

STATE OF NEW YORK
DEPARTMENT OF PUBLIC SERVICE

CASE 19-G-0298 - In the Matter of Staff's Analysis of Local
Distribution Company Performance Related to
the Pipeline Safety Measures.

2018 PIPELINE SAFETY
PERFORMANCE MEASURES REPORT

Pipeline Safety Section
Office of Electric, Gas & Water
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Executive Summary

The pipeline safety performance measures that make up this report are the result of collaborative efforts beginning in the 1990's between New York's major natural gas local distribution companies (LDCs) and the New York State Department of Public Service (DPS). Revised in 2003, these measures improve identification and tracking in areas that are critical to pipeline safety. Most of the data used in the report was gathered and submitted by the LDCs using processes developed from these collaborative efforts.

This report examines the results of LDC performance in specific safety areas that include damage prevention, emergency response, and leak management for 2018. Also examined are the results of audits and investigations that verify compliance with the minimum pipeline safety regulations. The Pipeline Safety Section of the Office of Electric, Gas and Water has been producing this report since 2004.

Performance related to the total damage prevention measure significantly declined, approximately 28.1%, from the previous calendar year, due largely to the exclusion of refreshed one-call tickets in the New York City and Long Island regions, which is discussed in more detail below. The 30-minute, 45-minute, and 60-minute emergency response time measures improved slightly, with the total year-end leak backlog improving roughly 10.1% from the previous calendar year. The year-end backlog for potentially hazardous leaks also improved going from 66 in 2017, to 32 in 2018. In 2017, non-compliances were identified in all 11 of the major LDCs' operating service territories.

Overall, the data indicates that performance has substantially improved for LDCs across the state over the

sixteen-year period Staff has been reporting performance to the New York State Public Service Commission (Commission). As LDCs continue their outreach efforts, adopt better practices in responding to leak, odor, and emergency reports, and work to replace leak-prone infrastructure, Staff expects further performance improvements will occur. A high-level discussion of the 2018 results for each performance measure follows below.

The first measure, damage prevention, gauges the success of LDCs in minimizing damage to buried natural gas facilities caused by excavation activities. The damage prevention measure is broken down into four categories: damages due to (1) mismarks, or the inaccurate marking by the LDC of its affected underground facility; (2) company and its contractors; (3) third party excavator error; and (4) no-calls, or failure of an excavator to provide notice of intent to excavate to the one-call notification system.

Overall, damage prevention performance across the state significantly declined, approximately 28.1%, during 2018. This was due, largely in part, to the exclusion of 234,172 refreshed one-call tickets in the KeySpan Gas East Corporation d/b/a National Grid (NGrid LI), and The Brooklyn Union Gas Company d/b/a National Grid (NGrid NY), service territories. Retransmits, or refreshes, are defined as any one-call ticket which has the same requesting party and location of the proposed scope of work. Retransmits, or refreshes, should be excluded by all LDCs from their total performance. However, and pursuant to the findings of an operational audit, both NGrid LI and NGrid NY were including refreshed tickets within their respective total performances. In 2018, refreshed one-call tickets were excluded from both NGrid LI's and NGrid NY's respective total performances. Therefore, any comparisons made from year to year

would have to be based upon the total number of damages, and not the total number of damages per 1,000 one-call tickets. In 2017, there were a total number of 1,562 damages. In 2018, there were a total number of 1,595 damage. This increase in 33 damages, or approximately 2.1%, is relatively consistent.

The second measure, emergency response, reflects the LDCs' ability to respond promptly to reports of leak, odor, and emergency notifications by examining the percentage of reports that were responded to within various response time intervals. The performance measure contains three specific response goals: (1) respond to 75% of emergency reports within 30 minutes, (2) 90% within 45 minutes, and (3) 95% within 60 minutes.

LDC performance for each of the response time goals improved in 2018. In general, the LDCs have continued to use technologies such as global position systems (GPS) to quickly identify the most appropriate employee to respond to leak, odor, or emergency reports, and have continued placing, or added personnel, in certain geographical areas during the times of day that have historically high volumes of emergency notifications. In addition, the Commission has begun to incorporate positive revenue adjustments within the respective LDC rate proposals to encourage further improvements.

The third measure, leak management, examines LDCs' performance in effectively reducing leak inventories and keeping potentially hazardous leaks to a minimum. Potentially hazardous leaks include any leak that requires repair pursuant to 16 NYCRR §255 (Types 1, 2A, and 2). This report also examines each LDC's total leak backlog. Total leak backlogs include potentially hazardous leaks and Type 3 leaks, which do not have a prescribed repair timeframe and are, by definition, considered to be non-hazardous. Pursuant to 16 NYCRR §255, Type 3 leaks require

reevaluation during the next required leakage survey or annually, whichever is sooner, to ensure that a public safety hazard has not developed. While Type 3 leaks are not expected to become a safety concern, LDCs should work to eliminate these known leaks on their systems because it reduces lost gas, maintenance costs, the total number of emergency reports, and because methane leakage is an environmental concern and the persistent odor can negatively impact public awareness efforts.

For leaks requiring repair, the end of the calendar year generally coincides with the beginning of the frost season. During this timeframe, there is a greater chance of natural gas migration into a building because the natural gas cannot vent as readily through the soil to the atmosphere due to the blanket of frost. In general, all LDCs have demonstrated improvement in these measures over the past several years. The total year-end leak backlog improved significantly, approximately 49.8% and 10.1%, going from 26,638 in 2008, and 14,879 in 2017, respectively, to 13,381 in 2018. Also, the year-end backlog for potentially hazardous leaks improved significantly going from 66 in 2017, to 32 in 2018, and is down 97.2% when compared to 1,154 in 2003.

For the fourth measure, non-compliances identified by Staff, LDCs are being evaluated on their compliance with the Commission's minimum pipeline safety regulations. This measure looks at non-compliance issues as identified by Staff during audits and investigations of the LDCs. Each year, Staff conducts statistically-based audits and investigations of the LDCs to determine their compliance. Each non-compliance identified represents an area where an LDC failed to meet these minimum requirements as prescribed.

The data varies greatly from year to year, which is due, in part, to Staff's five-year audit cycle. These audits and investigations of the pipeline safety regulations occur on varying frequencies determined by the risk each regulation poses to public safety. The regulations are identified either as high risk, in which an audit is conducted annually, or as other risk, which is evaluated on a two, three, four, or five-year frequency, not to exceed five years.

In 2017, non-compliances were identified in all 11 of the major LDCs' operating service territories with improvements having been realized in each of the previous four calendar years. This is due, in part, to the negative revenue adjustments which have been incorporated into most of the LDC's respective rate plans. Regardless of the efforts made thus far, the goal for each LDC should remain the complete elimination of all non-compliances with the pipeline safety regulations.

Introduction

The pipeline safety performance measures were developed as a means of evaluating LDC performance in areas identified as presenting the highest safety risks. Performance measures are tools that Staff and the LDCs can use to ensure the safe and reliable operation and maintenance of natural gas distribution systems. These measures show how companies are performing from year to year, as well as the trends with time.

In developing the performance measures, Staff first identified areas in the LDCs' systems or operations that carry greater potential for harm to the public if performance is sub-standard. Staff then worked with LDCs to develop methods for capturing and tracking the appropriate data, so they could be used as a practical management tool. This process led to the identification of three performance measures: damage prevention examines damages to the LDCs' buried facilities resulting from excavator activities, which is a leading cause of incidents involving natural gas pipelines both within New York State and nationally; emergency response examines the amount of time that it takes an LDC to reach the scene of a reported gas leak, odor, or emergency notification; and leak management examines LDC performance in effectively reducing and managing leak inventory levels for potentially hazardous leaks and in total.

On August 15, 2013,¹ the Commission issued a request for proposals for an independent consultant to perform a focused operational audit of the performance measure data as submitted by nine of the 11 LDCs mentioned in this report. The objectives were to assess the completeness and accuracy of the performance

¹ Case 13-M-0314, Central Hudson Gas & Electric Corporation, et al. - Operational Audit, Letters to LCDs (issued August 15, 2013).

measure data submitted, assess comparability amongst the utilities, and determine the suitability of each of the performance measures identified.

On April 20, 2016, the Commission issued an Order² releasing the completed audit report and provided guidance on LDC response to the recommendations. Implementation plans to address each recommendation were due by May 20, 2016. In general, the consultant reported that the LDCs have complied with the intent of these performance measures and have, for the most part, accurately reported their respective data. Some of the consultants' recommendations focused on lack of written policies and procedures to address and collect data, instances where the methodology used to calculate the data has drifted with time, and minor inconsistencies among LDCs with the compilation of their respective data.

An example of where the data has drifted with time is the classification of resent, refreshed, revised, retransmitted, reissued, or relocated one-call notifications. For the data submitted in this year's report, there are inconsistencies with how each of the LDCs are reporting these types of one-call tickets. Also, the terminology used between the one-call centers are inconsistent - which may have led to these tickets having been accounted for differently amongst the LDCs. Per the most recent guidance provided to each LDC by Staff in December 2015, retransmits, or refreshes, are defined as any one-call ticket which has the same requesting party and location of the proposed scope of work. Retransmits, or refreshes, should be

² Case 13-M-0314, supra, Order Releasing Report and Providing Guidance on Response (issued April 20, 2016).

excluded by all LDCs from the one-call ticket count for the purposes of the damage prevention measure.

On March 10, 2017, the Commission issued an Order³ approving the submitted implementation plans and directed the LDCs to implement those plans. The issue identified with how retransmitted or refreshed one-call tickets are counted should resolve itself within the next few years as LDCs make changes to their existing programs. Thus, the data represented in this year's report may vary per LDC based on the treatment of these specific types of one-call tickets and depend upon how well the 2015 guidance was followed.

For the final measure, non-compliances identified by Staff, LDCs are being evaluated on their compliance with the Commission's minimum pipeline safety regulations. This measure looks at non-compliance issues as identified by Staff during audits and investigations of the LDCs. Each year, Staff conducts statistically-based audits, and investigations of the LDCs to determine their compliance. Each non-compliance identified represents an area where an LDC failed to meet these minimum requirements as prescribed.

Non-compliance with the pipeline safety regulations could cause or contribute to a major incident. For this reason, it's important these audit findings are publicly transparent and continue to track improvements, as well as repeat violations, with time. A further deterrent to non-compliances are negative revenue adjustments which have been incorporated into most of the LDCs' respective past and current rate plans.

³ Case 13-M-0314, supra, Order Approving Implementation Plans (issued March 10, 2017).

Performance and Analysis

Throughout this report, except for the compliance measure, the figures display performance results from 2014 through 2018 for each LDC,⁴ with the grey columns in the bar graphs representing 2014 through 2017, and the black column representing the 2018 results. For the compliance measure, the results from 2013 through 2017 are displayed based on the timing of when audits are completed. The blue horizontal lines on the bar graphs represent the combined LDC performance levels for the specific identified measure.

Damage Prevention

Damage to underground natural gas facilities due to excavation activity is one of the leading causes of natural gas pipeline failures and accidents, both statewide and nationally.

Damage prevention procedures are designed to work as follows: (1) an excavator provides notice of their intent to excavate to a one-call notification system and waits two working days for underground facilities to be marked;⁵ (2) the one-call notification system transmits an excavation notice (one-call ticket or ticket) to the member operators whose facilities may be affected by that excavation activity; (3) the affected operators clearly and accurately mark the location of their buried facilities in or near the excavation area; and (4) excavators work carefully around the marked facilities to avoid damage. Damages to underground facilities can be categorized by

⁴ Historical calendar year data and associated Case numbers can be found in Appendix A of this report.

⁵ New York State has two one-call notification systems, one for New York City and Long Island, New York 811, and the second for the remainder of the state, Dig Safely New York.

identifying where in this four-step process the root cause of an incident lies.

Evaluating the number of damages in relation to the volume of construction and excavation activity in an LDC's respective service territory provides a useful basis for assessing performance. The data used in these analyses are contained in Appendices B and C. The method used to normalize each LDCs' data is the number of damages per 1,000 one-call tickets. As previously mentioned, inconsistencies were identified through the operational audit for the treatment of retransmitted and refreshed tickets. Thus, the data represented in this year's report may vary per LDC based on the treatment of these specific types of one-call tickets.

The numbers of damages are then categorized as damages resulting from mismarks, excavator error, company employees and contractors, and no-calls. Each ticket received provides an LDC with the opportunity to mark its affected facilities accurately. Hence, for damages due to mismarks, the report examines the number of damages caused by mismarks per 1,000 tickets received for each LDC and so on for each of the other categories.

Once a one-call ticket is requested by calling the toll free 811 telephone number, and the facilities are marked, the excavator can, if working carefully, avoid damage to underground facilities. Third party excavator error damages are historically the largest component of total damages, primarily because of the need to educate third party contractors in safe and best excavation practices. Most large excavators are aware of the existence of the one-call systems and the requirement to provide notification of planned excavation work. Many excavators are not as well-versed in the additional requirements - such as respecting tolerance zones, verifying locations of

underground facilities by means of hand-dug test holes, notifying operators of unverifiable marked facilities, maintaining the markings, and maintaining clearances with powered equipment and the verified facility. Educating excavators on how to avoid underground facility damage once mark-outs have been requested requires more in-depth training and outreach. The Commission cannot order such training for non-utility excavator personnel. This is one of the reasons why, through its enforcement process, the Commission considers reducing penalties contingent upon successful completion of training provided by the one-call centers or Dig Safely New York's certified excavator program.

Damage caused by LDC personnel or by its contractors are also included in the damage analysis as a separate category. These personnel should have sufficient training, qualifications, and experience to work carefully near the LDC's facilities. LDCs should also have better control over contractors hired by them to perform work than they do over unaffiliated excavators. Thus, this category should be the smallest contributor to the total damages and, in theory, the easiest to improve. The current measure tracks damages caused by all utility operations within a particular LDC. That is, for an electric and gas combination utility, damage to gas facilities caused by electric crews or electric company contractors are combined.

Damages due to no-calls are instances where the excavator failed to provide notice of their intent to excavate to either of the one-call notification systems. This measure provides an indication of the general level of awareness excavators have about the one-call notification systems. A high percentage of damage in this category indicates that additional and more effective efforts are needed to make excavators aware

of the dangers of working around buried facilities and the importance of using the one-call systems.

It is important to note that the damage prevention measure evaluates actual damages to an LDCs' underground natural gas facilities. Based on the data reported in 2018, 99.8% of one-call tickets had no associated damage to natural gas facilities. This is consistent with the Common Ground Alliance's (CGA)⁶ 2017 Damage Information Reporting Tool (DIRT)⁷ report which found that when a call is made prior to excavation, damage occurs less than 1.0% of the time.

A total of 1,595 damages occurred in 2018 to the 11 major natural gas LDC facilities, 33 more than in 2017. For the previous eight years, the average number of total damages has been 1,593. This consistency demonstrates that any performance improvements or declines have primarily been driven by the number of one-call tickets. As previously mentioned, the total damage prevention measure significantly declined, approximately 28.1%, from the previous calendar year, due largely to the exclusion of refreshed one-call tickets (234,172) in the NGrid LI and NGrid NY service territories.

Staff supports the LDCs' and excavators' efforts by enforcing the Commission's damage prevention regulations prescribed within 16 NYCRR §753 - Protection of Underground Facilities. Over the past five years approximately 2,209 citations have been issued, which has led to training sessions

⁶ The Common Ground Alliance is a national association of stakeholders involved in damage prevention that identifies and disseminates best practices, conducts public awareness programs, and collects and analyzes data regarding damages to underground utility facilities.

⁷ <http://commongroundalliance.com/media-reports/dirt-report-2017>

being completed by excavators with either New York 811 or Dig Safely New York. Approximately \$3,694,471 in penalties have been collected for this same five-year period.

Figure 1 below displays the collective overall performance regarding the damage prevention measures. Note the decrease in the total number of one-call tickets and respective declining performances in each of the categories for 2018.

Metric	2014	2015	2016	2017	2018
Number of Tickets	797,366	801,920	827,512	978,049	777,371
Mismarks	0.42	0.48	0.39	0.37	0.52
Co. & Co. Contractor Error	0.09	0.10	0.08	0.08	0.11
Excavator Error	0.96	1.08	0.98	0.78	1.01
No-calls	0.49	0.51	0.44	0.37	0.41
Total Damages (per 1,000)	1.96	2.18	1.89	1.60	2.05

Figure 1 - Overall Damage Prevention Performance

As previously mentioned, retransmitted and refreshed tickets were excluded by NGrid LI and NGrid NY for 2018 which contributed to all four categories declining in performance for 2018.⁸ When reviewing the number of damages, the only improvement in 2018, when compared with that of 2017, came from no-call damages going from 365 to 315. For the remaining

⁸ The "total" damage performance may not equal the sum of the four-metrics due to rounding.

categories, the number of damages for mismarks increased from 357 in 2017, to 405 in 2018, for third party error, from 759 to 787, and for company and its contractors' error, from 81 to 88, respectively. Specific LDC performance for each of the damage prevention categories are located in Appendices B and C.

LDC performance in total damages per 1,000 tickets, are displayed in Figure 2 below.

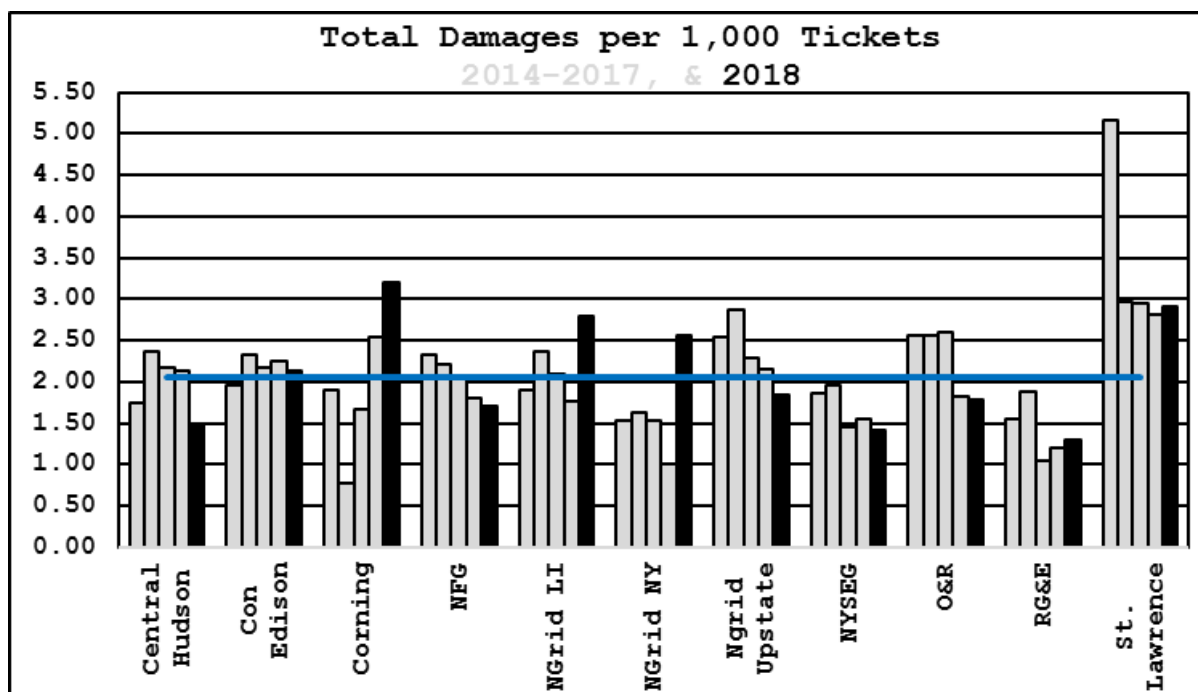


Figure 2 - Total Damages per 1,000 Tickets

As seen in Figure 2, six LDCs improved and five LDCs had worse performance when compared to the previous year. Among those improving, significant gains were made by Central Hudson Gas & Electric Corporation (Central Hudson) (30.8%) going from 54 total damages in 2017, to 44 in 2018, Niagara Mohawk Power Corporation d/b/a National Grid (NGrid Upstate) (14.6%) going from 221 to 187, New York State Electric & Gas Corporation (NYSEG) (8.2%) going from 95 to 89, and National Fuel Gas

Distribution Corporation (NFG) (5.5%) going from 178 to 173, respectively. For Consolidated Edison Company of New York, Inc. (Con Edison) (4.9%), and Orange & Rockland Utilities, Inc. (O&R) (2.6%), minor improvements were made when normalized with one-call ticket increases going from 225 and 58 total damages in 2017, to 238 and 60 in 2018, respectively.

LDC performance in excavator error damages per 1,000 tickets are displayed in Figure 3.

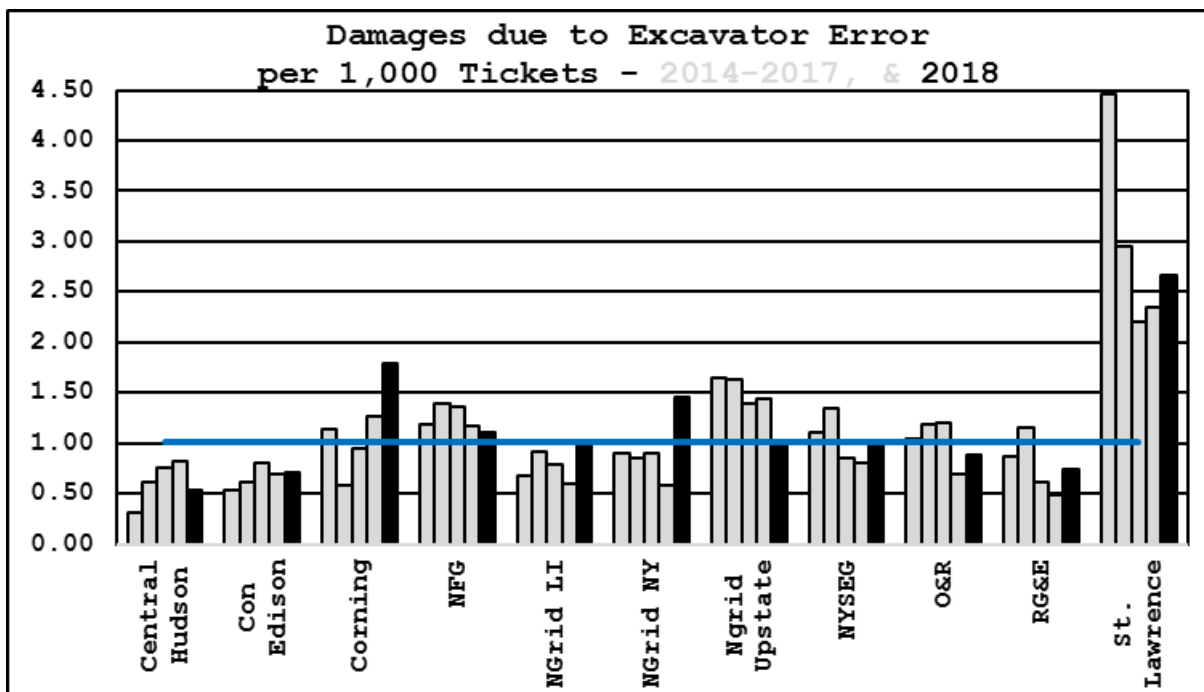


Figure 3 - Excavator Error Damages per 1,000 Tickets

As seen in Figure 3, three LDCs improved and eight LDCs had worse performance when compared to the previous year. Of those LDCs showing improvement, the most significant changes were made by Central Hudson (35.3%) going from 21 excavator error damages in 2017, to 16 in 2018, and NGrid Upstate (32.3%) going from 149 to 100, respectively. As LDCs continue their public outreach, education, and training efforts, the general

public and excavators will be more informed as to the required safe digging protocols prescribed within the one-call regulations found in 16 NYCRR §753.

Typically, the LDCs that have declined in performance from the previous year are encouraged to perform an analysis of their specific damage prevention programs and outreach efforts to identify ways to improve and reduce damages. Due to minor inconsistencies having been identified among LDCs during the operational audit with the compilation of their respective data, no self-analysis will be recommended for this year to allow for leveling out of the data. Once new performance levels are established, and yearly comparisons re-evaluated, future self-analysis will be recommended for those LDCs who further decline in their performance.

LDC performance in no-call damages per 1,000 tickets are displayed in Figure 4 below.

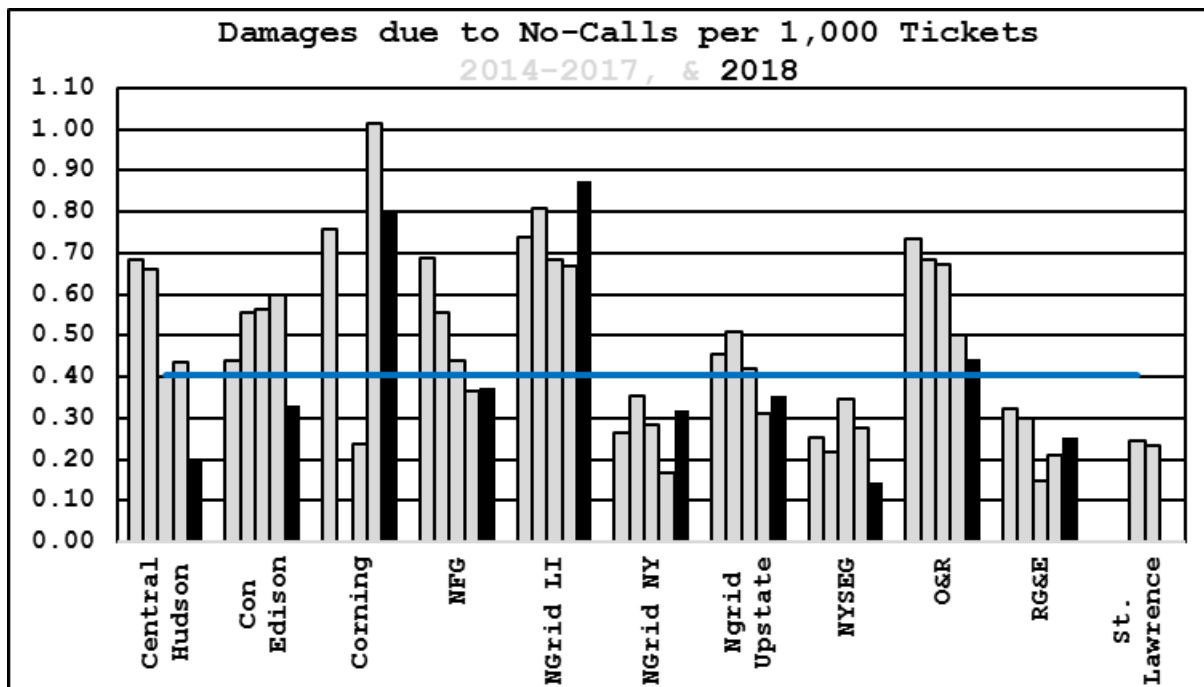


Figure 4 - No-call Damages per 1,000 Tickets

As seen in Figure 4, six of the LDCs improved and five had worse performance when compared to the previous year. Among those LDCs with improved performance, St. Lawrence Gas Company, Inc. (St. Lawrence) (100.0%), Central Hudson (53.7%), NYSEG (48.1%), Con Edison (44.6%), Corning Natural Gas Corporation (Corning) (21.1%), and O&R (11.7%), saw the largest improvements during 2018 when compared with that of 2017. For St. Lawrence, the total number of damages went from one in 2018, to zero in 2017, for Central Hudson from 11 to six, for NYSEG from 17 to nine, for Con Edison from 60 to 37, for Corning it remained at four, and for O&R from 16 to 15, respectively. NGrid LI and NGrid NY saw reductions in the total number of damages from 2017 to 2018, going from 124 to 111, and 47 to 41, respectively.

Use of the three-digit 811 dialing system, consistent enforcement actions taken by Staff for violations of 16 NYCRR §753, and public outreach, education, and training efforts taken by LDCs and the one-call systems are all contributing factors in raising excavator awareness regarding their obligations to not only utilize the one-call system, but to excavate safely around underground facilities.

To aid in the enforcement of 16 NYCRR §753, LDCs voluntarily forward information about excavators who damaged underground facilities without having mark-out requests. In a more recent effort, LDCs have also begun reporting more of their damages regardless of cause, which has been a contributing factor to the reduction in damages. Once notified, Staff can evaluate the details of each damage, perform on-site interviews and investigations, conclude the root cause or causes of the damage, obtain any pertinent information or photographs, and pursue enforcement actions where appropriate. This enforcement

effort, coupled with higher reporting frequencies and associated penalties, are deterrents to non-compliance. Where appropriate, enforcement cases are resolved by a consent order agreement in which the financial penalty may be reduced if the excavator attends either a free training provided by the one-call system covering the area where the damage occurred or Dig Safely New York's certified excavator program. All LDCs are encouraged to continue in their efforts to notify Staff of these incidents.

LDC performance in mismark damages per 1,000 tickets are displayed in Figure 5 below.

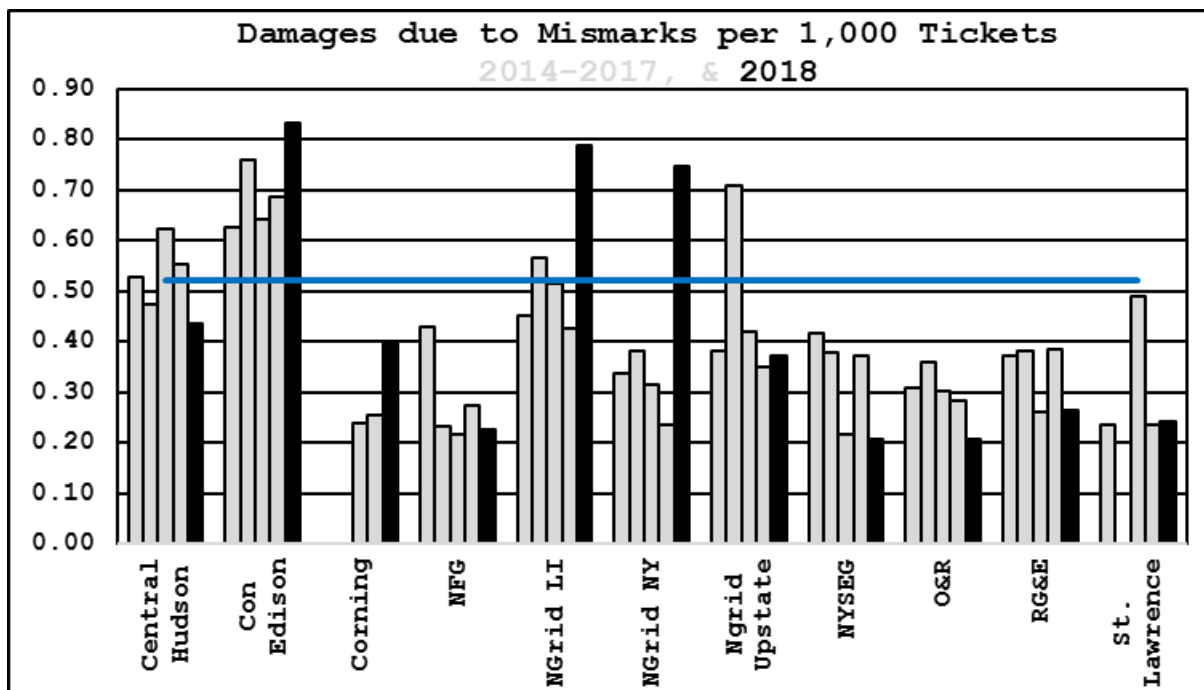


Figure 5 - Mismark Damages per 1,000 Tickets

As seen in Figure 5, five LDCs improved, and six had worse performance when compared to the previous year. Overall, there was 13.4% decline in performance going from 357 mismark damages in 2017, to 405 in 2018. For the LDCs that improved, NYSEG (44.6%) went from 23 mismark damages in 2017, to 13 in

2018, Rochester Gas & Electric Corporation (RG&E) (31.1%) went from 31 to 19, O&R (26.7%) went from nine to seven, Central Hudson (21.2%) went from 14 to 13, and NFG (17.2%) went from 27 to 23, respectively.

Staff typically expects to see general improvements in damages due to mismarks as LDCs continually adopt best practices to locate their facilities, remove older leak prone pipe that is less accurately identified on facility records with newer pipe whose exact locations are known, and develop better controls over their locating contractors.

LDC performance in damages due to the company and its contractors per 1,000 tickets are displayed in Figure 6 below.

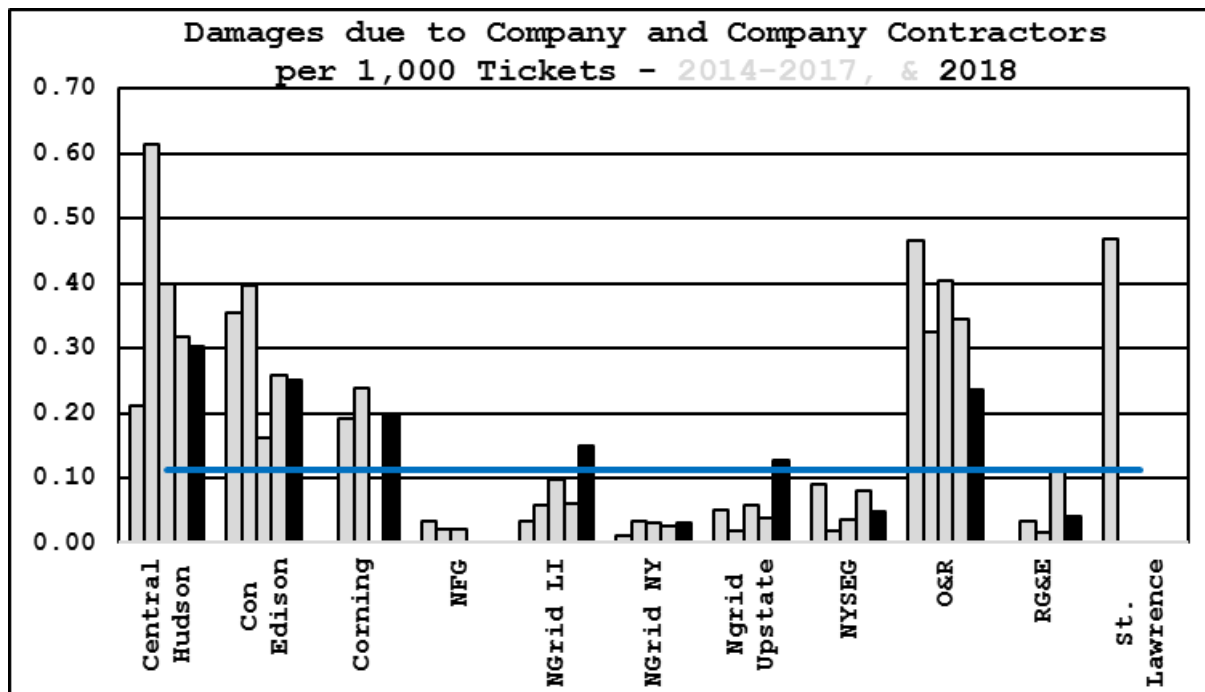


Figure 6 - Damages due to Company and Company Contractors per 1,000 Tickets

As seen in Figure 6, five LDCs improved, two remained the same, and four had worse performance when compared to the

previous year. The largest improvements in company and company contractor damages came from RG&E (62.6%) going from nine damages in 2017, to three in 2018, NYSEG (41.2%) going from five to three, and O&R (31.5%) going from 11 to eight, respectively. Both NFG and St. Lawrence maintained zero damages in 2018.

With the Commission's support and encouragement, the LDCs have increased their proactive removal of leak-prone pipe. This leads to more excavation activity from both the company and its contractors near and around buried natural gas facilities, which, in turn, increases the opportunity for damage. Even with this increased excavation activity, performance in this category was maintained going from 81 damages in 2017, to 88 in 2018.

On the other hand, LDCs should have better control over contractors they hire to perform work for them than they do over third-party excavators. These employees should have the training, qualifications, and experience to work carefully near and around facilities. The LDCs point out that often these damages are to facilities that are in the process of being removed. When damaged, their own crews and contractors are more prepared than third-party excavators to promptly control the situation. While true, Staff believes that LDCs should not minimize this category of damages. These damages still have the potential to harm workers and members of the public and should be avoided. All damages are not only safety concerns but have the potential to lead to service outages and other disruptions, such as road closures and evacuations.

As noted above, this measure has the lowest number of damages, and is the smallest contributor to the overall damage prevention measure. Further, the graphs' vertical scale in Figure 6 makes the year-to-year changes appear more dramatic than those displayed in Figures 2, 3, 4, and 5. This graph's

vertical scale exaggerates the fluctuations for the smaller LDCs. It has been noted several times that the smaller LDCs (such as Corning and St. Lawrence) can have dramatic variations from year to year. The data suggest that even the larger LDCs can experience sizable volatility in performance.

While there is value in evaluating recent trends in performance, it is worth taking a step back to look at this year's data in relation to that of 2014. Figure 7 displays the overall performance regarding the damage prevention measures from calendar years 2014 and 2018.

Metric	2014	2018
Number of Tickets	797,366	777,371
Mismarks	0.42	0.52
Co. & Co. Contractor Error	0.09	0.11
Excavator Error	0.96	1.01
No-calls	0.49	0.41
Total (per 1,000)	1.96	2.05

Figure 7 - Damage Comparison between 2014 and 2018

Emergency Response

Commission regulation 16 NYCRR §255.825(d) requires that LDCs provide a monthly report to Staff that includes a breakdown of the total number of leak, odor, and emergency reports received and responded to during the month in intervals of 15 minutes during normal business hours, weekdays outside

business hours, and weekends and holidays. The following have been established as overall response time standards: 75% within 30 minutes, 90% within 45 minutes, and 95% within 60 minutes. Each company has a very small number of instances of response times exceeding 60 minutes.⁹

The intent of the reporting requirement and the performance measure is to evaluate company responses to natural gas leak, odor, and emergency notifications that are generated by the public or other authorities; for example, police, fire, and municipalities. For the purposes of reporting, the response times are measured from the time the notification is sent from the company dispatch to the time of arrival of qualified company personnel at the location.¹⁰

Figure 8 displays the 11 major LDCs annual emergency response time performance for each standard since 2014, with the 2018 performance presented in black. For the fourth consecutive year, the total number of leak, odor, and emergency reports decreased (1.3%), going from 179,787 in 2017, to 177,410 in 2018. In 2018, all three categories improved from the previous calendar year, as well as having exceeded the minimum standards of 75%, 90%, and 95%. While these gains weren't significant, the continued focus by each of the LDCs in these categories is notable and should be commended. Also, the Commission has encouraged improvements beyond the 30, 45, and 60-minute

⁹ The LDCs are expected to review the circumstances of each instance exceeding 60 minutes and, where possible, work towards their elimination.

¹⁰ Qualified personnel are defined as company representatives who are properly trained and equipped to investigate leak, odor, and emergency reports in accordance with accepted company procedures and 16 NYCRR §255.604; operator qualification requirements.

standards by incorporating positive revenue adjustments into the LDCs' respective rate plans.

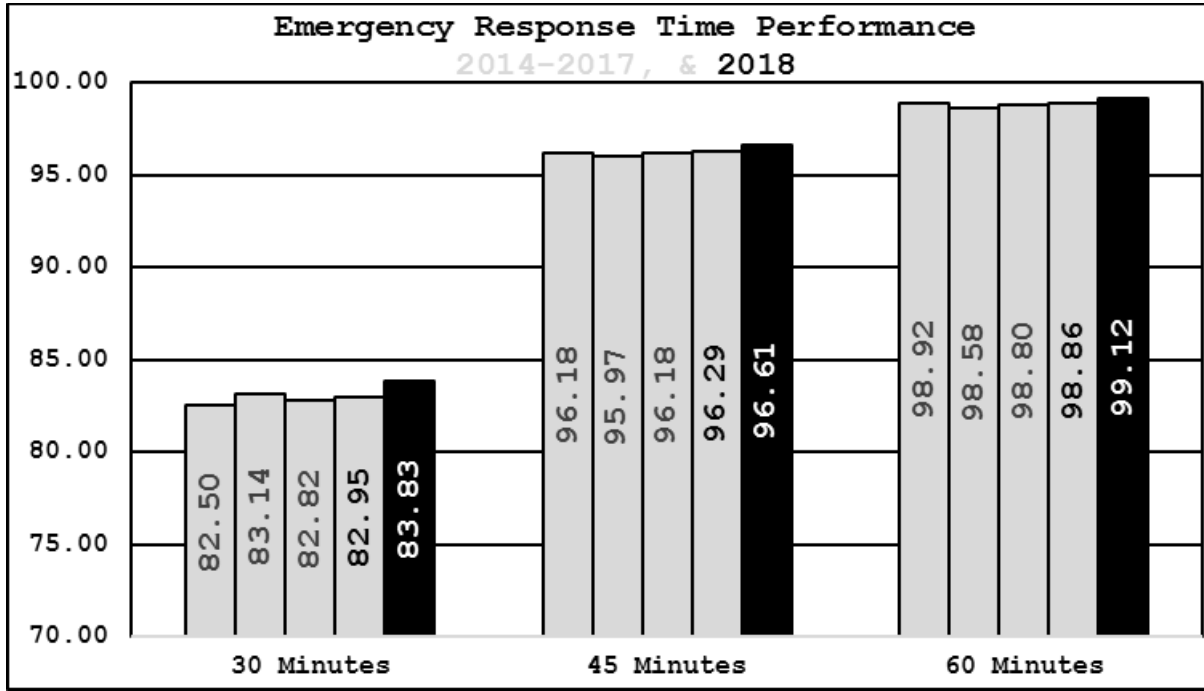


Figure 8 - Emergency Response Time Performance

Over the past 16 years, leak, odor, and emergency notifications across the LDCs have decreased from 227,905 in 2003, to 177,410 in 2018; or by 22.2%. These declines in notification volumes may be attributed to the reduction of leak backlogs, which will be discussed below in the leak management section, and aggressive and proactive leak prone pipe removal programs approved by the Commission.

Figure 9 presents data for calendar years 2014 through 2018, arranged by LDC and percentage of emergency response times achieved within 30 minutes.

LDCs	2014	2015	2016	2017	2018
Central Hudson	78.7	77.0	77.7	79.2	82.8
Con Edison	87.9	88.2	89.1	90.0	92.0
Corning	79.9	79.1	83.8	86.6	77.2
NFG	92.5	93.3	91.4	94.0	94.7
NGrid LI	75.5	78.0	77.2	74.3	74.1
NGrid NY	75.6	75.9	76.2	77.3	78.9
NGrid Upstate	79.1	82.7	82.3	80.4	79.3
NYSEG	80.8	80.6	82.0	79.0	76.1
O&R	87.9	89.0	88.9	89.0	88.2
RG&E	87.4	81.4	77.8	75.5	75.6
St. Lawrence	84.4	83.6	78.5	79.6	79.6

Figure 9 - Emergency Response Times for 30 Minutes (%)

As seen in Figure 9, NGrid LI is the only LDC that failed to meet the 30-minute standard. The data for the 45 and 60 minute responses times are provided in Appendices D and E, respectively.

It is encouraging to see that all LDCs have made efforts over the years to reach the emergency response time standards jointly established for this measure. Staff expects all LDCs to continue to evaluate and monitor their performance

and identify areas where best practices can be implemented to further exceed the benchmarks.

Leak Management

The purpose of evaluating the LDCs' leak management programs is to gauge how LDCs are responding to and addressing leaks on their systems, eliminating potentially hazardous leaks that are found, and reducing their backlogs of total leaks. The natural gas pipeline safety regulations contained in 16 NYCRR §255 include requirements for classifying leaks according to their relative hazard, considering factors such as whether natural gas migration is detected near buildings, in manholes, vaults, catch basins, under paved versus unpaved areas, etc. All leaks classified as potentially hazardous must be monitored and repaired according to the pipeline safety regulations and any hazardous conditions must be immediately eliminated. All other leaks must be reevaluated during the next required leakage survey or annually, whichever is less, but have no mandatory repair timeframes.

Unrepaired potentially hazardous leaks are an increased safety risk to the public. The risk is further exacerbated when there is frost in the ground, which increases the chance of natural gas migration into buildings. The frost acts as a blanket that does not allow the gas to readily vent to the atmosphere through the soil, potentially allowing the natural gas to find underground pathways and enter structures. Although a leak backlog on any particular day is a snapshot in time, the end of the calendar year is significant since it generally coincides with the beginning of the frost season. Thus, all data analyses are presented as of the last two weeks in December for each calendar year.

The data as reported by the LDCs related to Leak Management are contained in Appendices F, G, H, I, J, and K. The leak management measure looks at the year-end backlog of potentially hazardous leaks and in total. This measure does not substitute for, and is not a reflection upon, any LDC's compliance with requirements prescribed within the pipeline safety regulations. The data reported by the LDCs include leak repairs on mains and services by pipe material; the backlogs of potentially hazardous leaks and in total; repaired potentially hazardous leaks; and discovered potentially hazardous leaks.

Analysis of leak management data can also provide an indication of the pipe material's susceptibility to leakage. As a means of continuously improving leak management programs, Staff encourages the identification and removal of leak prone pipe, such as cast iron, bare, or ineffectively coated steel, and certain brittle plastic materials. Incentive programs to remove deteriorating and leak prone infrastructure and/or reducing leak backlogs have been incorporated into the LDCs' past and current rate plans. The long-term goal is to eliminate pipeline infrastructure that, due to its vulnerability to leaks, presents greater safety risks to the public. Thus, the aging pipeline infrastructure is removed and replaced by more modern materials that have shown to be less likely to leak.

The overall year-end backlog of potentially hazardous leaks had improved performance from 2017 to 2018, going from 66 to 32, and is down 97.2% when compared to 1,154 in 2003. This demonstrates that LDCs have maintained a continued effort of managing leak surveys and are completing them earlier in the year, to allow for time to repair discovered leaks before heading into the frost season.

Figure 10 displays the backlog of potentially hazardous leaks¹¹ from 2014 through 2018. The numerical leak data for this category is contained in Appendix H.

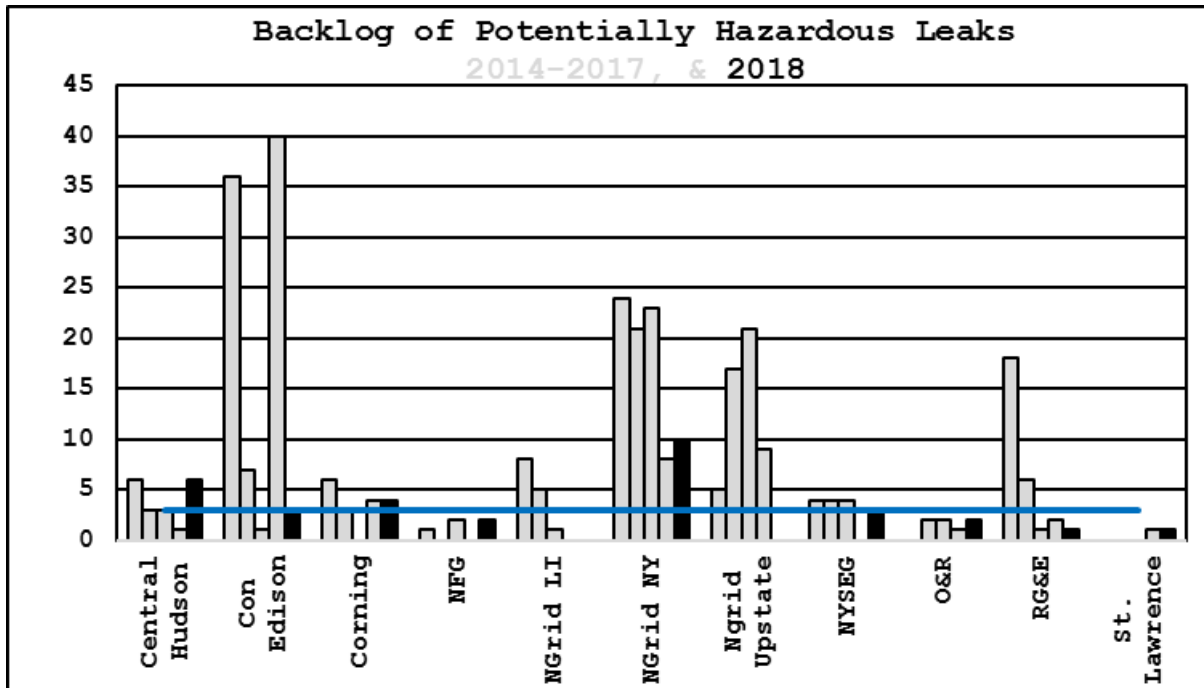


Figure 10 - Backlog of Potentially Hazardous Leaks

As seen in Figure 10, LDCs' continued efforts have led to negligible backlogs for potentially hazardous leaks entering the frost season, or last two weeks in December.

LDC performance as it relates to total leak backlogs include all potentially hazardous leaks, as identified above, in

¹¹ A backlog of leaks requiring repair is defined as active leaks in the system consisting of: Type 1, requiring immediate effort to protect life and property, continuous action to eliminate the hazard, and repairs on a day-after-day basis or the condition kept under daily surveillance until corrected; Type 2A, monitored every two weeks and repaired within six months; and Type 2, monitored every two months and repaired within one year.

addition to the remaining Type 3 leaks. Type 3 leaks are defined as not potentially hazardous at the time of detection and are reasonably expected to remain that way. However, Type 3 leaks must be reevaluated during the next regularly scheduled required leakage survey or annually, whichever is less, though they have no mandatory repair timeframe.

Without a mandatory repair timeframe, LDCs could allow this backlog to grow while still meeting the minimum pipeline safety regulations. In recent years, and like that of potentially hazardous leak backlogs, negative revenue adjustments have been incorporated into most of the respective LDCs' rate plans for total leak backlogs.

Figure 11 displays the backlog of total leaks (Type 1, 2A, 2, and 3) from 2014 through 2018. The numerical leak data is contained in Appendix G.

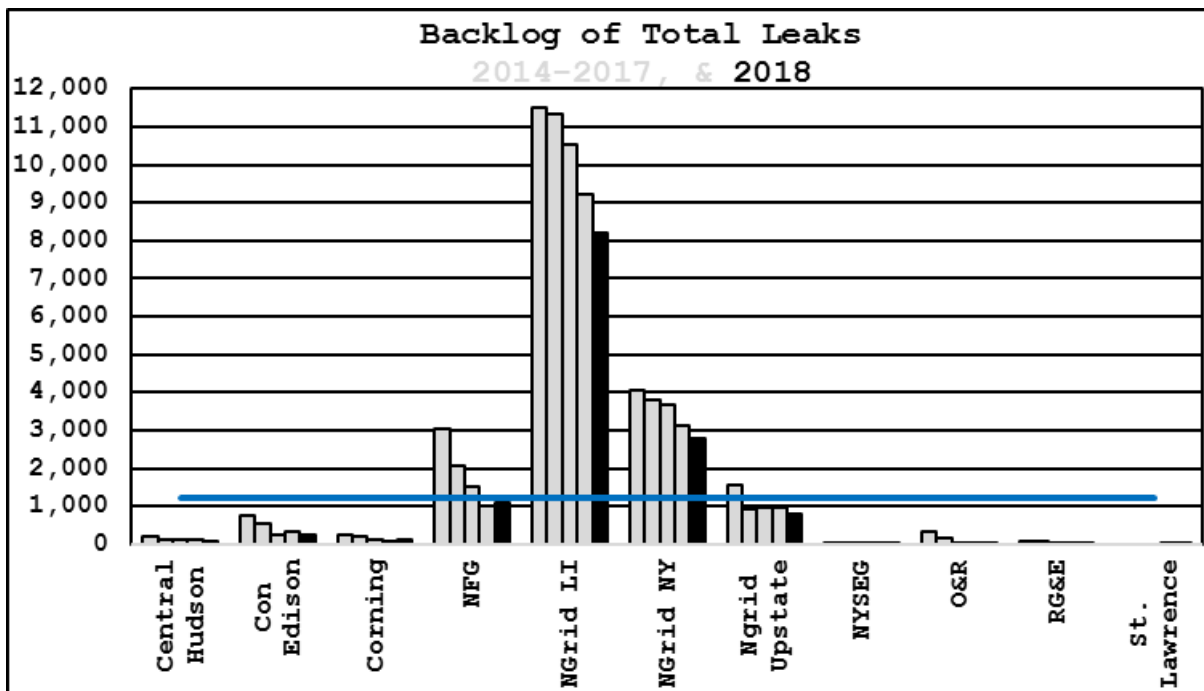


Figure 11 - Backlog of Total Leaks

As seen in Figure 11, NGrid LI continues to be an outlier in this category but has once again improved from the previous calendar year. NGrid LI improved approximately 11.2% when comparing 2018 to 2017, which resulted in 1,033 fewer backlogged leaks. Regardless, this performance is nearly three times that of the next highest LDC, NGrid NY, and accounts for 61.3% of the overall total leak backlog.

The notable performance improvements within this measure includes Con Edison (19.9%) going from 312 total leaks in 2017, to 250 in 2018, Central Hudson (18.0%) going from 111 to 91, NGrid Upstate (16.8%) going from 979 to 815, and NGrid NY (10.1%) going from 3,118 to 2,803, respectively. NYSEG, O&R, RG&E, and St. Lawrence all maintained their respective total leak backlogs during 2018.

Declines in performance (57.5% and 4.4%) were noted for Corning and NFG,¹² respectively, who went from a backlog of 73 and 1,028 total leaks in 2017, to 115 and 1,073 in 2018. These declines in performance were due, in part, to the discovery of 74 additional leaks when compared with that of 2017. As the accelerated removal of leak prone pipe continues over the next several years, it's to be expected that the backlog of total leaks will continue to improve.

Non-Compliances Identified through Audit Process

For the final measure, non-compliances identified by Staff, LDCs are being evaluated on their compliance with the Commission's minimum pipeline safety regulations. This measure looks at non-compliance issues as identified by Staff during

¹² During a leakage survey, NFG discovered 180 Type 3 leaks on a four-mile section of rural pipeline. In lieu of repairing these non-hazardous leaks, NFG decided to replace the entire section of piping during calendar year 2019.

audits and investigations of the LDCs. Each year, Staff conducts statistically-based audits and investigations of the LDCs to determine their compliance. Each non-compliance identified represents an area where an LDC failed to meet these minimum requirements as prescribed.

Staff conducts compliance audits and investigations on a calendar year basis. The statistically-based audits typically include a review of record and field activities. For the record audits, Staff reviews the previous calendar year's documentation and reports on any instances of non-compliance with the pipeline safety regulations. Throughout the remainder of the year, Staff accompanies LDC crews to perform field audits of the actual work being performed and compares those tasks with the requirements of the regulations and the LDCs' applicable procedures. Like the record audit, any instances of non-compliance are documented and then reported. For investigations, Staff is made aware, either through mandatory reporting or notifications, that an accident or incident has occurred. Once notified, Staff can evaluate the details of accident or incident, perform on-site interviews, conclude the root cause or causes of the accident or incident, obtain any pertinent information or photographs, and document any instances of non-compliance.

For this measure, the year identified will consist of both the statistically-based audits and investigations of a calendar year.¹³ Since the 2018 audits of 2017 records are in progress, Figure 12 below only displays the total number of non-compliances from 2013 through 2017. The total number of non-compliances are then normalized by the number of operating head-

¹³ This typically includes records generated, field activities, or accidents and incidents which were performed or occurred during the specific calendar year.

quarters (OHQs) within an LDC. For each OHQ, Staff conducts a separate audit of activities as they are prescribed by Staff’s five-year audit plan for that year. The associated data per LDC and the number of OHQs are located in Appendices L and M.

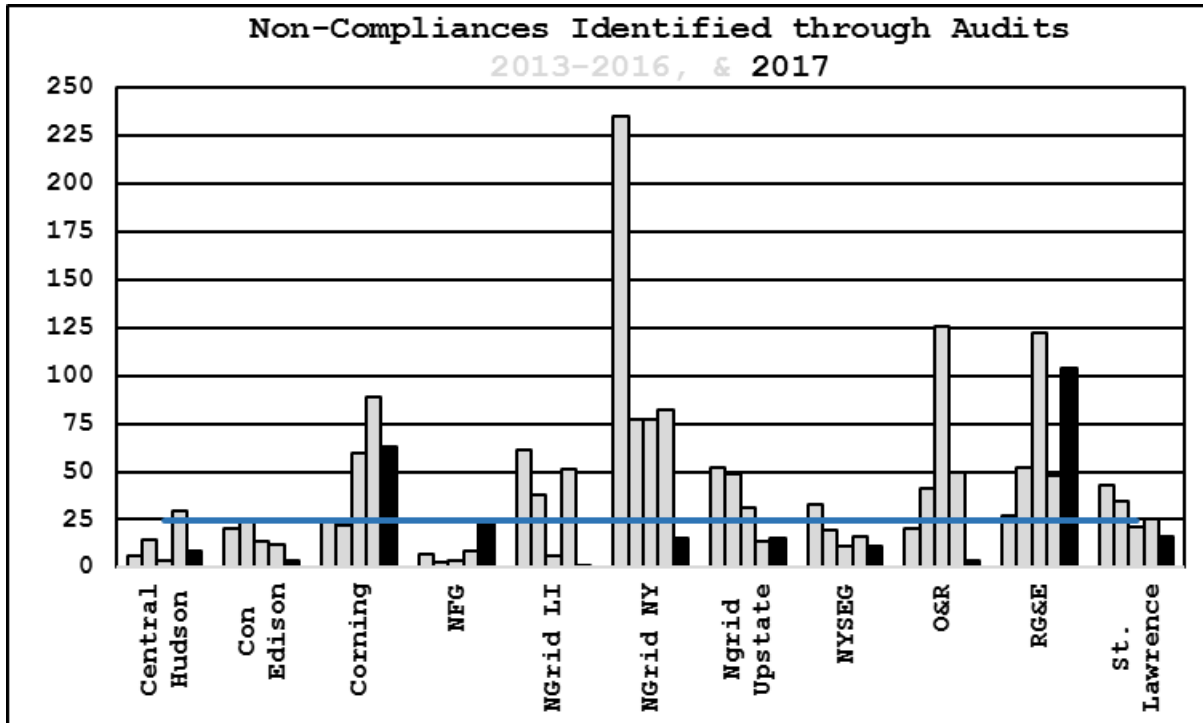


Figure 12 - Non-Compliances Identified through Audits

As seen in Figure 12, the data varies greatly from year to year; therefore, the year to year graph does not represent a direct comparison of year to year compliance. This is due, in part, to Staff’s five-year audit plan, which reviews sections of the pipeline safety regulations on varying frequencies based on the likelihood of risk to public safety (life, property, and the environment). The regulations are either identified as high risk, which is audited annually, or as other risk, which is audited on a two, three, four, or five-year frequency, but does not exceed five years. The specific code

sections identified, and corresponding risk classifications are located in Appendix N.

Staff's focus is on compliance with the minimum pipeline safety regulations, but also includes areas in which LDCs, based upon historic experiences and identified risks, have chosen to exceed these minimum standards. In 2017, non-compliances were identified in all 11 of the major LDCs' operating service territories with overall improvements having been realized in each of the previous four calendar years. This is due, in part, to the mechanisms that have been incorporated into most of the LDC's respective rate plans, which attach an associated regulatory liability for the non-compliances identified. NFG is the only LDC in the State with more than 14,000 customers that does not have associated negative revenue adjustments with its performance related to non-compliances.

Comparing violations of high risk and other risk code sections in 2017 to 2013, which would have contained audits of the same code sections on a five-year basis, NFG had 52 and 98 more violations, respectively. Staff is concerned that this trend may continue because NFG will be operating without an associated regulatory liability for compliance with the minimum pipeline safety regulations.

Conclusion

Natural gas is a safe and reliable energy commodity when handled and transported properly. Safety performance measures are an important management tool that provide Staff and LDCs the ability to evaluate trends in key areas of pipeline safety (damage prevention, emergency response, leak management, and non-compliances with the Commission's regulations). The

LDCs must continue to focus on these areas to further reduce risks in distributing natural gas to consumers.

Over the past 16 years, LDCs have worked to improve performance in the key areas of safety as identified within this report. Over this time, the total damage prevention performance improved 68.6% going from 6.53 to 2.05 damages per 1,000 one-call notifications; response to leak, odor, and emergency reports within 30-minutes improved from 76.8% to 83.8%; and the year-end backlog of potentially hazardous leaks has decreased 97.2%, going from 1,154 to 32. Over the past 11 years the total leak backlog has decreased 49.8%, going from 26,638 to 13,381. As LDCs continue their education and outreach efforts, adopt better practices in responding to leak, odor, and emergency reports, and work to remove aging infrastructure, Staff expects further improvements will occur.

Staff will continue to evaluate LDCs' performance via the measures contained within this report and encourage LDCs to evaluate their past and current practices. LDCs should reach out to the other LDCs that experienced superior performance levels to determine the incremental and, if necessary, entirely new approaches to achieve improvements.

Those LDCs that made significant improvements are further encouraged to respond to this report and share the best practices that enabled them to make these improvements. Staff will continue to meet with LDCs on a regular basis and will monitor LDC performance. Performance trends will be discussed with LDCs at these meetings and will be analyzed in future performance measure reports.

Appendix A

Historical Case Numbers¹⁴

Year Analyzed	Case Number
2003	04-G-0457
2004	05-G-0204
2005	06-G-0566
2006	07-G-0461
2007	08-G-0413
2008	09-G-0454
2009	10-G-0225
2010	11-G-0242
2011	12-G-0222
2012	13-G-0213
2013	14-G-0176
2014	15-G-0248
2015	16-G-0254
2016	17-G-0245
2017	18-G-0260

¹⁴ The appendices to this report include the most recent year under analysis plus the four previous years. This table is provided to aid those wishing to research prior years.

Appendix B

Number of One-Call Tickets

LDCs	2014	2015	2016	2017	2018
Central Hudson	19,002	21,136	22,522	25,302	29,795
Con Edison	95,784	93,510	92,054	100,397	111,669
Corning	5,291	5,193	4,214	3,952	5,010
NFG	88,724	95,284	97,457	98,714	101,503
NGrid LI	174,833	156,964	164,892	185,313	126,872
NGrid NY	172,673	177,824	191,140	283,474	128,359
NGrid Upstate	96,672	104,422	104,991	102,770	101,798
NYSEG	55,299	55,468	55,180	61,600	62,853
O&R	25,809	27,790	29,697	31,820	33,777
RG&E	59,014	60,274	61,289	80,447	71,598
St. Lawrence	4,265	4,055	4,076	4,260	4,137

Number of Damages due to Mismarks

LDCs	2014	2015	2016	2017	2018
Central Hudson	10	10	14	14	13
Con Edison	60	71	59	69	93
Corning	0	0	1	1	2
NFG	38	22	21	27	23
NGrid LI	79	89	85	79	100
NGrid NY	58	68	60	67	96
NGrid Upstate	37	74	44	36	38
NYSEG	23	21	12	23	13
O&R	8	10	9	9	7
RG&E	22	23	16	31	19
St. Lawrence	1	0	2	1	1

Damages due to Mismarks per 1,000 Tickets

LDCs	2014	2015	2016	2017	2018
Central Hudson	0.53	0.47	0.62	0.55	0.44
Con Edison	0.63	0.76	0.64	0.69	0.83
Corning	0.00	0.00	0.24	0.25	0.40
NFG	0.43	0.23	0.22	0.27	0.23
NGrid LI	0.45	0.57	0.52	0.43	0.79
NGrid NY	0.34	0.38	0.31	0.24	0.75
NGrid Upstate	0.38	0.71	0.42	0.35	0.37
NYSEG	0.42	0.38	0.22	0.37	0.21
O&R	0.31	0.36	0.30	0.28	0.21
RG&E	0.37	0.38	0.26	0.39	0.27
St. Lawrence	0.23	0.00	0.49	0.23	0.24

Appendix B (Continued)

Number of Damages due to No-calls

LDCs	2014	2015	2016	2017	2018
Central Hudson	13	14	9	11	6
Con Edison	42	52	52	60	37
Corning	4	0	1	4	4
NFG	61	53	43	36	38
NGrid LI	129	127	113	124	111
NGrid NY	46	63	54	47	41
NGrid Upstate	44	53	44	32	36
NYSEG	14	12	19	17	9
O&R	19	19	20	16	15
RG&E	19	18	9	17	18
St. Lawrence	0	0	1	1	0

Damages due to No-calls per 1,000 Tickets

LDCs	2014	2015	2016	2017	2018
Central Hudson	0.68	0.66	0.40	0.43	0.20
Con Edison	0.44	0.56	0.56	0.60	0.33
Corning	0.76	0.00	0.24	1.01	0.80
NFG	0.69	0.56	0.44	0.36	0.37
NGrid LI	0.74	0.81	0.69	0.67	0.87
NGrid NY	0.27	0.35	0.28	0.17	0.32
NGrid Upstate	0.46	0.51	0.42	0.31	0.35
NYSEG	0.25	0.22	0.34	0.28	0.14
O&R	0.74	0.68	0.67	0.50	0.44
RG&E	0.32	0.30	0.15	0.21	0.25
St. Lawrence	0.00	0.00	0.25	0.23	0.00

Number of Damages due to Excavator Error

LDCs	2014	2015	2016	2017	2018
Central Hudson	6	13	17	21	16
Con Edison	52	58	74	70	80
Corning	6	3	4	5	9
NFG	105	133	133	115	112
NGrid LI	119	145	131	112	124
NGrid NY	157	152	172	165	188
NGrid Upstate	159	171	146	149	100
NYSEG	61	75	47	50	64
O&R	27	33	36	22	30
RG&E	51	70	38	40	53
St. Lawrence	19	12	9	10	11

Appendix B (Continued)

Damages due to Excavator Error per 1,000 Tickets

LDCs	2014	2015	2016	2017	2018
Central Hudson	0.32	0.62	0.75	0.83	0.54
Con Edison	0.54	0.62	0.80	0.70	0.72
Corning	1.13	0.58	0.95	1.27	1.80
NFG	1.18	1.40	1.36	1.16	1.10
NGrid LI	0.68	0.92	0.79	0.60	0.98
NGrid NY	0.91	0.85	0.90	0.58	1.46
NGrid Upstate	1.64	1.64	1.39	1.45	0.98
NYSEG	1.10	1.35	0.85	0.81	1.02
O&R	1.05	1.19	1.21	0.69	0.89
RG&E	0.86	1.16	0.62	0.50	0.74
St. Lawrence	4.45	2.96	2.21	2.35	2.66

Number of Damages due to Co. & Co. Contractor Error

LDCs	2014	2015	2016	2017	2018
Central Hudson	4	13	9	8	9
Con Edison	34	37	15	26	28
Corning	0	1	1	0	1
NFG	3	2	2	0	0
NGrid LI	6	9	16	11	19
NGrid NY	2	6	6	7	4
NGrid Upstate	5	2	6	4	13
NYSEG	5	1	2	5	3
O&R	12	9	12	11	8
RG&E	0	2	1	9	3
St. Lawrence	2	0	0	0	0

Damages due to Co. & Co. Contractor Error per 1,000 Tickets

LDCs	2014	2015	2016	2017	2018
Central Hudson	0.21	0.62	0.40	0.32	0.30
Con Edison	0.35	0.40	0.16	0.26	0.25
Corning	0.00	0.19	0.24	0.00	0.20
NFG	0.03	0.02	0.02	0.00	0.00
NGrid LI	0.03	0.06	0.10	0.06	0.15
NGrid NY	0.01	0.03	0.03	0.02	0.03
NGrid Upstate	0.05	0.02	0.06	0.04	0.13
NYSEG	0.09	0.02	0.04	0.08	0.05
O&R	0.46	0.32	0.40	0.35	0.24
RG&E	0.00	0.03	0.02	0.11	0.04
St. Lawrence	0.47	0.00	0.00	0.00	0.00

Appendix B (Continued)

Number of Total Damages

LDCs	2014	2015	2016	2017	2018
Central Hudson	33	50	49	54	44
Con Edison	188	218	200	225	238
Corning	10	4	7	10	16
NFG	207	210	199	178	173
NGrid LI	333	370	345	326	354
NGrid NY	263	289	292	286	329
NGrid Upstate	245	300	240	221	187
NYSEG	103	109	80	95	89
O&R	66	71	77	58	60
RG&E	92	113	64	97	93
St. Lawrence	22	12	12	12	12

Total Damages per 1,000 Tickets

LDCs	2014	2015	2016	2017	2018
Central Hudson	1.74	2.37	2.18	2.13	1.48
Con Edison	1.96	2.33	2.17	2.24	2.13
Corning	1.89	0.77	1.66	2.53	3.19
NFG	2.33	2.20	2.04	1.80	1.70
NGrid LI	1.90	2.36	2.09	1.76	2.79
NGrid NY	1.52	1.63	1.53	1.01	2.56
NGrid Upstate	2.53	2.87	2.29	2.15	1.84
NYSEG	1.86	1.97	1.45	1.54	1.42
O&R	2.56	2.55	2.59	1.82	1.78
RG&E	1.56	1.87	1.04	1.21	1.30
St. Lawrence	5.16	2.96	2.94	2.82	2.90

Appendix C¹⁵

Central Hudson	2014	2015	2016	2017	2018	LDCs
Number of Tickets	19,002	21,136	22,522	25,302	29,795	777,371
Mismarks	0.53	0.47	0.62	0.55	0.44	0.52
No-Calls	0.68	0.66	0.40	0.43	0.20	0.41
Excavator Error	0.32	0.62	0.75	0.83	0.54	1.01
Co. & Co. Contractor Error	0.21	0.62	0.40	0.32	0.30	0.11
Total	1.74	2.37	2.18	2.13	1.48	2.05

Con Edison	2014	2015	2016	2017	2018	LDCs
Number of Tickets	95,784	93,510	92,054	100,397	111,669	777,371
Mismarks	0.63	0.76	0.64	0.69	0.83	0.52
No-Calls	0.44	0.56	0.56	0.60	0.33	0.41
Excavator Error	0.54	0.62	0.80	0.70	0.72	1.01
Co. & Co. Contractor Error	0.35	0.40	0.16	0.26	0.25	0.11
Total	1.96	2.33	2.17	2.24	2.13	2.05

Corning	2014	2015	2016	2017	2018	LDCs
Number of Tickets	5,291	5,193	4,214	3,952	5,010	777,371
Mismarks	0.00	0.00	0.24	0.25	0.40	0.52
No-Calls	0.76	0.00	0.24	1.01	0.80	0.41
Excavator Error	1.13	0.58	0.95	1.27	1.80	1.01
Co. & Co. Contractor Error	0.00	0.19	0.24	0.00	0.20	0.11
Total	1.89	0.77	1.66	2.53	3.19	2.05

¹⁵ The "Total" performance level may not equal the sum of the four-metrics due to rounding.

Appendix C⁹ (Continued)

NFG	2014	2015	2016	2017	2018	LDCs
Number of Tickets	88,724	95,284	97,457	98,714	101,503	777,371
Mismarks	0.43	0.23	0.22	0.27	0.23	0.52
No-Calls	0.69	0.56	0.44	0.36	0.37	0.41
Excavator Error	1.18	1.40	1.36	1.16	1.10	1.01
Co. & Co. Contractor Error	0.03	0.02	0.02	0.00	0.00	0.11
Total	2.33	2.20	2.04	1.80	1.70	2.05

NGrid LI	2014	2015	2016	2017	2018	LDCs
Number of Tickets	174,833	156,964	164,892	185,313	126,872	777,371
Mismarks	0.45	0.57	0.52	0.43	0.79	0.52
No-Calls	0.74	0.81	0.69	0.67	0.87	0.41
Excavator Error	0.68	0.92	0.79	0.60	0.98	1.01
Co. & Co. Contractor Error	0.03	0.06	0.10	0.06	0.15	0.11
Total	1.90	2.36	2.09	1.76	2.79	2.05

NGrid NY	2014	2015	2016	2017	2018	LDCs
Number of Tickets	172,673	177,824	191,140	283,474	128,359	777,371
Mismarks	0.34	0.38	0.31	0.24	0.75	0.52
No-Calls	0.27	0.35	0.28	0.17	0.32	0.41
Excavator Error	0.91	0.85	0.90	0.58	1.46	1.01
Co. & Co. Contractor Error	0.01	0.03	0.03	0.02	0.03	0.11
Total	1.52	1.63	1.53	1.01	2.56	2.05

Appendix C⁹ (Continued)

NGrid Upstate	2014	2015	2016	2017	2018	LDCs
Number of Tickets	96,672	104,422	104,991	102,770	101,798	777,371
Mismarks	0.38	0.71	0.42	0.35	0.37	0.52
No-Calls	0.46	0.51	0.42	0.31	0.35	0.41
Excavator Error	1.64	1.64	1.39	1.45	0.98	1.01
Co. & Co. Contractor Error	0.05	0.02	0.06	0.04	0.13	0.11
Total	2.53	2.87	2.29	2.15	1.84	2.05

NYSEG	2014	2015	2016	2017	2018	LDCs
Number of Tickets	55,299	55,468	55,180	61,600	62,853	777,371
Mismarks	0.42	0.38	0.22	0.37	0.21	0.52
No-Calls	0.25	0.22	0.34	0.28	0.14	0.41
Excavator Error	1.10	1.35	0.85	0.81	1.02	1.01
Co. & Co. Contractor Error	0.09	0.02	0.04	0.08	0.05	0.11
Total	1.86	1.97	1.45	1.54	1.42	2.05

O&R	2014	2015	2016	2017	2018	LDCs
Number of Tickets	25,809	27,790	29,697	31,820	33,777	777,371
Mismarks	0.31	0.36	0.30	0.28	0.21	0.52
No-Calls	0.74	0.68	0.67	0.50	0.44	0.41
Excavator Error	1.05	1.19	1.21	0.69	0.89	1.01
Co. & Co. Contractor Error	0.46	0.32	0.40	0.35	0.24	0.11
Total	2.56	2.55	2.59	1.82	1.78	2.05

Appendix C⁹ (Continued)

RG&E	2014	2015	2016	2017	2018	LDCs
Number of Tickets	59,014	60,274	61,289	80,447	71,598	777,371
Mismarks	0.37	0.38	0.26	0.39	0.27	0.52
No-Calls	0.32	0.30	0.15	0.21	0.25	0.41
Excavator Error	0.86	1.16	0.62	0.50	0.74	1.01
Co. & Co. Contractor Error	0.00	0.03	0.02	0.11	0.04	0.11
Total	1.56	1.87	1.04	1.21	1.30	2.05

St. Lawrence	2014	2015	2016	2017	2018	LDCs
Number of Tickets	4,265	4,055	4,076	4,260	4,137	777,371
Mismarks	0.23	0.00	0.49	0.23	0.24	0.52
No-Calls	0.00	0.00	0.25	0.23	0.00	0.41
Excavator Error	4.45	2.96	2.21	2.35	2.66	1.01
Co. & Co. Contractor Error	0.47	0.00	0.00	0.00	0.00	0.11
Total	5.16	2.96	2.94	2.82	2.90	2.05

Appendix D

Emergency Response Times for 45 Minutes (%)

LDCs	2014	2015	2016	2017	2018
Central Hudson	98.7	98.6	98.5	99.0	98.8
Con Edison	99.3	99.2	99.3	99.4	99.5
Corning	95.2	95.3	97.5	98.1	95.6
NFG	97.3	98.1	98.0	98.7	98.7
NGrid LI	93.8	94.4	95.7	95.6	95.3
NGrid NY	93.9	92.4	93.1	93.8	94.8
NGrid Upstate	94.4	95.3	95.3	95.1	94.3
NYSEG	95.7	93.8	95.1	93.4	92.9
O&R	99.1	99.1	98.9	99.1	99.1
RG&E	97.7	95.4	93.3	90.9	95.5
St. Lawrence	95.0	95.3	92.8	93.7	93.2

Appendix E

Emergency Response Times for 60 Minutes (%)

LDCs	2014	2015	2016	2017	2018
Central Hudson	99.9	99.7	99.7	99.9	99.8
Con Edison	99.9	99.9	99.9	99.9	99.9
Corning	98.5	98.1	99.5	99.2	98.6
NFG	98.5	99.3	99.4	99.7	99.6
NGrid LI	99.1	98.7	99.6	99.5	99.6
NGrid NY	98.2	96.6	97.2	97.7	98.5
NGrid Upstate	98.1	98.6	98.6	98.5	98.2
NYSEG	98.9	97.9	98.8	98.4	97.8
O&R	99.9	99.9	99.9	99.9	99.9
RG&E	99.6	98.9	97.8	95.7	97.7
St. Lawrence	98.9	97.9	98.1	98.5	98.2

Appendix F

Leak Repairs on Mains by Material

LDCs	Unprot. Bare	Unprot. Coated	Prot. Bare	Prot. Coated	Plastic	Cast / Wrought Iron	Copper	Other
Central Hudson	85	0	0	78	2	115	0	0
Con Edison	4,371	173	0	69	107	3,181	0	0
Corning	35	1	4	2	6	0	0	0
NFG	1,183	0	0	55	61	98	0	11
NGrid LI	709	145	1	24	92	226	0	0
NGrid NY	135	0	0	89	33	3,246	0	0
NGrid Upstate	21	49	0	40	12	423	0	0
NYSEG	43	0	0	33	21	4	0	4
O&R	98	0	0	13	41	5	0	0
RG&E	6	0	0	155	12	1	1	80
St. Lawrence	0	0	0	1	0	0	0	0

Appendix G

Leak Repairs on Services by Material

LDCs	Unprot. Bare	Unprot. Coated	Prot. Bare	Prot. Coated	Plastic	Cast / Wrought Iron	Copper	Other
Central Hudson	91	0	0	125	59	39	1	0
Con Edison	1,872	177	0	416	503	0	179	0
Corning	29	6	0	1	33	0	0	1
NFG	315	0	0	45	312	0	0	10
NGrid LI	820	152	65	12	441	0	50	0
NGrid NY	238	0	0	266	341	0	342	0
NGrid Upstate	143	200	0	39	154	11	7	0
NYSEG	50	0	0	48	87	1	0	1
O&R	213	0	0	36	155	0	0	0
RG&E	7	0	0	198	53	0	2	46
St. Lawrence	0	0	0	2	1	0	0	0

Appendix H

Backlog of Potentially Hazardous Leaks

LDCs	2014	2015	2016	2017	2018
Central Hudson	6	3	3	1	6
Con Edison	36	7	1	40	3
Corning	6	3	0	4	4
NFG	1	0	2	0	2
NGrid LI	8	5	1	0	0
NGrid NY	24	21	23	8	10
NGrid Upstate	5	17	21	9	0
NYSEG	4	4	4	0	3
O&R	0	2	2	1	2
RG&E	18	6	1	2	1
St. Lawrence	0	0	0	1	1

Appendix I

Repaired Potentially Hazardous Leaks

LDCs	2014	2015	2016	2017	2018
Central Hudson	327	352	278	324	326
Con Edison	8,283	10,700	7,857	7,149	7,713
Corning	102	194	101	60	98
NFG	2,025	2,195	1,353	1,020	1,069
NGrid LI	2,318	2,332	2,100	1,958	2,226
NGrid NY	4,457	4,236	3,876	3,955	4,356
NGrid Upstate	1,136	1,533	990	858	775
NYSEG	274	308	168	196	171
O&R	430	487	287	307	291
RG&E	284	306	224	305	260
St. Lawrence	12	8	3	2	4

Appendix J

Discovered Potentially Hazardous Leaks

LDCs	2014	2015	2016	2017	2018
Central Hudson	364	366	240	283	304
Con Edison	5,321	5,846	3,666	4,146	4,259
Corning	106	163	84	69	95
NFG	1,957	2,199	1,356	1,023	1,071
NGrid LI	1,905	2,070	1,886	1,801	1,997
NGrid NY	4,021	4,649	3,340	3,270	3,340
NGrid Upstate	1,127	1,463	1,046	1,068	1,145
NYSEG	278	315	180	198	199
O&R	425	463	281	298	297
RG&E	277	322	378	327	294
St. Lawrence	12	8	3	2	4

Appendix K

Backlog of Total Leaks

LDCs	2014	2015	2016	2017	2018
Central Hudson	197	126	102	111	91
Con Edison	740	523	239	312	250
Corning	225	200	116	73	115
NFG	3,053	2,066	1,533	1,028	1,073
NGrid LI	11,494	11,330	10,556	9,232	8,199
NGrid NY	4,068	3,820	3,676	3,118	2,803
NGrid Upstate	1,552	936	961	979	815
NYSEG	49	39	13	8	10
O&R	330	170	26	6	10
RG&E	68	60	11	11	14
St. Lawrence	0	0	0	1	1

Appendix L

High Risk Non-Compliances Identified through Audit Process

LDCs	2013	2014	2015	2016	2017	# of OHQs
Central Hudson	19	22	14	56	36	5
Con Edison	91	70	50	21	17	5
Corning	14	4	36	72	8	1
NFG	64	25	25	31	116	9
NGrid LI	85	32	13	84	2	2
NGrid NY	180	89	55	49	19	2
NGrid Upstate	282	114	130	50	45	11
NYSEG	185	105	83	61 ¹⁶	71	13
O&R	18	12	216	11	5	2
RG&E	22	40	42	29	22	1
St. Lawrence	19	15	17	9	9	1

¹⁶ One of the 61 violations noted was for 16 NYCRR Part 255.557(c)(8). There was a total of 822 occurrences documented in the respective audit letter.

Appendix M

Other Risk Non-Compliances Identified through Audit Process

LDCs	2013	2014	2015	2016	2017	# of OHQs
Central Hudson	12	49	6	92	9	5
Con Edison	9	47	20	38	3	5
Corning	11	18	24	17	55	1
NFG	2	1	8	50	100	9
NGrid LI	38 ¹⁷	44	0	18	0	2
NGrid NY	291	65	100	115	12	2
NGrid Upstate	290	425	218	105	125	11
NYSEG	238	150	67	149	77	13
O&R	22	71	36	89	2	2
RG&E	5	12	80	19	82	1
St. Lawrence	24	20	4	16	7	1

¹⁷ Two of the 38 violations noted were for 16 NYCRR Part 255.481(a), and 16 NYCRR Part 255.491(b)(2). There was a combined total of 1,239 occurrences documented in the respective audit letter.

Appendix N

Code Section Risk

Part	Section	Subdivision	Description	Risk
255	17	All	Preservation of Records	Other
255	53	All	Materials - General	High
255	65	All	Materials - Transportation of Pipe	High
255	103	All	Pipe Design - General	High
255	143	All	Design of Pipeline Components - General Requirements	High
255	159	All	Design of Pipeline Components - Flexibility	High
255	161	All	Design of Pipeline Components - Supports and Anchors	High
255	163	All	Compressor Stations - Design and Construction	Other
255	165	All	Compressor Stations - Liquid Removal	Other
255	167	All	Compressor Stations - Emergency Shutdown	High
255	169	All	Compressor Stations - Pressure Limiting Devices	High
255	171	All	Compressor Stations - Additional Safety Equipment	Other
255	173	All	Compressor Stations - Ventilation	High
255	179	All	Valves on Pipelines to Operate at 125 PSIG (862 kPa) or More	High
255	181	All	Distribution Line Valves	High
255	183	All	Vaults - Structural Design Requirements	High
255	185	All	Vaults - Accessibility	Other
255	187	All	Vaults - Sealing, Venting, and Ventilation	Other
255	189	All	Vaults - Drainage and Waterproofing	High
255	190	All	Calorimeter or Calorimixer Structures	Other
255	191	All	Design Pressure of Plastic Fittings	Other
255	193	All	Valve Installation in Plastic Pipe	Other
255	195	All	Protection Against Accidental Overpressuring	High
255	197	All	Control of the Pressure of Gas Delivered from High Pressure Distribution Systems	High
255	199	All	Requirements for Design of Pressure Relief and Limiting Devices	High
255	201	All	Required Capacity of Pressure Relieving and Limiting Stations	High
255	203	All	Instrument, Control, and Sampling Piping and Components	Other
255	225	All	Qualification of Welding Procedures	High
255	227	All	Qualification of Welders	High
255	229	All	Limitations On Welders	Other
255	230	All	Quality Assurance Program	Other
255	231	All	Welding - Protection from Weather	High
255	233	All	Welding - Miter Joints	High
255	235	All	Preparation for Welding	High
255	237	All	Welding - Preheating	Other
255	239	All	Welding - Stress Relieving	Other
255	241	(a), (b)	Inspection and Test of Welds	High
255	241	(c)	Inspection and Test of Welds	Other
255	243	(a), (b), (c), (d), (e)	Nondestructive Testing - Pipeline to Operate at 125 PSIG (862 kPa) or More	High
255	243	(f)	Nondestructive Testing - Pipeline to Operate at 125 PSIG (kPa) or More	Other
255	244	All	Welding Inspector	High
255	245	All	Welding - Repair or Removal of Defects	High
255	273	All	Joining of Materials other than by Welding - General	High
255	279	All	Joining of Materials other than by Welding - Copper Pipe	High
255	281	All	Joining of Materials other than by Welding - Plastic Pipe	High

Part	Section	Subsection	Description	Risk
255	283	All	Plastic Pipe - Qualifying Joining Procedures	Other
255	285	(a),(b),(d)	Plastic Pipe - Qualifying Persons to make Joints	High
255	285	(c)(e)	Plastic Pipe - Qualifying Persons to make Joints	Other
255	287	All	Plastic Pipe - Inspection of Joints	Other
255	302	All	Notification Requirements	High
255	303	All	Compliance with Construction Standards	High
255	305	All	Inspection - General	High
255	307	All	Inspection of Materials	High
255	309	All	Repair of Steel Pipe	High
255	311	All	Repair of Plastic Pipe	High
255	313	(a),(b),(c)	Bends and Elbows	High
255	313	(d)	Bends and Elbows	Other
255	315	All	Wrinkle Bends in Steel Pipe	High
255	317	All	Protection from Hazards	Other
255	319	All	Installation of Pipe in a Ditch	Other
255	321	All	Installation of Plastic Pipe	High
255	323	All	Casing	Other
255	325	All	Underground Clearance	High
255	327	All	Cover	Other
255	353	All	Customer Meters and Regulators - Location	Other
255	355	All	Customer Meters and Regulators - Protection from Damage	Other
255	357	(a),(b),(c)	Customer Meters and Service Regulators - Installation	Other
255	357	(d)	Customer Meters and Service Regulators - Installation	High
255	359	All	Customer Meter Installations - Operating Pressure	Other
255	361	(a),(b),(c),(d)	Service Lines - Installation	Other
255	361	(e),(f),(g),(h),(i)	Service Lines - Installation	High
255	363	All	Service Lines - Valve Requirements	Other
255	365	(a),(c)	Service Lines - Location of Valves	Other
255	365	(b)	Service Lines - Location of Valves	High
255	367	All	Service Lines - General Requirements for Connections	Other
255	369	All	Service Lines - Connections to Cast Iron or Ductile Iron Mains	Other
255	371	All	Service Lines - Steel	Other
255	373	All	Service Lines - Cast Iron and Ductile Iron	Other
255	375	All	Service Lines - Plastic	Other
255	377	All	Service Lines - Copper	Other
255	379	All	New Service Lines not in Use	Other
255	381	All	Service Lines - Excess Flow Valve Performance Standards	Other
255	455	(a)	External Corrosion Control - Buried or Submerged Pipelines Installed after July 31, 1971	Other
255	455	(d),(e)	External Corrosion Control - Buried or Submerged Pipelines Installed after July 31, 1971	High
255	457	All	External Corrosion Control - Buried or Submerged Pipelines Installed before July 31, 1971	High
255	459	All	External Corrosion Control - Examination of Buried Pipeline when Exposed	Other
255	461	(a),(b),(d),(e),(f),(g)	External Corrosion Control - Protective Coating	Other
255	461	(c)	External Corrosion Control - Protective Coating	High
255	463	All	External Corrosion Control - Cathodic Protection	High
255	465	(a),(e)	External Corrosion Control - Monitoring	High
255	465	(b),(c),(d),(f)	External Corrosion Control - Monitoring	Other
255	467	All	External Corrosion Control - Electrical Isolation	Other
255	469	All	External Corrosion Control - Test Stations	Other
255	471	All	External Corrosion Control - Test Leads	Other

Part	Section	Subsection	Description	Risk
255	473	All	External Corrosion Control - Interference Currents	Other
255	475	All	Internal Corrosion Control - General	Other
255	476	(a),(c)	Internal Corrosion Control - Design and Construction of Transmission Line	High
255	476	(d)	Internal Corrosion Control - Design and Construction of Transmission Line	Other
255	479	All	Atmospheric Corrosion Control - General	Other
255	481	All	Atmospheric Corrosion Control - Monitoring	Other
255	483	All	Remedial Measures - General	High
255	485	(a),(b)	Remedial Measures - Transmission Lines	High
255	485	(c)	Remedial Measures - Transmission Lines	Other
255	487	All	Remedial Measures - Distribution Lines other than Cast Iron or Ductile Iron Lines	Other
255	489	All	Remedial Measures - Cast Iron and Ductile Iron Pipelines	Other
255	490	All	Direct Assessment	Other
255	491	All	Corrosion Control Records	Other
255	503	All	Test Requirements - General	Other
255	505	(a),(b),(c),(d)	Strength Test Requirements for Steel Pipelines to Operate at 125 PSIG (862 kPa) or More	High
255	505	(e),(h),(i)	Strength Test Requirements for Steel Pipelines to Operate at 125 PSIG (862 kPa) or More	Other
255	507	All	Test Requirements for Pipelines to Operate at less than 125 PSIG (862 kPa)	Other
255	511	All	Test Requirements for Service Lines	Other
255	515	All	Environmental Protection and Safety Requirements	Other
255	517	All	Test Requirements - Records	Other
255	552	All	Upgrading / Conversion - Notification Requirements	Other
255	553	(a),(b),(c),(f)	Upgrading / Conversion - General Requirements	High
255	553	(d),(e)	Upgrading / Conversion - General Requirements	Other
255	555	All	Upgrading to a Pressure of 125 PSIG (862 kPa) or More in Steel Pipelines	High
255	557	All	Upgrading to a Pressure Less than 125 PSIG (862 kPa)	High
255	559	(a)	Conversion to Service Subject to this Part	High
255	559	(b)	Conversion to Service Subject to this Part	Other
255	603	All	Operations - General Provisions	High
255	604	All	Operator Qualification	High
255	605	All	Essentials of Operating and Maintenance Plan	High
255	609	All	Change in Class Location - Required Study	High
255	611	(a),(d)	Change in Class Location - Confirmation or Revision of Maximum Allowable Operating Pressure	Other
255	613	All	Continuing Surveillance	Other
255	614	All	Damage Prevention Program	High
255	615	All	Emergency Plans	High
255	616	All	Customer Education and Information Program	High
255	619	All	Maximum Allowable Operating Pressure - Steel or Plastic Pipelines	High
255	621	All	Maximum Allowable Operating Pressure - High Pressure Distribution Systems	High
255	623	All	Maximum and Minimum Allowable Operating Pressure - Low Pressure Distribution Systems	High
255	625	(a),(b)	Odorization of Gas	High
255	625	(e),(f)	Odorization of Gas	Other
255	627	All	Tapping Pipelines Under Pressure	High
255	629	All	Purging of Pipelines	High

Part	Section	Subsection	Description	Risk
255	631	(a)	Control Room Management	High
255	705	All	Transmission Lines - Patrolling	High
255	706	All	Transmission Lines - Leakage Surveys	High
255	707	(a),(c),(d),(e)	Line Markers for Mains and Transmission Lines	Other
255	709	All	Transmission Lines - Record Keeping	Other
255	711	All	Transmission Lines - General Requirements for Repair Procedures	High
255	713	All	Transmission Lines - Permanent Field Repair of Imperfections and Damages	High
255	715	All	Transmission Lines - Permanent Field Repair of Welds	High
255	717	All	Transmission Lines - Permanent Field Repairs of Leaks	High
255	719	All	Transmission Lines - Testing of Repairs	High
255	721	(b)	Distribution Systems - Patrolling	Other
255	723	All	Distribution Systems -Leakage Surveys and Procedures	High
255	725	All	Test Requirements for Reinstating Service Lines	Other
255	726	All	Inactive Service Lines	Other
255	727	(b),(c),(d),(e),(f),(g)	Abandonment or Inactivation of Facilities	Other
255	729	All	Compressor Stations - Procedures for Gas Compressor Units	High
255	731	All	Compressor Stations - Inspection and Testing of Relief Devices	High
255	732	All	Compressor Stations - Additional Inspections	High
255	735	All	Compressor Stations - Storage of Combustible Materials	Other
255	736	All	Compressor Stations - Gas Detection	High
255	739	(a),(b)	Pressure Limiting and Regulating Stations - Inspection and Testing	High
255	739	(c),(d),(e),(f)	Pressure Limiting and Regulating Stations - Inspection and Testing	Other
255	741	All	Pressure Limiting and Regulating Stations - Telemetry or Recording Gauges	Other
255	743	(a),(b)	Pressure and Limiting and Regulating Stations - Testing of Relief Devices	High
255	743	(c)	Regulator Station MAOP	Other
255	744	(c),(d),(e)	Service Regulators and Vents - Inspection	Other
255	745	All	Transmission Line Valves	High
255	747	All	Valve Maintenance - Distribution Systems	Other
255	748	All	Valve Maintenance - Service Line Valves	Other
255	749	All	Vault Maintenance	Other
255	751	All	Prevention of Accidental Ignition	High
255	753	All	Caulked Bell and Spigot Joints	Other
255	755	All	Protecting Cast Iron Pipelines	High
255	756	All	Replacement of Exposed or Undermined Cast Iron Piping	High
255	757	All	Replacement of Cast Iron Mains Paralleling Excavations	High
255	801	All	Reports of accidents	Other
255	803	All	Emergency Lists of Operator Personnel	Other
255	805	(a),(b),(e),(g),(h)	Leaks - General	Other
255	807	(a),(b),(c)	Leaks - Records	Other
255	807	(d)	Leaks - Records	High
255	809	All	Leaks - Instrument Sensitivity Verification	High
255	811	(b),(c),(d),(e)	Leaks - Type 1 Classification	High
255	813	(b),(c),(d)	Leaks - Type 2A Classification	High
255	815	(b),(c),(d)	Leaks - Type 2 Classification	High
255	817	All	Leaks - Type 3 Classification	Other
255	819	(a)	Leaks - Follow-Up Inspection	High
255	821	All	Leaks - Nonreportable Reading	High
255	823	(a),(b)	Interruptions of Service	Other

Part	Section	Subsection	Description	Risk
255	825	All	Logging and Analysis of Gas Emergency Reports	Other
255	829	All	Annual Report	Other
255	831	All	Reporting Safety-Related Conditions	Other
255	905	All	High Consequence Areas	High
255	907	All	General (IMP)	Other
255	909	All	Changes to an Integrity Management Program (IMP)	Other
255	911	All	Required Elements (IMP)	High
255	915	All	Knowledge and Training (IMP)	High
255	917	All	Identification of Potential Threats to Pipeline Integrity and Use of the Threat Identification in an Integrity Program (IMP)	High
255	919	All	Baseline Assessment Plan (IMP)	High
255	921	All	Conducting a Baseline Assessment (IMP)	High
255	923	All	Direct Assessment (IMP)	High
255	925	All	External Corrosion Direct Assessment (ECDA)(IMP)	High
255	927	All	Internal Corrosion Direct Assessment (ICDA)(IMP)	High
255	931	All	Confirmatory Direct Assessment (CDA)(IMP)	High
255	933	All	Addressing Integrity Issues (IMP)	High
255	935	All	Preventive and Mitigative Measures to Protect the High Consequence Areas (IMP)	High
255	937	All	Continual Process of Evaluation and Assessment (IMP)	High
255	939	All	Reassessment Intervals (IMP)	High
255	941	All	Low Stress Reassessment (IMP)	Other
255	945	All	Measuring Program Effectiveness (IMP)	Other
255	947	All	Records (IMP)	Other
255	1003	All	General Requirements of a GDPIM Plan	High
255	1005	All	Implementation Requirements of a GDPIM Plan	High
255	1007	All	Required Elements of a GDPIM Plan	High
255	1009	All	Required Report when Compression Couplings Fail	High
255	1011	All	Records an Operator Must Keep (GDPIM)	Other
255	1015	All	GDPIM Plan Requirements for a Master Meter or a Small Liquefied Petroleum Gas (LPG) Operator	High
261	15	All	Operation and Maintenance Plan	High
261	17	(a), (c)	Leakage Survey	High
261	19	All	High Pressure Piping	Other
261	21	All	Carbon Monoxide Prevention	High
261	51	All	Warning Tag Procedures	High
261	53	All	HEFPA Liaison	High
261	55	All	Warning Tag Inspection	High
261	57	All	Warning Tag - Class A condition	High
261	59	All	Warning Tag - Class B condition	High
261	61	All	Warning Tag - Class C Condition	Other
261	63	All	Warning Tag - Action and Follow-Up	Other
261	65	All	Warning Tag Records	Other
193	2011	All	Reporting	Other
193	2017	All	Plans and Procedures	High
193	2019	All	Mobile and Temporary LNG Facilities	High
193	2057	All	Thermal Radiation Protection	High
193	2059	All	Flammable Vapor-Gas Dispersion Protection	High
193	2067	All	Wind Forces	High
193	2101	All	Design - Scope	High
193	2119	All	Design - Records	High
193	2155	All	Structural Requirements	High
193	2161	All	Design - Dikes	High

Part	Section	Subsection	Description	Risk
193	2167	All	Covered Systems	High
193	2173	All	Water Removal	High
193	2181	All	Impoundment Design and Capacity	High
193	2187	All	Nonmetallic Membrane Liner	High
193	2301	All	Construction - Scope	High
193	2303	All	Construction Acceptance	High
193	2304	All	Corrosion Control Overview	High
193	2321	All	Nondestructive Tests	High
193	2401	All	Equipment - Scope	High
193	2441	All	Equipment - Control Center	High
193	2445	All	Sources of Power	High
193	2501	All	Operations - Scope	High
193	2503	All	Operating Procedures	High
193	2505	All	Operations - Cooldown	High
193	2507	All	Monitoring Operations	High
193	2509	All	Emergency Procedures	High
193	2511	All	Personnel Safety	High
193	2513	All	Transfer Procedures	High
193	2515	All	Investigations of Failures	High
193	2517	All	Purging	High
193	2519	All	Communication Systems	High
193	2521	All	Operating Records	Other
193	2603	All	Maintenance - General	High
193	2605	All	Maintenance Procedures	High
193	2607	All	Foreign Material	Other
193	2609	All	Support Systems	High
193	2611	All	Fire Protection	High
193	2613	All	Auxiliary Power Sources	High
193	2615	All	Isolating and Purging	High
193	2617	All	Maintenance - Repairs	High
193	2619	All	Control Systems	High
193	2621	All	Testing Transfer Hoses	High
193	2623	All	Inspecting LNG Storage Tanks	High
193	2625	All	Corrosion Protection	High
193	2627	All	Atmospheric Corrosion Control	Other
193	2629	All	External Corrosion Control - Buried or Submerged Components	Other
193	2631	All	Internal Corrosion Control	Other
193	2633	All	Interference Currents	Other
193	2635	All	Monitoring Corrosion Control	High
193	2637	All	Remedial Measures	High
193	2639	All	Maintenance Records	Other
193	2703	All	Design and Fabrication	Other
193	2705	All	Construction, Installation, Inspection, and Testing	High
193	2707	All	Operations and Maintenance	High
193	2709	All	Security	High
193	2711	All	Personnel Health	Other
193	2713	All	Training - Operations and Maintenance	High
193	2715	All	Training - Security	High
193	2717	All	Training - Fire Protection	High
193	2719	All	Training - Records	Other
193	2801	All	Fire Protection	High
193	2903	All	Security Procedures	High
193	2905	All	Protective Enclosures	High

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Part	Section	Subsection	Description	Risk
193	2907	All	Protective Enclosure Construction	High
193	2909	All	Security Communications	High
193	2911	All	Security Lighting	High
193	2913	All	Security Monitoring	High
193	2915	All	Alternative Power Sources	High
193	2917	All	Warning Signs	Other