
Missouri East	380200-Services - Plastic & Copper	Services - Copper	6/30/2019	$ 8,121,890.19	$ 9,394,683.68
				$ 772,222,086.93	$ 303,165,245.16
Missouri West	380100-Services - Steel	Services - Steel	12/31/2018	$ 7,090,114.69	$ 4,632,875.20
Missouri West	380200-Services - Plastic & Copper	Services - Plastic	12/31/2018	$ 439,085,067.74	$ 219,149,209.78
Missouri West	380200-Services - Plastic & Copper	Services - Copper	12/31/2018	$ -	$ -
				$ 446,175,182.43	$ 223,782,084.98
Missouri West	380100-Services - Steel	Services - Steel	6/30/2019	$ 6,965,403.30	$ 4,429,552.32
Missouri West	380200-Services - Plastic & Copper	Services - Plastic	6/30/2019	$ 449,857,645.99	$ 219,127,694.52
Missouri West	380200-Services - Plastic & Copper	Services - Copper	6/30/2019	$ -	$ -
				$ 456,823,049.29	$ 223,557,246.84

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Spire Missouri, Inc. to Change its Infrastructure System Replacement Surcharge in its Spire Missouri East Service Territory	))))	File No. GO-2019-0356
In the Matter of the Application of Spire Missouri, Inc. to Change its Infrastructure System Replacement Surcharge in its Spire Missouri West Service Territory	))))	File No. GO-2019-0357

PUBLIC COUNSEL DATA REQUESTS 8518-8519 TO SPIRE MISSOURI, INC.

The Office of Public Counsel (Public Counsel) hereby provides the following Data Requests to Spire Missouri, Inc. (Company) pursuant to the Commission's Rule 4 CSR 240-2.090. Public Counsel is requesting Company to respond to these requests within twenty (20) days of receipt. Please provide electronic responses to the following: opcservice@ded.mo.gov.

DEFINITIONS

As used herein, the words "document" or "documents" include any original and all copies of any written, printed, typed, electronically stored, or graphic matter of any kind or nature, however produced or reproduced, now in your possession, custody or control, or in the possession, custody or control of your agents, representatives, employees of you or any and all persons acting in your behalf, including documents at any time in the possession, custody or control of such individuals or entities, or known by you to exist.

DATA REQUESTS

8518. For each photograph attached to the direct testimony of Craig R. Hoeferlin:

a. Please identify the person who took each photo
b. Please provide the date the each photo was taken
c. Please identify the type of pipe in each photo (size and material)
d. Please indicate whether these photos of Spire MO pipes?

e. Please indicate if the condition of the pipes found in each photo is similar to condition of all of Spire's pipes and, if not, how Spire identifies which pipes are in the same condition as those pictured?
f. Please indicate if any of these pipes were replaced as a result of or in relation to leak detection testing and include all documentation regarding same?
g. Please provide the project and phase from which each of these photos was taken

Response:

First Photo of Schedule CRH-5

a. This photo was presumably taken by the Commission's Gas Safety Staff as it was extracted from a Staff investigation report; however, the name of the photographer is unknown.
b. The exact date of this photo is unknown, but the incident occurred January 17, 1991 and the photo would have been within a few months of that date.
c. 6" Cast Iron
d. Yes.
e. The condition of the Company's pipes varies; however, the condition of this pipe is well within the realm of what the Company sees when pipe is exposed or as a result of a leak investigation or leak survey.
f. This pipe was replaced due to an incident at this location.
g. This was replaced as part of a repair.

Second photo through the second to last photo of Schedule CRH-5

a. This photo was taken by a Spire employee.
b. The photo was taken December 10, 2018
c. 12" Cast Iron
d. Yes.
e. While a hole of this size is not typical the condition of the surrounding pipe is fairly common and we certainly get many fractures even if these were particularly large.
f. The pipe was replaced because of the fracture.
g. This was replaced as part of a repair.

Last photo of Schedule CRH-5

a. This photo was presumably taken by the Commission's Gas Safety Staff as it was extracted from a Staff investigation report; however, the name of the photographer is unknown.
b. The photo was taken December 30, 2008.
c. 4" Cast Iron
d. Yes.
e. No. This pipe had a fracture area around the circumference of the 4-inch cast iron main. Spire identifies areas that a leak may be present and depending on leak class classification and addresses the leak.
f. On January 7, 2009, Laclede/Spire abandoned in-place the repaired section of 4-inch low-pressure CI natural gas main along Steins street that had fractured. The CI main was cut and capped at a location that was 5 feet 5 inches north of the centerline of Steins street and 1-foot west of the centerline of Ivory Avenue. This involved the abandonment of approximately 382 feet of 4-inch natural gas CI main.
g. This was abandoned as part of a repair.

8519. Did Mr. Hoeferlin personally observe the condition of any of the pipes included in his

attached photos at or near the time that those photos were taken?

Response: Mr. Hoeferlin did not personally observe the condition of the pipes included in his attached photos. However, as stated above, the photos attached to Mr. Hoeferlin's testimony are examples of the condition of pipe the Company sees when pipe is exposed or as a result of a leak investigation or leak survey.

Issued 8/23/19
Submitted on behalf of John Robinett

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Spire Missouri, Inc. to Change its Infrastructure System Replacement Surcharge in its Spire Missouri East Service Territory	))))	File No. GO-2019-0356
In the Matter of the Application of Spire Missouri, Inc. to Change its Infrastructure System Replacement Surcharge in its Spire Missouri West Service Territory	))))	File No. GO-2019-0357

RESPONSES OF SPIRE MISSOURI INC TO PUBLIC COUNSEL DATA REQUESTS 8520-8542

Presented below are the responses of Spire Missouri Inc. ("Spire" or "Company") to Public Counsel Data Request Nos. 8520-8542.

RESPONSES TO DATA REQUESTS

8520. Please provide a copy of the Annual Gas Distribution System Report prepared for the US Department of Transportation (consistent with the versions supplied in Spire's response to OPC DR 8501 and 8502) for calendar Years 2017, 2016, and 2015 for each Spire service territory.

Response: Please see Attachment OPC DR 8520 on the flash drive delivered for information responsive to this request.

8521. OPC DR 8505 requested the average age of mains in Spire's system for each main type and size that Spire currently has in use in each service territory. Spire responded by stating as follows:

> The average service life of the mains in Spire's distribution system was thoroughly examined and determined by competent depreciation professionals in the depreciation studies submitted in Spire's last general rate cases, GO-2017-0215 and GO-2017-0216. No party to those cases challenged these studies or raised issues questioning the validity of those studies. In addition, the footage and vintage of all mains and services retired with ISRS projects is provided to the Public Service Commission Staff and OPC in the supporting work papers in each of Spire's ISRS filings.

This is not responsive to the question that was asked. The OPC wishes to know the **age** of Spire's pipes, not their average service life, and further wants to know those ages broken down by pipe size and material. This includes those pipes that Spire has **not yet** retired.

The OPC notes that the *Annual Report for Calendar Year 2018 Gas Distribution System* Spire provided in response to OPC's DR 8501 and 8502 included a section titled *Miles of Main and Number of Services by Decade of Installation*. Therefore, Spire would appear to have at least some records regarding the Installation dates (and hence ages) of its pipes. The OPC wants this information, again broken down by pipe size and material if possible. The OPC further notes that 4 CSR 240-40.040 (J) requires Spire to quote:

> Maintain records which classify, for each plant account, the amounts of the annual additions and retirements so as to show the number and cost of the various record units or retirement units by vintage year, when implementing the provisions of Part 201 Gas Plant Instructions 11.C. and paragraph 20,051.11.C.

The OPC would expect that these records would include sub-accounts related to the various pipe material types.

Based on the forgoing, the OPC requests the following:

a. The average **age** of mains in its system for each main type and size that Spire currently has in use in each service territory;

Response: Please see Spire's Objection Letter dated September 12, 2019.

b. All documentation regarding or related to the *Miles of Main and Number of Services by Decade of Installation* section of the *Annual Report for Calendar Year 2018 Gas Distribution System* provided to/by the US Department of Transportation (including all documentation relied upon to develop the numbers found therein); and

Response: Please see Attachment OPC DR 8521(b) on the flash drive delivered for information responsive to this request.

c. All documentation related to Spire's compliance with 4 CSR 240-40.040 (J) including the records mentioned therein broken down by sub-account when and where possible for each Spire service territory.

Response: Please see Spire's most recent FERC FORM 2 documents for Calendar year 2018 included as Attachment OPC DR 8521(c) on the flash drive delivered for information responsive to this request.

8522. OPC DR 8506 requested the average age of services in Spire's system for each service type

and size that Spire currently has in use in each service territory. Spire responded by stating as follows:

> The average service life of the services in Spire's distribution system was thoroughly examined and determined by competent depreciation professionals in the depreciation studies submitted in Spire's last general rate cases, GO-2017-0215 and GO-2017-0216. No party to those cases challenged these studies or raised issues questioning the validity of those studies. In addition, the footage and vintage of all mains and services retired with ISRS projects is provided to the Public Service Commission Staff and OPC in the supporting work papers in each of Spire's ISRS filings.

This is not responsive to the question that was asked. The OPC wishes to know the **age** of Spire's pipes, not their average service life, and further wants to know those ages broken down by pipe size and material. This includes those pipes that Spire has **not yet** retired. The OPC notes that the *Annual Report for Calendar Year 2018 Gas Distribution System* Spire provided in response to OPC's DR 8501 and 8502 included a section titled *Miles of Main and Number of Services by Decade of Installation*. Therefore, Spire would appearto have at least some records regarding the Installation dates (and hence ages) of its pipes. The OPC wants this information broken down by pipe size and material if possible. The OPC further notes that 4 CSR 240-40.040 (J) requires Spire to quote:

> Maintain records which classify, for each plant account, the amounts of the annual additions and retirements so as to show the number and cost of the various record units or retirement units by vintage year, when implementing the provisions of Part 201 Gas Plant Instructions 11.C. and paragraph 20,051.11.C.

The OPC would expect that these records would include sub-accounts related to the various pipe material types.

Based on the forgoing, the OPC requests the following:

a. The average **age** of services in its system for each service type and size that Spire currently has in use in each service territory;

Response: Please see Spire's objection letter dated September 12, 2019.

b. All documentation regarding or related to the *Miles of Main and Number of Services by Decade of Installation* section of the *Annual Report for Calendar Year 2018 Gas Distribution System* provided to/by the US Department of Transportation (including all documentation relied upon to develop the numbers found therein); and

Response: **Please see response to OPC DR 8521(b).**

c. All documentation related to Spire's compliance with 4 CSR 240-40.040 (J) including the records mentioned therein broken down by sub-account when and where possible for each Spire service territory.

Response: Please see response to OPC DR 8521(c).

8523. OPC DR 8507 requested the average corrosion rate of mains Spire experienced annually broken down by size and type of main. Spire responded that it does not track the average corrosion rate of its mains. The OPC notes that the Direct Testimony of Craig R. Hoeferlin states as follows on page 3:

> Regarding steel infrastructure, the Commission found that steel "that is not cathodically protected corrodes relatively quickly and needs to be replaced" as the "corrosion diminishes wall thickness which causes the possibility of leaks."

The OPC asked its original DR hoping to understand what the phrase "corrodes relatively quickly" meant in the above referenced excerpt. Because Spire apparently does not monitor ***actual*** corrosion rates, the OPC will change its question accordingly.

To that end, the OPC requests that Spire:

a. Explain what it understands the phrase "corrodes relatively quickly" as used in the direct testimony of Craig R. Hoeferlin to mean.

Response: Spire has consistently stated its position on the effects of corrosion on its non-protected steel pipes. Spire will not attempt to speak for the Commission, but would note that the Commission's language on corrosion is consistent with Spire's stated position.

b. Explain what it believes the average rate of corrosion or "Average Corrosion Rate" of its **non-cathodically protected** Steel Pipes is bearing in mind the following:

Corrosion rate is the speed at which any metal in a specific environment deteriorates. It also can be defined as the amount of corrosion loss per year in thickness. The speed or rate of deterioration depends on the environmental conditions and the type and condition of the metal under reference.

Mils per year or MPY is used to give the corrosion rate in a pipe, a pipe system or other metallic surfaces. It is used to calculate the material loss or weight loss of a metal surfaces.

Corrosion rates are usually expressed as a penetration rate in "inches per year" or "melts per year (MPY)" (where a melt = 10^-3 inches).

Average is a number expressing the central or typical value in a set of data, in particular the mode, median, or (most commonly) the mean, which is calculated by dividing the sum of the values in the set by their number.

Response: Please see the response to OPC Data Request 8507.

c. Provide all documentation on which Spire relies regarding its answer to (b).

Response: N/A

d. Explain what it believes the average rate of corrosion or "Average Corrosion Rate" of its **cathodically-protected** Steel Pipes is bearing in mind the following:

Corrosion rate is the speed at which any metal in a specific environment deteriorates. It also can be defined as the amount of corrosion loss per year in thickness. The speed or rate of deterioration depends on the environmental conditions and the type and condition of the metal under reference.

Mils per year or MPY is used to give the corrosion rate in a pipe, a pipe system or other metallic surfaces. It is used to calculate the material loss or weight loss of a metal surfaces.

Corrosion rates are usually expressed as a penetration rate in "inches per year" or "melts per year (MPY)" (where a melt = 10^-3 inches).

Average is a number expressing the central or typical value in a set of data, in particular the mode, median, or (most commonly) the mean, which is calculated by dividing the sum of the values in the set by their number.

Response: See the response to OPC Data Request 8507.

e. Provide all documentation on which Spire relies regarding its answer to (d).

Response: N/A

8524. Please provide copies of all materials and documents referenced in Spire's response to OPC DR 8510.

Response: Please see the response to OPC Data Request 8520.

8525. OPC DR 8512 asked if it is Spire's position that the DIMP proves that its cast iron mains are worn out or in a deteriorated condition as those terms are used in §393.1009(5)(a). Spire provided a lengthy response that indicated the DIMP's ranking system was "consistent" with its pipes being worn out or deteriorated but did not state that the DIMP actually said that its pipes were worn out or deteriorated. Therefore, please confirm that Spire's DIMP does not at any point state that the cast iron pipes Spire replaced and are seeking recovery for in this ISRS case are in a worn out or deteriorated condition. If Spire does not agree with this statement, please provide explicit excerpts from Spire's DIMP wherein the DIMP states the cast iron pipes Spire replaced in this case are in a worn out or deteriorated condition.

Response: Spire has previously stated that its DIMP plan does not, alone, prove its cast iron mains are in a worn out or deteriorated state. However, as stated in prior Data Request responses Spire's DIMP consistently shows cast iron as one of the highest priority risks on its system.

8526. OPC DR 8514 asked if it is Spire's position that the DIMP proves that its unprotected steel mains are worn out or in a deteriorated condition as those terms are used in §393.1009(5)(a). Spire provided a lengthy response that indicated the DIMP's ranking system was "consistent" with its pipes being worn out or deteriorated but did not state that the DIMP actually said that its pipes were worn out or deteriorated. Therefore, please confirm that Spire's DIMP does not at any point state that the non-cathodically protected

steel pipes Spire replaced and are seeking recovery for in this ISRS case are in a worn out or deteriorated condition. If Spire does not agree with this statement, please provide explicit excerpts from Spire's DIMP wherein the DIMP states the non-cathodically protected steel pipes Spire replaced in this case are in a worn out or deteriorated condition.

Response: Spire does not have non-cathodically protected steel mains on record in its system.

8527. Please confirm that Spire's DIMP does not at any point state that the non-cathodically protected steel services that Spire replaced and are seeking recovery for in this ISRS case are in a worn out or deteriorated condition. If Spire does not agree with this statement, please provide explicit excerpts from Spire's DIMP wherein the DIMP states the non-cathodically protected steel services Spire replaced in this case are in a worn out or deteriorated condition.

Response: Spire has previously stated that it's DIMP plan does not, alone, prove its unprotected steel services are in a worn out or deteriorated state. However, as stated in prior Data Request responses, Spire's DIMP consistently shows unprotected steel among its highest priority risks on its system.

8528. Does Spire believe that it is subject to either a state or federal mandate to replace cathodically protected steel mains?

Response: Yes, especially in those circumstances, such as those applicable here, where the steel mains at issue were not coated or cathodically protected when first installed. Under such circumstances, it has been widely recognized in the industry that the application of post-installation cathodic protection is not a long-term solution for ensuring the safety and integrity of such facilities and that replacement is ultimately required. The need to pursue a more aggressive replacement of the rather large quantity of MGE's/Spire West's protected bare steel mains was also noted by the PSC safety staff at the time Laclede acquired those properties.

a. If so, please indicate the source of said mandate and provide all documentation related to the same.

Response: Please see Missouri Revised Statute Sections 386.310 and 393.190.1 and PSC Rule - 20 CSR 4240-40 (15)(E). Please also see Commission Case No. GO-2002-50 approving MGE's Safety Line Replacement Program, which requires replacement of MGE's cathodically protected bare steel mains.

8529. Does Spire believe that it is subject to either a state or federal mandate to replace cathodically protected steel services?

Response: Yes. Please see response to DR No. 8528.

a. If so, please indicate the source of said mandate and provide all documentation related to the same.

Response: Please see response to DR No. 8528.

8530. Please identify whether the retired service amounts for steel services found in the Work Order Authorization Sheets (provided by Spire as work papers) are in number of services, footage of pipe retired, or some other quantity. [TO CLARIFY: the first Work Order Authorization Sheet found in the file labeled "ISRS Mo-East Additions WO Authorization Sheets Updated" is for work order 901048. On page 12 of 13, the Utility Account Total Retired Quantity for Steel Services was 676. Please indicate whether this 676 is the total number of steel services retired, the total footage of steel services retired, or some other measure of quantity.].

Response: The figures are for retired footage.

a. if the answer to the above question is some other measure of quantity, please explain that measure and provide the best possible means of converting that measure into either number of services retired or footage of pipe retired

Response: N/A

8531. Please verify that the retired main amounts for cast iron mains found in the Work Order Authorization Sheets provided by Spire as work papers represents the footage of pipe retired or else explain what those quantities represent. [TO CLARIFY: the first Work Order Authorization Sheet found in the file labeled "ISRS Mo-East Additions WO Authorization Sheets Updated" is for work order 901048. On page 11 of 13, the Utility Account Total

Retired Quantity for Cast Iron Mains was 4,612. Please confirm that this 4,612 represents the footage of pipe retired or else explain what this quantity represents.].

Response: The figures are for retired footage.

8532. Please verify that the retired main amounts for steel mains found in the Work Order Authorization Sheets provided by Spire as work papers represents the footage of pipe retired or else explain what those quantities represent. [TO CLARIFY: the first Work Order Authorization Sheet found in the file labeled "ISRS Mo-East Additions WO Authorization Sheets Updated" is for work order 901048. On page 10 of 13, the Utility Account Total Retired Quantity for Steel Mains was 453. Please confirm that this 453 represents the footage of pipe retired or else explain what this quantity represents.].

Response: The figures are for retired footage.

8533. Please provide a narrative response describing the capping process that Spire employs when it abandons pipes in the ground.

Response: All mains that are to be abandoned will have gauges installed at the capping locations. The main will be stopped by bagging, stopper installation or squeezing depending on the pipe material and size at each location. After a period of time to allow the system to stabilize, the main will be cut and a cap installed. The crew will then move to the next location and perform the same series of steps until all locations have been completed. The abandoned gas mains will then be purged of gas and the abandoned gas main either capped at the final location or plugged in some other manner to prevent migration of any subsurface material within the pipe.

8534. Is it Spire's position that the worn out or deteriorated nature of its non-cathodically protected steel mains pose a safety risk?

Response: As stated in response to DR 8526 above, Spire does not non-cathodically protected steel mains on record in its system.

8535. Is it Spire's position that the worn out or deteriorated nature of its cast iron mains pose a safety risk?

Response: As stated above in response to DR 8525, cast iron mains are consistently ranked among the highest items in Spire's risk analysis. Spire works closely with and is heavily regulated by the Commission's Gas Safety Staff ensuring these risks are effectively managed and addressed.

8536. Is it Spire's position that the worn out or deteriorated nature of its non-cathodically protected steel service pose a safety risk?

Response: As stated above in response to DR 8527, unprotected steel services are consistently ranked among the highest items in Spire's risk analysis. Spire works closely with and is heavily regulated by the Commission's Gas Safety Staff ensuring these risks are effectively managed and addressed

8537. OPC DR 8517 asked if Spire believes that all of the non-protected steel mains currently in use in each service territory are worn out or in a deteriorated condition as those terms are used in §393.1009(5)(a)? Spire responded "Yes to the extent this question is applicable to bare steel services." Please indicate whether it is Spire's position that all of the non-cathodically protected steel **mains** it currently has in use in each service territory are worn out or in a deteriorated condition as those terms are used in §393.1009(5)(a)?

Response: Spire does not have unprotected steel mains on record in its system.

a. If not, how does Spire distinguish which non-cathodically protected steel mains are worn out from those that are not?

Response: N/A

8538. OPC DR 8517 asked if Spire believes that all of the non-protected steel mains currently in use in each service territory are worn out or in a deteriorated condition as those terms are used in §393.1009(5)(a)? Spire responded "Yes to the extent this question is applicable to bare steel services." Please confirm that it is Spire's position that all of the non-cathodically protected steel **services** it currently has in use in each service territory are worn out or in a deteriorated condition as those terms are used in §393.1009(5)(a)?

Response: Yes, that is Spire's position.

a. If not, how does Spire distinguish which non-cathodically protected steel services are worn out from those that are not?

Response: N/A

8539. Please provide a copy of the five most recent finical statements or other reports that Spire has filed with the United States Securities and Exchange Commission wherein Spire has disclosed that all of its cast iron mains are in a worn out or deteriorated condition.

Response: Spire has not included specific statements in its filings that its cast iron mains are in a worn out or deteriorated condition since there is a widespread understanding that virtually all facilities become worn out or deteriorate over time, including cast iron mains used by a utility to distribute natural gas. Investors are generally familiar with the basic concept of depreciation and therefore comprehend

this reality without the need for specific disclosures. That these facilities are either worn out or in a deteriorated condition is also evident in the pertinent financial information associated with its ISRS mechanism and ISRS regulatory proceedings which is included in these SEC filings.

Spire has not disclosed that its cast iron mains are in a worn out or deteriorated condition; however, Spire has included pertinent financial information associated with its ISRS mechanism and ISRS regulatory proceedings.

a. If no such financial statement or other report exists, please confirm that Spire has never disclosed to the United States Securities and Exchange Commission that all of its cast iron mains are in a worn out or deteriorated condition

Response: Spire has not disclosed that its cast iron mains are in a worn out or deteriorated condition.

8540. Please provide a copy of the five most recent financial statements or other reports that Spire has filed with the United States Securities and Exchange Commission wherein Spire has disclosed that all of its non-cathodically protected steel mains are in a worn out or deteriorated condition.

Response: Spire has not disclosed that its non-cathodically protected steel mains are in a worn out or deteriorated condition as Spire does not have non-cathodically protected steel mains on record in its system.

a. If no such financial statement or other report exists, please confirm that Spire has never disclosed to the United States Securities and Exchange Commission that all of its non-cathodically protected steel mains are in a worn out or deteriorated condition.

Response: Please see Spire's response above.

8541. Please provide a copy of the five most recent financial statements or other reports that Spire has filed with the United States Securities and Exchange Commission wherein Spire has disclosed that all of its non-cathodically protected steel services are in a worn out or deteriorated condition.

Response: Spire has not included specific statements in its filings that its non-cathodically protected steel services are in a worn out or deteriorated condition since there is a widespread understanding that virtually all facilities become worn out or deteriorate over time, including steel mains used by a utility to distribute natural gas. Investors are generally familiar with the basic concept of depreciation and therefore comprehend this reality without the need for specific disclosures. That these facilities

are either worn out or in a deteriorated condition is also evident in the pertinent financial information associated with its ISRS mechanism and ISRS regulatory proceedings which is included in these SEC filings.

a. If no such finical statement or other report exists, please confirm that Spire has never disclosed to the United States Securities and Exchange Commission that all of its non-cathodically protected steel services are in a worn out or deteriorated condition

Response: Please see the response to DR No. 8541.

8542. Please identify the last year in which spire installed new **non-cathodically protected** steel services.

Response: Spire is unable to identify the specific year in which Spire installed new non-cathodically protected steel services.

a. If Spire is incapable of identifying a specific year, please indicate the best estimation for when Spire ceased Installation of new **non-cathodically protected** steel services

Response: Spire has not installed new non-cathodically protected steel services since the 1950's at Spire East and since the 1970's for Spire West.

GO-2019-0356
GO-2019-0357

SPIRE MISSOURI, INC.

Schedule JAR-D-16

has been deemed

"Confidential"

in its Entirety

OPC Data Requests and Spire Responses from Exhibit No. 200 entered into the record in GO-2019-0115 and GO-2019-0116; schedule jar-d-3 and schedule jar-d-4

8514. For each work order included in this ISRS filing, Provide copies of any and all testing or other analysis related to interior diameter and outer diameter of any pipe that was retired.

Response: Spire does not perform testing on the interior or outer diameters of pipe.

8529. For each project please provide evidence of physical testing Spire used to determine mains and services were in worn out and/or deteriorated condition. If no testing was performed, please describe the process Spire used to determine that the mains or services being replacedwere worn out and/or deteriorated?

Response: Please see the Company's response to OPC DR 8519 in this proceeding.

8519. Did Spire East perform tests on service lines that were retired and replaced under earlier ISRS filings that indicated lines were worn out or in a deteriorated condition? If yes please provide the testing documentation for each project. If no please indicate that no testing was done.

Response: If it is economically and operationally feasible to reconnect a service line to a main that is being installed in connection with the Company's cast iron and bare steel replacement programs, it will be reused. If it is not economically or operationally feasible to reconnect a service line to a newly installed main, a new service line will be installed. As the Company has repeatedly demonstrated, such an approach does not result in any incremental increase in either the Company's ISRS costs and or the resulting ISRS charges but instead reduces them compared to the costs that would be incurred if an attempt was made to reuse service lines that cannot feasibly be economically or operationally reconnected to the main. Any effort to perform "tests" on service lines that cannot be economically or operationally reused would serve no purpose, but instead would be an unnecessary and imprudent expenditure of resources. Also see the response to DR 8505.