

Gas Operations LG&E and KU Utilities 2021 Operating Plan



September 2020



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Plan Highlights

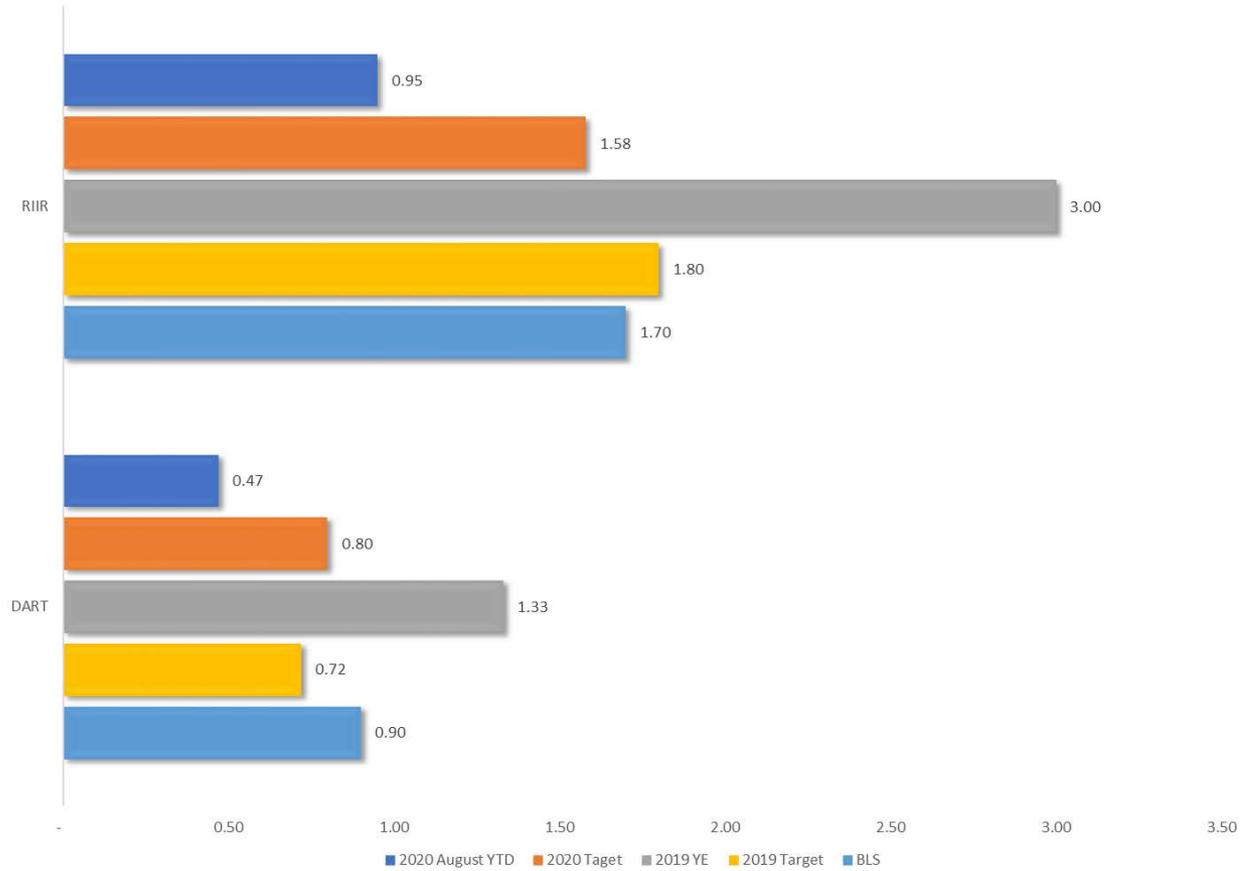
Funding levels within the proposed plan were established with the following priorities in mind:

- Employee, contractor and public safety
- Regulatory compliance
- Capital investments for transmission asset modernization and reinforcement
- Supporting customer service requests
- Gas system reliability
 - Asset replacement to ensure reliable and safe service
 - System enhancements to meet customer needs
- Operational technology cyber security initiative

Plan Highlights

- Continuously strive to improve employee and business partner safety performance
- Ensure effective employee engagement through the Gas Operations Safety Focus Team.
- Maintain and enhance gas system safety thru effective Integrity, Public Awareness, Damage Prevention, and Gas Control Room Management programs and continue implementation of a Pipeline Safety Management System
- Enhanced public safety through customer communications and asset replacement
- Continuation of motor vehicle safety initiatives
- Identify, share, and capitalize on industry best practices
- Mock drills, leak detection training, and emergency response improvements
- Effective liaison with emergency response agencies
- Promote wellness initiatives as an aspect of safety

Plan Highlights



Plan Highlights

- The CRM program prescribes the safety requirements for Gas Controllers, Control Rooms, and SCADA systems that are used to remotely monitor and control pipeline operations
- The CRM program address both engineering and management solutions related to human factors in a control room operation in order to enhance the performance of the operator's personnel and safety of the pipeline control operation
- LG&E's CRM program consists plans, policies and procedures to address the following:
 - Fatigue mitigation, alarm management, change management, controller training, team training, and compliance validation
- By the start of 2021, all LG&E and KU gas pipeline facilities planned will be under Gas Operation's CRM.
- Two incremental operators are required to properly staff the control room for safe, effective and compliant operation.

Plan Highlights

- Annual pipeline locating ticket request volume has remained consistent for 2018-2020 (Approx. 136,000 tickets annually)
- On time performance has significantly improved for locating underground facilities with the current business partners.
- Metrics:

Year	Damage Rate	Total Gas Damages	Locator At-Fault Damages	On Time Performance
Target	2.25	NA	NA	95% or greater
2018	2.63	373	90	44%-95.7%
2019	2.14	289	39	99.10%
2020*	1.61	147	12	99.92%

Plan Highlights

— Success rate is the rate of response to an

Year	Avg. Response	
	Time	Success Rate
2016	37.0	87.6%
2017	37.1	86.8%
2018	32.9	91.4%
2019	34.1	90.6%
2020*	31.4	93.7%

*2020 is through August

Plan Highlights

- Operator Qualification Program
 - Integration with Industrial Training Services compliance program is complete (July 2017 – December 2019)
 - LKE employees completed over (8,000) man hours of evaluations during this initial period
 - In addition to Gas Distribution Operations, Operator Qualification touches several LOBs across the company including:
 - Power Generation - E.W. Brown, Cane Run, Paddy's Run, and Trimble County
 - Customer Service – Call Center representatives, and meter readers
 - Field Services - Gas service turn on/off, gas meter shop, meter change, and meter sampling program
 - Current LG&E/KU employees in the OQ system – 929
 - Current number of individuals in the OQ system (including LG&E/KU employees) – 8,028
 - Total number of OQ qualifications held by all individuals performing OQ related work for LG&E/KU – 97,193

Plan Highlights

- For the dry gas system, approx. 267 miles or 93% is capable of in-line inspection (i.e. piggable)
- Leveraging an expanded set of technologies enables LG&E to achieve a higher overall level of pipeline safety and pipeline integrity
- The suite of tools being used provides a better understanding of the threats to the pipeline and its condition and to meet the latest regulatory requirements requiring validation of the actual safe operating pressure for transmission pipelines. Technologies include these tools:
 - Geometry – pipeline geometry (diameter, pipe ovality, dents)
 - Magnetic Flux Leakage (MFL-A & C) circumferential and axial – pipeline wall loss and corrosion
 - Electro-magnetic Acoustic Transducer (EMAT) – crack-like anomaly detection
 - ROMAT - material and pipe grade determination, hard spots & categorization of the pipe seam
 - Pipe grade sensors – Used to determine pipe yield strength
 - Inertial – Used to determine pipe movement/bend strain and to provide coordinates of anomalies discovered by other tools

Plan Highlights

- Enhancing Gas Storage safety by implementing a phased-in, multi-year timeframe for Integrity Management
- Implementing new risk modeling software (TaskOp), and asset and workflow management system (Asset Manager)
- Well Inspection base line assessments – deadline 2023 extended to Jan 2027
 - Planned 70% completed by end of 2020

- Implementing new probabilistic risk modeling software (JANA DIMP)
- Creating a valve isolation program utilizing gas system planning and valve area isolation software to identify valves assigned to the designated valve program.

Plan Highlights

- Meet customer expectations for new service requests
- Promptly address customer service issues
- Identify customer service improvement opportunities
- Promote professional and positive corporate image to customers
- Restore customer service outages quickly and efficiently
- Meet customer capacity needs
- Proactively communicate with customers

Plan Highlights

- Targeted replacement of aging infrastructure to ensure safety, reliability and performance
- Effectively manage gas safety compliance programs
- Provide reliable gas supplies through investments in:
 - Gas regulation/measurement facilities
 - Gas transmission system
 - Gas compressor stations
 - Gas storage fields
 - Distribution infrastructure upgrades

Plan Highlights

- Headcount plan that addresses retirements
- Identification of pre-hires for critical job positions
- Knowledge transfer to new employees
- Support of employee continuing education initiatives
- Support onboarding and enhanced training/operator qualification to promote consistent work practices across operational groups
- Internal and external training opportunities
- Mobile computing technologies supporting training
- Skilled craft-worker intern program in participation with local technical colleges

Major Assumptions

Major Assumptions

- Require operators to validate MAOPs of gas transmission pipelines (49 CFR 192.624 MAOP Verification).
- Expand pipeline integrity requirements beyond high consequence areas (49 CFR 192.710 Pipeline Assessments).
- Expand operator qualification requirements to construction activities (49 CFR 192.801 Qualification of Pipeline personnel, Scope).
- Require continuous improvement for distribution system integrity (49 CFR 192.1007 Gas Distribution Pipeline Integrity Management).
- Require continued implementation of storage integrity compliance program (49 CFR 192.12 Underground Natural Gas Storage).
- Requirements starting in 2021 have added incremental costs to our plan (49 CFR 192.1 Mega Rule Part 2)

Major Assumptions

- Forecasted Design Day for 2021 is expected to increase to 689,000 Mcf/day from 679,000 Mcf/day estimated in the prior BP. Through the current 5-year planning period, the forecasted Design Day is expected to gradually increase to 692,000 Mcf/day.

2020-2025 Capital Expenditures (\$000)

Item	2020 Forecast	2021 Plan	2022 Plan	2023 Plan	2024 Plan	2025 Plan
Gas Line Tracker	\$ 81,708	\$ 37,259	\$ 11,094	\$ 11,034	\$ 11,034	\$ 11,037
Base (Non-Tracker)						
New Business	5,344	6,389	4,989	4,989	4,989	4,989
Enhance the Network	28,036	70,803	15,664	9,514	66,703	4,360
Maintain the Network	34,259	25,542	18,237	15,335	16,697	18,582
Repair the Network	1,011	1,100	1,101	1,100	1,099	1,099
Miscellaneous	343	1,643	661	506	514	521
Subtotal Base	<u>68,994</u>	<u>105,477</u>	<u>40,650</u>	<u>31,443</u>	<u>90,001</u>	<u>29,550</u>
Total Capital	<u>\$ 150,702</u>	<u>\$ 142,735</u>	<u>\$ 51,744</u>	<u>\$ 42,477</u>	<u>\$ 101,035</u>	<u>\$ 40,586</u>
2020 Plan	<u>\$ 148,704</u>	<u>\$ 126,873</u>	<u>\$ 63,250</u>	<u>\$ 58,701</u>	<u>\$ 51,436</u>	
Change	<u>\$ (1,998)</u>	<u>\$ (15,862)</u>	<u>\$ 11,506</u>	<u>\$ 16,224</u>	<u>\$ (49,599)</u>	

2020-2025 Annual O&M Expenses (\$'000)

Item	2020 Forecast	2021 Plan	2022 Plan	2023 Plan	2024 Plan	2025 Plan
Labor	\$ 22,289	\$ 23,336	\$ 24,162	\$ 25,200	\$ 26,196	\$ 26,698
Non-Labor:						
In-Line Inspections	4,794	10,253	10,933	7,220	11,206	10,407
Line Locating	12,173	12,163	11,751	11,032	10,468	10,537
Compressor Stations	4,409	4,087	4,191	4,277	4,546	4,117
Gas Control	1,308	1,505	1,453	1,459	1,391	1,451
Gas Ops, Construction, Engineering	3,986	3,981	3,998	3,983	3,959	3,968
Storage Integrity Engineering	4,819	5,847	5,837	5,885	5,931	5,895
Distribution Integrity & Compliance	406	467	447	432	458	457
Transmission Integrity & Compliance	24	783	1,202	937	1,179	973
Other	1,280	1,791	1,771	1,764	1,792	1,799
Total Base Rate Recovery	\$ 55,488	\$ 64,214	\$ 65,744	\$ 62,188	\$ 67,127	\$ 66,301
GLT Mechanism O&M	\$ 1,326	\$ 999	\$ 1,023	\$ 1,038	\$ 1,052	\$ 1,065
GSC Mechanism O&M	\$ 1,500	\$ 1,421	\$ 1,466	\$ 1,593	\$ 1,593	\$ 1,427
Total O&M	\$ 58,314	\$ 66,633	\$ 68,233	\$ 64,819	\$ 69,772	\$ 68,793

Employee Headcount by Department

Department	9/30/2020 2020	Plan 2021	Plan 2022	Plan 2023	Plan 2024	Plan 2025
VP Gas Distribution Operations	2	2	2	2	2	2
Pipeline Safety Mgmt Systems	4	6	7	7	7	7
Gas Regulatory Compliance	49	55	59	66	71	72
Dir Gas Regulatory Compliance	1	1	1	1	1	1
Transmission Integrity & Comp	11	15	16	16	16	16
Distribution Integrity & Comp	30	31	34	41	46	47
Gas Storage Integrity Engineering	3	4	4	4	4	4
Operator Qualifications Program	4	4	4	4	4	4
Gas Management & Supply	6	6	6	6	6	6
Gas Ops, Construction & Engrn	127	130	130	130	130	130
Dir Gas Ops, Const, & Engrn	1	1	1	1	1	1
Gas Operations	81	83	83	83	83	83
Gas Construction	32	33	33	33	33	33
Gas Engineering	13	13	13	13	13	13
Gas Control & Storage	96	99	101	101	101	101
Dir Gas Control and Storage	2	2	2	2	2	2
Muldraugh Operations	28	30	30	30	30	30
Magnolia Operations	22	22	22	22	22	22
Gas Control	44	45	47	47	47	47
Interns	7	13	13	13	13	13
Total	291	310	318	325	330	331
2021BP	291	310	318	325	330	331
Prior Plan	315	324	329	334	339	
Change from Prior Plan	24	14	11	9	9	

** Average headcount not end of year

Supplemental Contractor Headcount by Department

<u>Department</u>	<u>6/30/2020</u>	<u>Plan</u>	<u>Plan</u>	<u>Plan</u>	<u>Plan</u>	<u>Plan</u>
	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>
Magnolia Gas Storage Operations	-	-	-	-	-	-
Muldraugh Gas Storage Operations	5	5	3	3	3	3
Gas Control	5	4	4	4	4	4
Operator Qualification Program	-	-	-	-	-	-
Gas Transmission Integrity & Compliance	25	15	15	17	15	15
Gas Distribution Integrity & Compliance	150	150	145	140	135	135
Gas Constuction	147	147	100	100	100	100
Gas Engineering and Planning	2	-	-	-	-	-
Gas Operations	30	42	42	42	42	42
Gas Supply	-	-	-	-	-	-
Pipeline Safety Mgmt System	-	-	-	-	-	-
Total	364	363	309	306	299	299
Total Contractor Workforce						
2021BP	364	363	309	306	299	299
Prior Plan	386	385	380	375	370	370
Change from Prior Plan	22	22	71	69	71	71

2020-2025 Non Labor Expense Category (\$000)

Item	2020 Forecast	2021 Plan	2022 Plan	2023 Plan	2024 Plan	2025 Plan
Inline Inspections:						
Ballardsville ILI	\$ -	\$ 1,613	\$ 1,074	\$ 1,029	\$ 295	\$ -
Blanton-Paddy's ILI	-	2,830	1,235	-	-	-
Calvary ILI	2	-	-	-	3,200	1,280
Center 20 ILI	246	-	-	-	-	2,842
Doe Valley 8 ILI	-	-	1,940	324	-	-
MAG 16 ILI	472	-	-	-	-	3,117
MAG 20 ILI	-	3,324	689	-	-	-
Mill Creek 12 ILI	0	-	-	-	1,679	637
Muldraugh - Piccadilly ILI	117	-	-	-	-	-
Muldraugh to Penile ILI	-	-	-	-	3,083	917
Penile - Paddy's ILI	48	-	-	-	-	-
Riverport 12 ILI	-	-	1,223	-	-	-
Riverport 8 ILI	-	-	-	950	-	-
Western Kentucky A - ILI	45	-	-	3,199	946	-
Western Kentucky B - ILI	767	-	3,699	360	-	-
Tool Development	3,098	1,005	-	-	-	-
Validation Digs	-	1,481	1,072	1,358	2,003	1,614
Total Inline Inspections	\$ 4,794	\$ 10,253	\$ 10,933	\$ 7,220	\$ 11,206	\$ 10,407

2020-2025 Non Labor Expense Category (\$000)

Item	2020 Forecast	2021 Plan	2022 Plan	2023 Plan	2024 Plan	2025 Plan
Line Locating:						
Electric Line Locating	\$ 5,359	\$ 5,360	\$ 5,527	\$ 5,408	\$ 5,326	\$ 5,394
Unlocatables	305	312	265	270	270	270
Software	60	-	-	-	-	-
Total Electric Line Locating	\$ 5,724	\$ 5,672	\$ 5,792	\$ 5,678	\$ 5,596	\$ 5,664
Gas Line Locating	\$ 5,154	\$ 5,191	\$ 4,577	\$ 3,946	\$ 3,456	\$ 3,461
Unlocatables	1,231	1,300	1,381	1,408	1,416	1,412
Software	65	-	-	-	-	-
Total Gas Line Locating	\$ 6,450	\$ 6,491	\$ 5,958	\$ 5,354	\$ 4,872	\$ 4,873
Total Line Locating	\$12,173	\$ 12,163	\$11,751	\$11,032	\$ 10,468	\$ 10,537

2020-2025 Non Labor Expense Category (\$000)

Item	2020 Forecas	2021 Plan	2022 Plan	2023 Plan	2024 Plan	2025 Plan
Compressor Stations:						
Supplemental Contractors	\$ 58	\$ 44	\$ 57	\$ 57	\$ 57	\$ 57
Outside Services-Other	1,631	851	893	872	914	880
Materials	1,419	1,899	1,929	2,019	2,226	1,817
Transportation & Equipment	800	835	853	871	892	904
Other	500	458	458	458	458	458
Total Compressor Stations	\$ 4,409	\$ 4,087	\$ 4,191	\$ 4,277	\$ 4,546	\$ 4,117
Gas Control:						
Supplemental Contractors	\$ 11	\$ 22	\$ 22	\$ 22	\$ 22	\$ 22
Outside Services-Other	332	565	482	493	409	458
Materials	463	364	377	361	361	361
Transportation & Equipment	362	376	392	403	420	432
Other	140	179	179	179	179	179
Total Gas Control	\$ 1,308	\$ 1,505	\$ 1,453	\$ 1,459	\$ 1,391	\$ 1,451

2020-2025 Non Labor Expense Category (\$000)

Item	2020 Forecast	2021 Plan	2022 Plan	2023 Plan	2024 Plan	2025 Plan
Gas Operations, Construction & Engineering:						
Gas Construction	\$ 252	\$ 345	\$ 348	\$ 351	\$ 354	\$ 357
Gas Operations:						
Trouble	\$ 742	\$ 662	\$ 677	\$ 688	\$ 673	\$ 680
Customer Initiated	616	495	512	527	521	522
Leak Repair	588	572	592	605	609	617
Patrolling & Related Repair Costs	95	112	186	149	145	147
Materials	1,510	1,304	1,343	1,358	1,352	1,357
Transportation	58	128	139	143	124	117
Administrative	1,158	925	945	949	952	956
Other	294	251	259	267	275	284
Total Gas Operations	5,060	4,449	4,654	4,685	4,651	4,680
Gas Engineering	73	58	61	62	64	66
Director	5	9	9	9	9	10
Total Gas Operations, Construction & Engineering:	<u>\$ 5,390</u>	<u>\$ 4,861</u>	<u>\$ 5,072</u>	<u>\$ 5,108</u>	<u>\$ 5,079</u>	<u>\$ 5,113</u>

2020-2025 Non Labor Expense Category (\$000)

Item	2020 Forecast	2021 Plan	2022 Plan	2023 Plan	2024 Plan	2025 Plan
Distribution Integrity & Compliance:						
Leak Survey	\$ 882	\$ 938	\$ 938	\$ 948	\$ 980	\$ 927
Public Awareness	276	427	425	431	431	431
Stop Box Inspections	1,196	1,300	1,300	1,350	1,350	1,350
Priority Valves	92	107	110	112	115	115
Farm Tap Inspections	45	50	52	50	50	50
Corrosion Control	1,905	2,317	2,325	2,333	2,341	2,349
Records Review	-	90	90	90	90	90
Administrative	232	348	356	360	362	372
Other	191	270	241	211	212	211
Total Dist Int. & Compliance:	\$ 4,819	\$ 5,847	\$ 5,837	\$ 5,885	\$ 5,931	\$ 5,895
Transmission Integrity & Compliance:						
Records Review	\$ 107	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50
Pipeline Integrity	169	325	305	290	316	315
Administrative	-	-	-	-	-	-
Other	111	92	92	92	92	92
Total Trans Int. & Compliance:	\$ 386	\$ 467	\$ 447	\$ 432	\$ 458	\$ 457

2020-2025 Non Labor Expense Category (\$000)

Item	2020 Forecast	2021 Plan	2022 Plan	2023 Plan	2024 Plan	2025 Plan
Storage Integrity Engineering:						
Outside Services-Other	\$ 5	\$ 716	\$ 1,132	\$ 869	\$ 1,108	\$ 903
Materials	6	2	2	2	2	2
Transportation & Equipment	10	27	27	28	29	30
Other	2	39	41	39	41	39
Total Storage Integrity Engineering	\$ 24	\$ 783	\$ 1,202	\$ 937	\$ 1,179	\$ 973
Other:						
Pipeline Safety Management Systems	\$ 14	\$ 84	\$ 92	\$ 90	\$ 107	\$ 97
Operator Qualification	78	152	180	182	181	186
Gas Supply	173	190	189	169	169	169
American Gas Association Dues	219	213	219	226	233	240
Dept Of Transportation Storage Fee	167	167	100	100	100	100
Dept of Transportation Assessment	125	147	153	158	162	167
OT Security	88	543	543	543	543	543
Liability Claims	99	109	109	109	109	109
Other	318	186	187	187	188	189
Total Other	\$ 1,280	\$ 1,791	\$ 1,771	\$ 1,764	\$ 1,792	\$ 1,799

2020-2025 Mechanism O&M Expense (\$000)

Item	2020 Forecast	2021 Plan	2022 Plan	2023 Plan	2024 Plan	2025 Plan
GLT Mechanism:						
CSO Meter Conditions	589	375	388	398	406	414
Repair Leaks	374	314	325	330	336	341
Customer Unlocatables	362	310	310	310	310	310
Total GLT Mechanism	\$ 1,326	\$ 999	\$ 1,023	\$ 1,038	\$ 1,052	\$ 1,065
GSC Mechanism:						
Gas Losses - Muldraugh	1,311	1,241	1,281	1,407	1,407	1,241
Gas Losses - Magnolia	189	180	185	186	186	186
Total GSC Mechanism	\$ 1,500	\$ 1,421	\$ 1,466	\$ 1,593	\$ 1,593	\$ 1,427
Total Mechanism Expense	\$ 2,826	\$ 2,420	\$ 2,489	\$ 2,631	\$ 2,645	\$ 2,492

O&M Annual Expense Reconciliation (\$000)

	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>
2021 Business Plan (pg 6)	\$ 66,633	\$ 68,233	\$ 64,819	\$ 69,772	\$ 68,793
2020 Business Plan	63,625	63,446	59,940	65,272	67,026
Change	<u>\$ (3,008)</u>	<u>\$ (4,787)</u>	<u>\$ (4,880)</u>	<u>\$ (4,500)</u>	<u>\$ (1,767)</u>
Drivers:					
Labor	\$ 652	\$ 1,005	\$ 1,008	\$ 1,160	\$ 1,480
Inline inspections	(2,848)	(4,069)	(3,948)	(3,145)	(2,105)
Line Locating	(555)	(907)	(1,117)	(846)	(628)
Mega Rule Part 2 Compliance	(311)	(393)	(400)	(408)	(416)
Well Logging	559	187	86	(541)	(319)
Customer Initiated Requests	27	21	16	30	44
Leak Repair	(83)	(97)	(98)	(95)	(89)
Trouble Orders	(14)	36	48	146	156
Compressor Stations Material	37	(86)	(107)	(305)	142
OT / IT Security	(543)	(543)	(543)	(543)	(543)
All Other	70	58	176	46	511
Total Drivers	<u>\$ (3,008)</u>	<u>\$ (4,787)</u>	<u>\$ (4,880)</u>	<u>\$ (4,500)</u>	<u>\$ (1,767)</u>

Operational Performance

Key Performance Indicators

<u>KPI</u>	<u>2020 Aug YTD</u>	<u>2021 Plan</u>	<u>2022 Plan</u>	<u>2023 Plan</u>	<u>2024 Plan</u>	<u>2025 Plan</u>
Safety - Employee Incident Rate	0.95	1.56	1.55	1.53	1.51	1.51
Safety - Contractor Incident Rate	2.01	1.66	1.55	1.47	1.38	1.38
DART - Employees	0.47	0.78	0.77	0.75	0.73	0.73
Gas Response Priority 1 Calls (minutes)	31.4	34.5	34.5	34.0	34.0	34.0
New Business Cycle Time (calendar days) ¹	5.50	8.50	8.00	7.50	7.50	7.00

1) Measures from the time a service request is approved by a locator from the Design department to the time the service is installed.