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GAS SAFETY  
PERFORMANCE MEASURES REPORT  
(CASE 05-G-0204)

Safety Section  
Office of Gas & Water  
May 1, 2005

## EXECUTIVE SUMMARY

This performance measures report (2004 report) examines the New York State natural gas local distribution companies' (LDCs) performance in three areas pertaining to safety: damage prevention, emergency response, and leak management.

These performance measures are the result of collaborative efforts between Staff and the LDCs to improve identification and tracking of areas that are critical to gas safety. The data used in the report were gathered and submitted by the LDCs using processes developed from these collaborative efforts, and this is the second year that the Office of Gas and Water has collected data according to these processes. Overall, the data indicate that LDC performance has improved across the state.

The first measure, damage prevention, analyzes LDCs' ability to minimize damages to buried facilities caused by excavation activities. The damage measure is further broken down into four categories: damages due to (1) mismarks (inaccurate marking of LDC buried facilities); (2) third-party excavator error; (3) company forces (including company contractors); and (4) lack of notification of intent to excavate.

Overall, total damages across the state decreased by approximately 5%. Considering the increase in construction activity, the performance improvement is actually greater. The number of one-call notices (tickets) received by the utilities increased by 8.5%. The net result is an improvement of 12% when the data is normalized. Staff attributes these positive results in part, to enhanced training of locating personnel, the Commission's enforcement process for non-compliance with its regulations protecting underground facilities, and public

education efforts undertaken by both the LDCs and the One-Call centers, including cooperative efforts performed with the Department of Public Service on implementation of a damage prevention grant obtained from the United States Department of Transportation Office of Pipeline Safety. Despite the general statewide improvement, several LDCs experienced increases within one or more of the four categories of damages described above.

The second measure, emergency response, monitors LDCs' ability to respond promptly to reports of gas leaks or emergencies by examining the percentage of calls that fall within various response times. This performance measure contains three specific response goals. Meeting the goals requires LDCs to respond to 75% of emergency calls within 30 minutes, 90% within 45 minutes, and 95% within 60 minutes. Response performance generally improved across the state for each of these timeframes in 2004. Staff attributes this progress to LDCs adopting more efficient work practices, utilization of new technologies such as global positioning satellites to quickly identify the most appropriate employee to respond to an emergency notification, and placement of personnel in certain geographical areas during the times of day that have historically had high volumes of emergency notifications.

The final measure, leak management, examines LDCs' performance in effectively maintaining leak inventories and keeping potentially hazardous leaks to a minimum. The key measure looks at the year-end backlog of leaks requiring repair, and divides them by the number of such repairs actually made during the year. The results show seven LDCs improved their performance in this category. Furthermore, five LDCs decreased their year-end backlog of leaks requiring repair by over half. The net result statewide for year-end 2004 is a 26% decrease in the number of leaks requiring repair compared to year-end 2003.

Many LDCs attribute the decreased year-end backlog to completing mandatory leak surveys earlier in 2004, leaving more time to complete the repairs by the end of the year. According to the LDCs, this facilitates the management of leak repair activity heading into the winter months. The end of the calendar year is typically the beginning of the frost season, when there is a greater chance of gas migration into buildings because the gas cannot vent as readily through the ground to the atmosphere due to the blanket of frost.

The analysis of each performance measure identifies specific areas where certain LDCs have room for improvement. It is recommended that those LDCs perform self-analyses in these areas, evaluate the cause of the performance decline, and develop action plans to improve performance. In some cases, Staff suggests certain issues to examine, although the LDC need not limit themselves to Staff's suggestions and are free to explore additional areas.

This report will be transmitted to an executive level operating officer of each LDC. Those LDCs identified as having room for improvement within the various measures will be asked to respond within 45 days describing action plans to improve performance. In addition, all the LDCs will be invited to comment on the report with observations, reactions or planned activities to maintain or improve performance.

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**COMPANY ACRONYMS**

<b>Company</b>	<b>Acronym in Report</b>
Central Hudson Gas & Electric Corporation	Central Hudson
Consolidated Edison Company of New York, Inc.	Con Edison
Corning Natural Gas Corporation	Corning
KeySpan Energy Delivery Long Island	KED LI
KeySpan Energy Delivery New York City	KED NY
National Fuel Gas Distribution Corporation	NFG
New York State Electric & Gas Corporation	NYSEG
Niagara Mohawk Power Corporation	NIMO
Orange & Rockland Utilities, Inc.	O&R
Rochester Gas & Electric Corporation	RG&E
St. Lawrence Gas Company, Inc.	St. Lawrence

## INTRODUCTION

Safety performance measures were developed by Staff as a means of effectively improving gas delivery system safety by measuring local distribution companies (LDCs) performance in areas identified as presenting the highest risks. Performance measures are tools that Staff and the LDCs can utilize to monitor the safe operation and maintenance of distribution systems. They indicate how companies are performing from year to year and whether safety aspects are improving, remaining stable, or deteriorating.

In developing the performance measures Staff first identified areas in LDCs' systems or operations that carry the greatest potential for harm to the public if performance is sub-standard. Staff then evaluated methods for capturing and tracking appropriate data so it could be used as a practical management tool. This process led to the identification of three performance measures:

**Damage Prevention:** This measure examines damages to the LDCs' buried facilities resulting from excavator activities, which is the leading cause of incidents involving buried pipeline facilities.

**Emergency Response Time:** This measure examines the amount of time that it takes an LDC to reach the scene of a reported gas leak or odor.

**Leak Management:** This measure examines LDC performance in effectively maintaining leak inventory levels and keeping potentially hazardous leaks to a minimum.

### Activities Resulting from 2003 Report

After the 2003 performance measures report was issued in Case 04-G-0457, Staff met with each LDC to discuss reactions

to the report. Every LDC presented Staff with its efforts to improve performance where opportunities existed. The Northeast Gas Association (NGA) also provided comments on the 2003 report on August 23, 2004.<sup>1</sup>

Since 2003, all of the data being collected from the LDCs meets the criteria established from collaborative efforts between Staff and LDC personnel, resulting in more consistent data collections, reporting, and analysis. The 2004 report is the second issued and, therefore, two years of data for each LDC is presented. Given that this is only the second year of consistent data collection, long-term trends cannot be ascertained. However, the data indicate whether an LDC's performance has improved or declined since 2003, and whether a particular LDC is an outlier.

In an effort to facilitate the reporting of data, Staff created standardized forms for all LDCs to utilize and streamline the process. These forms allow LDCs to examine their own calculated performance as it is being submitted to Staff on a quarterly basis.

The NGA agreed that the performance measure analyses offer LDCs, "a useful mechanism to identify ways to manage and improve their respective systems by providing examples and recommendations of the types of efforts that can be conducted, and areas that can be investigated, that may contribute to safety improvements."<sup>2</sup> NGA pointed out a significant level of high performance across the state and said that measures should

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<sup>1</sup> NGA is a regional trade association that focuses on education and training, operations, technology research and development, and outreach and marketing. Its members include several LDCs operating in New York and New England, including those examined in this report.

<sup>2</sup> NGA Comments, Letter dated August 23, 2004, page 1.

be used to compare an LDC's performance with itself, year-to-year, but cautions against making comparisons among companies, noting that each LDC has unique infrastructure factors, replacement budgets, business plans, operating areas, and customer, labor and rate factors. NGA further commented that resources required to improve in a particular measure may not be commensurate with the incremental gas safety benefit, and it believes that the utilities must consider if the improvement is worth the cost and makes practical business sense while meeting safety needs.

#### **PERFORMANCE AND ANALYSIS FOR 2004**

Throughout this report, all of the figures accompanying the data show both 2003 and 2004 results for each LDC. The grey columns in the bar graphs represent the LDC's 2003 performance. The color columns represent the 2004 performance results.

#### **Damage Prevention**

Damage due to excavation activity is the leading cause of pipeline failures and accidents, both statewide and nationwide.

The damage-prevention procedures are designed to work as follows: (1) excavators provide notice of their intent to excavate to a one-call system, which transmits an excavation notice (one-call ticket or ticket) to the member operators potentially affected by that excavation; (2) member operators clearly and accurately mark the location of their buried facilities in or near the excavation site; and (3) excavators work carefully around the marked facilities in order to avoid damaging them. Damages to underground facilities can be

categorized by identifying where in this three-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 operating territory provides a useful basis for assessing performance in this area. The data used in the analyses are contained in Appendix A. A mathematical formula is used to normalize each LDC's data as follows: number of damages per 1000 requested facility locates (or tickets).

The number of damages are categorized by:

- damages resulting from mismarks<sup>3</sup>
- damages resulting from excavator error
- damages resulting from company and company contractors
- damages resulting from no-calls, or no ticket request

Each one-call ticket received provides an LDC the opportunity to mark its facilities correctly. Hence, the measure specifically addresses this by examining damages caused by mismarks per 1000 tickets.

Once a one-call ticket is requested and the facilities are marked correctly, it provides an excavator the opportunity to work carefully and avoid damages. Damages due to excavator error per 1000 tickets tracks this category. Historically, this metric contributes the highest percentage of damages of LDCs' facilities.

Damages that are caused by the LDC themselves, or their direct contractors, are also included in the damage analysis as a separate category. LDC personnel should be

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<sup>3</sup> A mismark is a failure to accurately mark the location of underground facilities.

trained to work carefully near their own facilities. LDCs should also have better control over outside contractors they hire to perform work for them than they do over third-party contractors. Thus, this category should ideally be the smallest contributor to the total damages.

No-call damages are simply instances where no ticket was generated because the excavator did not provide notice of intent to excavate. This metric provides an indication of the general level of awareness excavators have about the one-call notification systems. A high percentage of damages in this category indicates that efforts are needed to make excavators aware of the dangers of working around buried facilities and the importance of using the one-call notification systems.

It is important to note that this measure evaluates actual damages to LDCs' underground facilities. Based on the data reported in 2004, approximately 99.4% of the excavation notices resulted in no damage to natural gas facilities. There were a total of 3,118 damages in 2004, 5.1% less than in 2003. For 2004, the total number of one-call tickets increased by 8.5%. These results show that excavators are becoming more aware of the one-call system and proper excavation practices. While these are encouraging statistics, a single damage could lead to a catastrophic event, so it is important that LDCs strive to minimize damage to facilities.

#### 2004 Damage Results and Analysis

The data for the damage prevention measure will first be addressed by taking a macro view across the state. The report will then examine individual metrics in an effort to carry out closer analyses of LDCs' strengths and weaknesses.

Each category helps to identify areas in which LDCs excel or have room for improvement.

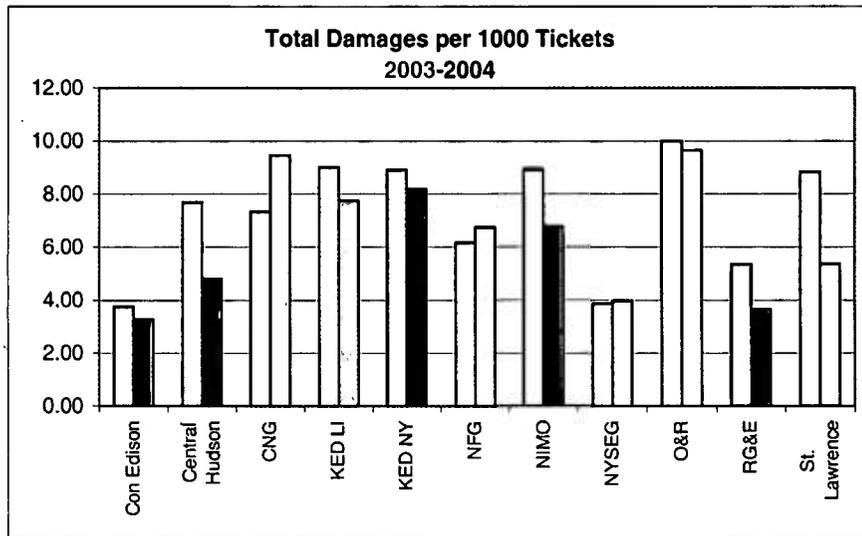
Figure #1 displays all damages across the state normalized by 1000 one-call tickets. The net result of the increase in number of tickets and lower overall damages decreased this metric to 5.97 from 6.81, representing a 12.3% reduction.

Metric	2003	2004	% Chg.
# Tickets	481,179	522,204	8.5%
Mis-marks	1.14	1.05	-8.4%
Co. & Co. Contractor	0.27	0.31	16.2%
Excavator Error	3.56	2.83	-20.7%
No-Calls	1.84	1.78	-3.1%
Total (per 1000)	6.81	5.97	-12.3%

**Figure #1:** Damages per 1000 Tickets Statewide

The one metric that did not improve over 2003 is damages by company and company contractors; the one area that LDCs have the most control over. The contributing factor to this decline will be examined on an individual LDC basis below. It is also important to note that excavator error damages had the largest normalized improvement, which implies that excavators are becoming more careful when working around gas facilities once they have been marked out.

The data contained below in Figure #2 displays overall performance of LDCs across the state. Each column represents a summation of damages from all categories normalized per 1000 tickets.



**Figure #2:** *Total Facility Damages per 1000 Tickets<sup>4</sup>*

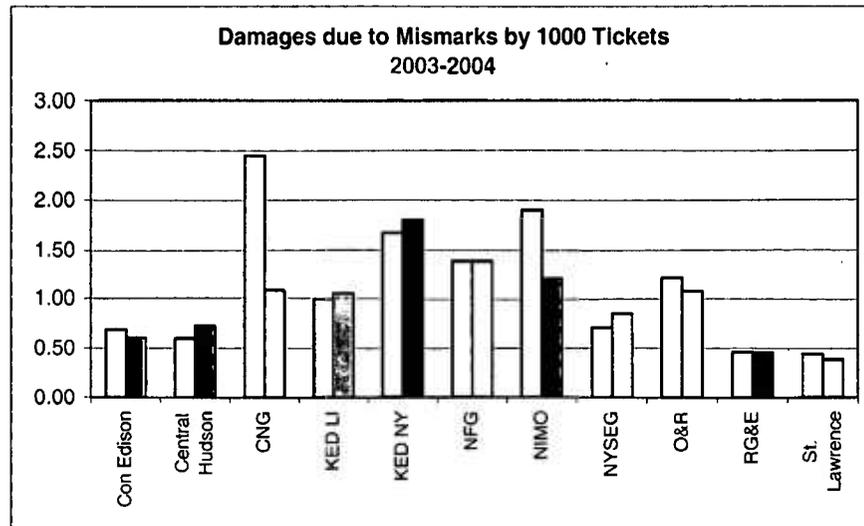
The data shows little correlation between geographical area and size of system. For example, Con Edison and RG&E have the lowest relative number of normalized damages (upstate and downstate), while Corning and O&R have the highest. Each of these companies has differing geographical areas as well as size of systems. Eight of the LDCs lowered their total damages per 1000 tickets. Of the three LDCs that experienced more damages, the discussion of the four metrics below will examine the specific areas in which damage performance declined. Regardless of performance, all LDCs have room for improvement in particular areas as displayed in the four analyses in Figures #3 - #6 below.<sup>5</sup>

<sup>4</sup> St. Lawrence revised its total damages down to 20 from 26 after the issuance of the 2003 Performance Measures report. Staff verified that 20 is the appropriate number.

<sup>5</sup> Note that the vertical axis scale is different for each of these figures.

## Mismarks

Figure #3 displays the damages by mismarks normalized by 1000 requested locates.



**Figure #3:** Damages due to Mismarks

As can be seen in Figure #3, there is a wide range of performance among the LDCs that does not appear to be influenced by company size, operating territory, or upstate versus downstate location. For example, Corning and St. Lawrence are very different in performance and both are upstate companies with similar size systems. Corning and KED LI differ in location, and size of system, but had similar performance in 2004.

Since this aspect of damage prevention is most directly within the control of the LDCs, Staff recommends that they all continuously strive to keep mismarks to a minimum. In particular, Staff recommends that Central Hudson, KED LI, KED NY, and NYSEG evaluate the current status of their marking programs, including issues such as mapping systems, training activities, locating and marking protocols, and locating

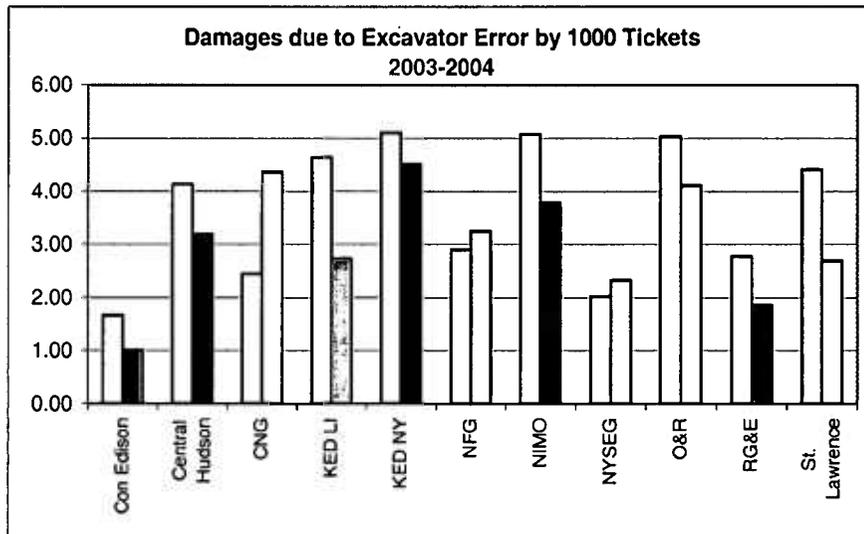
equipment to identify the reasons for declining performance in this category of damages.

Staff recognizes Corning and NIMO for their significant improvement in this metric. Corning attributes its improved performance to better training of its locaters and the general experience they have acquired through locating. NIMO attributes its improved performance to an internal audit that discovered inconsistencies in how divisions handled tickets and investigated damages. NIMO developed methods for consistent record keeping, improved consistency and frequency in the training of its locaters, and made efforts to enhance its root-cause analyses. However, even with its increase in performance, it still remains at a level where improvements can continue to be made.

KED NY, NIMO, and NFG have the most room for improvement in this metric and it is recommended that they develop methods to improve performance.

#### Excavator Error

Figure #4 displays damages where LDCs' facilities were properly marked, but were damaged by third-party excavators due to excavator error.



**Figure #4:** Damages due to Excavator Error

Historical data has shown that this category comprises the highest percentage of total damages to LDC underground facilities. As seen in Figure #4, Corning, NFG, and NYSEG experienced a decline in performance in this metric. These are the same LDCs that experienced a higher number of overall damages (see Figure #2). This demonstrates that LDCs can have the greatest impact on overall damages by reducing damages resulting from excavator error. These damages are not totally within the LDCs' control since they involve the actions of third parties, however, LDCs can influence this area through education and outreach efforts.

Education efforts have historically focused heavily on the "Call Before You Dig" message. Although that is valuable and should continue, LDCs should consider enhancing education efforts regarding proper excavation practices after the one-call system has been notified and the underground facilities have been marked by the LDCs. For example, this effort can be carried out by hosting safety seminars for the excavating

community. Additional examples of ways to influence excavator behavior include, but are not limited to, pursuit of excavator liability for repairs<sup>6</sup> and inspection of construction sites by utility personnel.

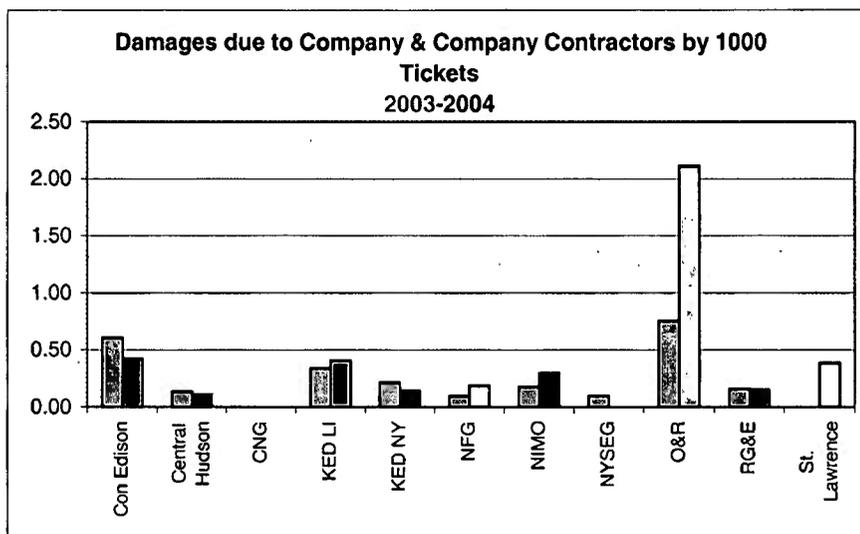
It is positive to see that most LDCs experienced a significant improvement in this metric and that their efforts appear to be having a productive impact on excavators. Even though all of the LDCs have room for improvement in this area, Staff recommends that Corning and NFG evaluate their current efforts and take steps to reverse the decline in performance. While NYSEG is a top performer (in each of the categories of damage prevention), Staff recommends that it also evaluate its decline in performance during 2004. Corning, KED NY and O&R have the most room for improvement and could significantly decrease their total damages if performance were increased in this metric. Staff is particularly concerned about the magnitude of Corning's decline (80%) in this category. It is recommended that Corning, KED NY, and O&R perform a self-analysis and make efforts to improve performance in this metric.

#### Company & Company Contractors

Figure #5 shows the data for damages caused by company forces and qualified company contractors.

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<sup>6</sup>General Business Law §765(4) makes an excavator liable to an operator for reasonable costs that result from a violation.



**Figure #5:** Damages due to Company and Company Contractors<sup>7</sup>

Staff expects performance in this category of damages to be minimal. LDCs have the most control over their own excavators and thus the greatest ability to reduce these types of damages.

As noted above, this is the single metric where overall performance declined across the state. KED LI, NFG, NIMO, O&R, and St. Lawrence did not perform as well as they did in 2003. In particular, O&R experienced a significant decline in this area. If O&R's data were extruded from both years of the metric, the total statewide performance would have remained constant. O&R attributes its decline in performance mostly to its program of replacing early vintage plastic pipe, which is prone to leakage. The installation of a metallic tracer wire to facilitate accurate locating of the pipe was not a consistent

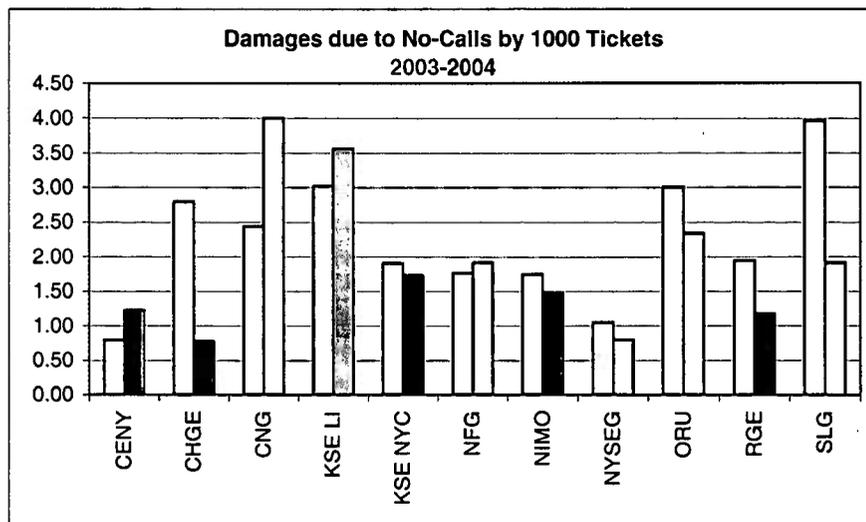
<sup>7</sup>Corning (2003 & 2004), NYSEG (2004), and St. Lawrence (2003) had no damages in this category. St. Lawrence appears to have a significant increase; however, it experienced a single damage in 2004. The relatively small size of the company and lower number of one call tickets received magnify the impact of the single damage in this category.

practice and, in many cases, maps are not entirely accurate in depicting the exact location of the pipe. Therefore, this pipe is difficult to locate accurately.

Staff recommends KED LI, NFG, NIMO, and O&R perform a self-assessment in this area and make efforts to reverse the declines in performance. Suggested areas to consider include training of in-house and contracted personnel, management oversight, and construction procedures. In addition to the four LDCs discussed above, Con Edison continues to have room for improvement, even though it did improve upon its 2003 performance. Therefore, it is recommended that Con Edison continue to make efforts to decrease these types of damages.

No-Calls

Figure #6 displays damages, normalized by 1000 tickets, caused by excavators who did not request a one-call ticket. Since by definition, no ticket exists for this category, normalizing by ticket volume serves as a proxy for normalizing by the level of construction activity.



**Figure #6:** Damages due to No Ticket Request by Excavators

These types of damages are typically the second-highest contributor to the total damages in LDCs' systems. Con Edison, Corning, KED LI, and NFG performance declined in this metric, while the remaining LDCs improved over 2003. Corning, KED LI, and O&R remain among the LDCs that have the most room for improvement. Staff recommends that all of the LDCs evaluate their excavator outreach efforts and identify areas (or types of excavators) that are the largest source of these types of damages. All LDCs should target problem excavators and strive to reduce these damages. Although it is the excavators' duty to use the one-call system and be aware of the law that apply to their business, LDCs can influence excavator behavior through outreach efforts.

#### Reducing Damages

The Department was awarded a Damage Prevention Grant from the United States Department of Transportation Office of Pipeline Safety in October 2003, for which implementation will continue into 2005. Working in cooperation with the one-call notification systems and the LDCs, activities have included updating an excavator manual<sup>8</sup> that was developed under a previous grant; producing a Spanish translation of the excavator manual; training seminars focused on utility locating techniques; and demonstrations of new technologies for safe excavation techniques such as vacuum excavation.<sup>9</sup>

Staff also participates in regional Damage Prevention Council (DPC) meetings, which are held regularly so that

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<sup>8</sup> The handbook for excavators illustrates 16 NYCRR Part 753 in simplified terms and demonstrates various best practices for safe excavation techniques.

<sup>9</sup> This excavation method uses either air or water to loosen up soil so that it can be removed by a large vacuum device. This method reduces the risk of damaging underground facilities.

stakeholders can meet informally to discuss damage prevention issues on a more localized level. Staff contributes to DPC efforts in local education activities and provides its perspective on the underground facilities damage prevention regulations. The gas LDCs are also very active on these DPCs.

Finally, the Commission actively conducts a program to enforce the regulations contained in 16 NYCRR Part 753, and assesses penalties for excavators and LDCs for non-compliance with the law. Such enforcement actions are often resolved by requiring the violator to obtain training in consideration of a reduced penalty.

In each of the four sub-categories of damage prevention discussed above, several LDCs have been identified as having room for improvement in that specific area. Beyond that, Staff recommends that all LDCs continuously monitor their performance in these areas in order to identify opportunities for improvement and to further reduce damages to their underground facilities.

#### **Emergency Response**

16 NYCRR §255.825(d) requires that LDCs provide a monthly report to Staff that includes a breakdown of the total number of calls received during the month and responded to in intervals of 15 minutes during normal business hours, weekdays outside business hours, and weekends and holidays. The report also indicates the percentage of calls responded to within 30, 45, and 60 minutes. The following have been established as acceptable 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.<sup>10</sup>

The intent of the reporting requirement and the performance measure is to evaluate company responses to gas leak, odor, and emergency calls that are generated by the public and other authorities (e.g. police, fire, and municipal employees). For the purposes of reporting, the response time is measured from the time the call is sent to dispatch to the time of arrival of qualified<sup>11</sup> company personnel at the location.

When an LDC responds to a report of a gas or otherwise unidentified odor and an investigation determines that the problem is not attributed to natural gas, the event is nevertheless included in the reported data. These are included because LDCs must respond as if it is an actual gas emergency until proven otherwise.

Any LDC that does not meet one of the target response level at 30, 45, or 60 minutes also provides additional data showing when the desired response level is actually achieved. For illustration purposes, if an LDC's data shows that it has responded to 73% of all calls within 30 minutes, that company will also provide data showing it is responding to 74% of calls in 31 minutes, and then 75% of calls within 32 minutes. This data enables Staff to analyze the LDC's progress as it works towards meeting the 75% goal.

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<sup>10</sup> The LDCs are expected to review the circumstances of each one and where possible work towards their elimination.

<sup>11</sup> *Qualified personnel* is defined as company representatives who are properly trained and equipped to investigate gas leak and odor reports in accordance with accepted company procedures and 16 NYCRR §255.604 - Operator Qualification.

## 2004 Results and Analysis

Figure #7 presents data for calendar years 2003 and 2004 arranged by operator and percentage of responses falling within the three goals of 30, 45, and 60 minutes. Performances that did not meet the target are printed in boldface type beneath the performance targets.

2003 - 2004 Response Performance	30 Minute		45 Minute		60 Minute	
	2003	2004	2003	2004	2003	2004
Con Edison	71.9%	76.0%	96.3%	97.2%	99.9%	99.9%
Central Hudson	81.0%	78.6%	99.2%	98.8%	99.9%	99.9%
Corning	77.0%	83.5%	93.0%	96.1%	98.0%	99.6%
KED LI	<b>67.9%</b>	<b>74.8%</b>	93.1%	96.0%	99.9%	99.9%
KED NY	<b>67.6%</b>	<b>68.0%</b>	92.2%	92.4%	98.1%	98.4%
NFG	87.1%	87.4%	96.1%	96.3%	98.9%	98.9%
NIMO	76.8%	80.8%	92.1%	94.1%	97.2%	98.0%
NYSEG	80.4%	81.1%	96.2%	96.0%	99.4%	99.4%
O&R	<b>68.0%</b>	<b>71.7%</b>	94.2%	95.8%	99.7%	99.7%
RG&E	95.0%	95.1%	99.3%	99.5%	99.9%	99.9%
St. Lawrence	<b>72.4%</b>	78.6%	<b>89.0%</b>	91.0%	98.2%	98.5%

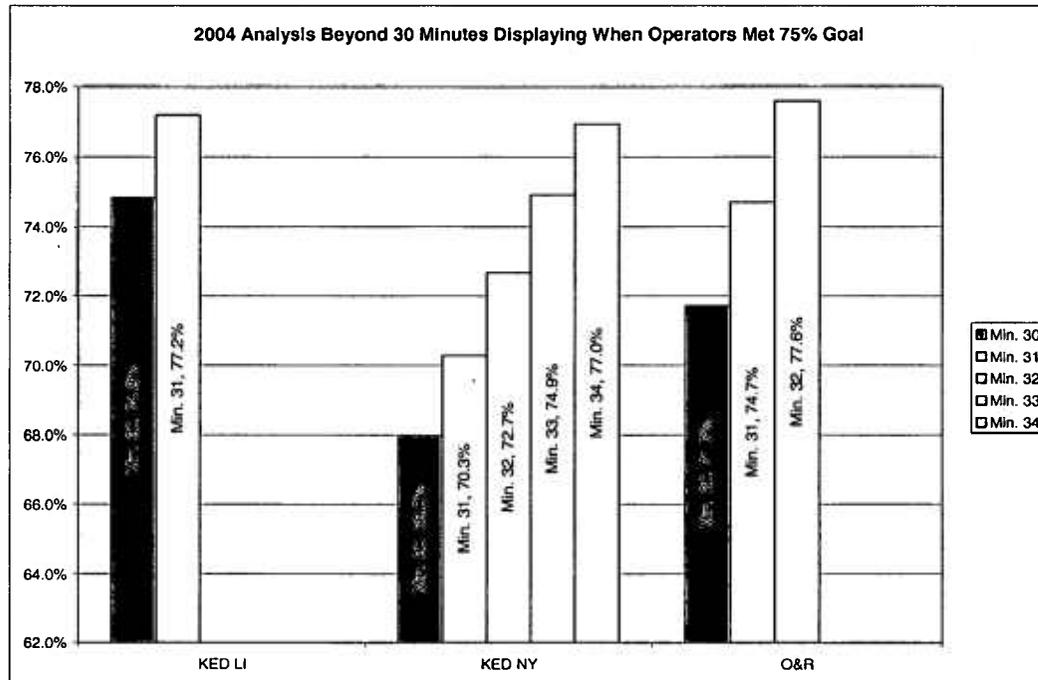
**FIGURE #7:** *Response Times for All Goals 2003 and 2004*

The data indicates that all companies have acceptable performance in responding to leak and odor calls within 45 and 60 minutes. Also, most LDCs either maintained or improved their performance from 2003. St. Lawrence failed to meet the 45 minute target in 2003 but was able to meet it in 2004.

For the 30 minute target, KED LI, KED NY, and O&R did not achieve the 75% response goal. However, all three LDCs, particularly KED LI, improved their performance over 2003. Also, Con Edison and St. Lawrence did not meet the 30 minute target in 2003, but greatly improved their performance and surpassed the target in 2004.

Con Edison attributes its enhanced performance to the implementation of several changes it made during the past year. Some of these changes included adding global positioning satellite (GPS) technology to vehicles so they can be located quickly and strategically assigned to emergencies, digitization of maps and allowing employees from different divisions to respond to emergencies based on physical location, rather than strictly assigned operating areas (i.e. Queens versus Manhattan). St. Lawrence attributes its increase in performance to reassigning personnel to assist with responses. LDCs having similar operating areas should consider these operational changes that appear to have positive impacts.

Figure #8 displays the minute-by-minute analysis for the LDCs (KED LI, KED NY, and O&R) that failed to reach the 75% within 30 minutes goal.



**FIGURE #8:** When 75% Goal was Met Beyond 30 Minutes

As shown in Figure #8, KED LI reached the target in 31 minutes, KED NY in 34 minutes, and O&R in 32 minutes.

KED LI and O&R made significant improvements toward meeting the 75% target. KED NY improved over 2003, but required 34 minutes to reach the 75% target. Geographical placement and work schedule alterations are cited as contributors to the increased performance for all three LDCs.

KED NY's response to the 2003 report indicated that it receives a large amount of calls that result in "no leaks." Further, upon arrival the company finds that these calls are often requests for appliance service. KED NY refers to this as residual effects from its former appliance business. KED NY is developing methods for screening actual leak and odor calls from other types of non-emergency calls in an effort to mitigate the impact of excessive responses where there is no leak. Staff recommends that KED NY evaluate its operations and take further steps to improve performance.

In addition, Staff recommends that KED LI and O&R continue to assess their operations and seek areas for improvement in this area. It is requested that all three LDCs report to Staff on their plans of action.

#### **Leak Management**

The intent of evaluating LDCs' leak management programs is to gauge performance in reducing the number of leaks that occur, eliminating potentially hazardous leaks that are

found, and reducing the backlog<sup>12</sup> of leaks at the end of the year. There are requirements contained in the natural gas safety regulations contained in 16 NYCRR Part 255 for classifying, monitoring and repairing different types of leaks. The gas safety regulations contain a scheme to classify these leaks according to the relative hazard, considering factors such as whether gas migration is detected near buildings, in manholes, vaults or catch basins, under paved versus unpaved areas, etc. All leaks classified as potentially hazardous must be monitored and repaired according to the gas safety regulations, and any hazardous conditions must be eliminated immediately. The key leak management measure looks at the number of year-end backlog of leaks requiring repair, and divides them by the number of such repairs actually made during the year. This measure does not substitute for, and is not a reflection upon any LDCs' compliance with the gas safety regulations.

Unrepaired leaks are an increased safety risk in LDCs' systems. The risk is further increased when there is frost in the ground due to the increased chance of gas migration into buildings, because the gas cannot vent through the ground to the atmosphere as readily due to the blanket of frost. Although a leak backlog on any particular day is a snapshot in time, the end of a calendar year is significant since it is typically the beginning of the frost season. Thus, all data analyses are

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<sup>12</sup> A backlog is defined as active leaks in system, consisting of Type 1 - requires 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; Type 2 - monitored at least every two months and repaired within one year; Type 3 - monitored annually, no mandated repair interval.

presented as of December 31, 2004 (data as reported by the LDCs used for analyses are contained in Appendix B).

The data reported by the LDCs includes leaks found and leaks repaired on mains and services categorized by:

- Leaks discovered by Type of leak
- Leaks repaired on mains by Type and pipe material
- Leaks repaired on services by Type and pipe material
- Backlog of leaks by Type

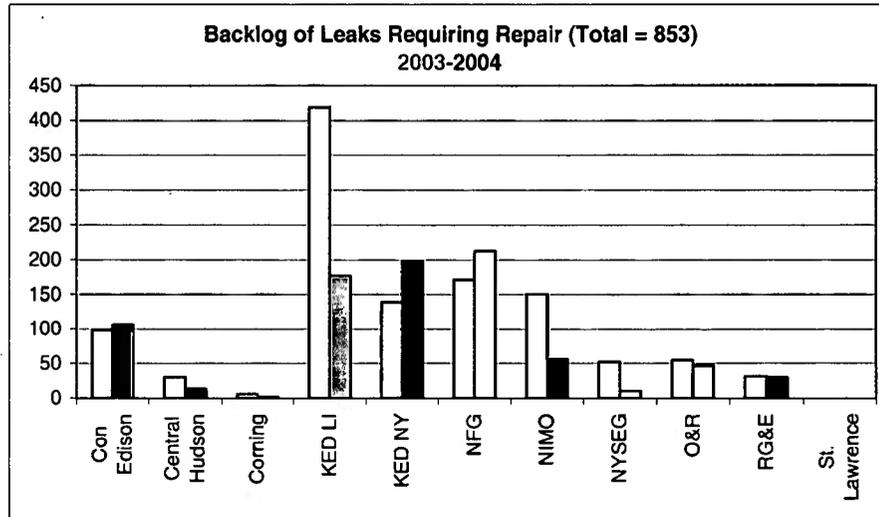
Analysis of leakage data can also provide an indication of the pipe material's susceptibility to leakage. As one means of continuously improving leak management programs, Staff encourages the identification and removal of leak-prone pipe such as unprotected steel and cast iron. Incentive programs to reduce safety risks by replacing deteriorating infrastructure and/or reducing leak backlogs have been incorporated into past and current rate cases for every LDC with the exception of St. Lawrence. Historically, the great majority of leaks occur on cast iron as well as steel pipe that is not cathodically protected against corrosion. St. Lawrence's system is comprised of plastic and cathodically protected steel and has not had significant leak problems.

Staff is focused on evaluating overall system integrity and management of leaks in view of public safety. The long-term goal is to eliminate pipeline infrastructure that, due to its vulnerability to leaks, presents greater safety risks to the public.

#### 2004 Results and Analysis

Figure #9 displays the backlog of leaks requiring repair (Types 1, 2A, and 2) on December 31, 2003 and on December 31, 2004. The total year-end backlog of leaks requiring repair

across the state decreased to 853 from 1,178 in 2003 (-26%). Of the 853 leaks, approximately 9% are Type 1, 27% are Type 2A, and 64% are Type 2.



**FIGURE #9:** Leak Backlog 2003 and 2004<sup>13</sup>

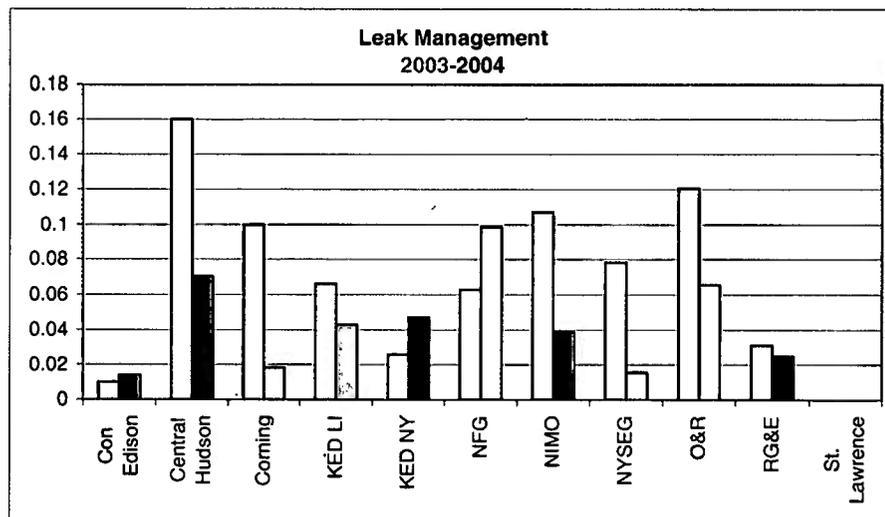
It can be seen in Figure #9 that many LDCs significantly decreased these types of leaks, while KED NY and NFG had notable increases. Staff will closely evaluate leak backlogs in subsequent years to determine company performance in managing potentially hazardous leaks. Staff expects to see these leak totals decrease over time and recommends that LDCs strive to minimize the backlog of these leaks at the onset of the typical frost season.

As presented in Figure #9, KED LI's backlog of potentially hazardous leaks requiring repair decreased substantially from 2003. Staff worked with the company throughout 2004, evaluating the company's policies and procedures for leak management including the frequency and

<sup>13</sup>Corning revised its 2003 year-end backlog of repairable leaks down to 6, from 30, after the issuance of the 2003 Performance Measures report. It had discovered an error had been made in tabulating the numbers. Staff verified that 6 is the appropriate number.

scheduling of leak surveys and leak repair timeframes, which resulted in a year-end backlog decrease of 242 (57.8% decrease).

Other LDCs with significant reductions in year-end backlogs are NYSEG with 78.8%, Corning with 66.7%, NIMO with 62.9%, and Central Hudson with 53.3%. NYSEG's efforts to finish its leakage surveys earlier in the year allowed for more time to repair discovered leaks before the frost season. NIMO also made extra efforts to complete its leakage surveys earlier in the year to facilitate the lowering of its backlog of leaks in anticipation of a potential strike by its labor union. Central Hudson made specific efforts to reduce its leaks by hiring contractors and making capital improvements by replacing leaking and leak-prone pipe. The results of these efforts are clearly reflected in the leak management measure, Figure #10.



**FIGURE #10:** Year-End Backlog of Leaks Requiring Repair versus such Leaks Repaired During Year<sup>14</sup>

<sup>14</sup> KED NY revised its accounting method of leak repair activity to align with KED LI and conform to the established reporting guidelines, and submitted a revised number of total repairs for 2003. As a result, its 2003 performance in this metric was actually 0.03 versus 0.04 as reported last year.

As a calculated measure of performance, Staff analyzed the ratio of year-end backlog of leaks requiring repair versus the total number of these leaks actually repaired during the year. This metric displays LDCs' diligence in reducing the safety risk from these more hazardous leaks.

As can be seen from Figure #10, the three LDCs that realized increases in their backlogs (Con Edison, KED NY, and NFG) did not perform as well in this metric as they did in 2003. Although Con Edison's performance declined compared to 2003, it remains a top performer. Staff will monitor to see if a further negative trend develops. Noting that the decline in performance stems from a reduction in leak repair activity compounded by an increase in the year-end backlog, Staff is particularly concerned with KED NY's and NFG's backlog increases. Figure #11 outlines the reduced leak repair activity of these two LDCs compared to that in 2003:

LDC	Net Backlog Increase	Net Decrease in Leak Repairs	% Decrease in Repair Activity
KED NY	58	1185	22.1%
NFG	41	584	21.3%

**FIGURE #11: Decreased Leak Repair Activity**

Staff recommends KED NY and NFG evaluate the reasons for the decline in leak repair performance and make efforts to minimize these types of leaks heading into the frost season.

Staff recognizes the improved performance of Central Hudson and O&R. However, each remain among those with the most room for improvement and are recommended to continue efforts in reducing their year-end backlog of these leaks.

## CONCLUSION

Performance measures are an important management tool that provides Staff and LDCs the ability to evaluate trends in key areas of gas safety (damage prevention, emergency response time, and leak management). LDCs must continue to focus on these areas to maintain an adequate level of safety and to further reduce safety risks. Natural gas is a safe and reliable energy product if handled and transported properly.

Staff will continue to evaluate LDCs' performance in the measures contained in this report and will expect those LDCs, mentioned as having improvement opportunities, to provide the Safety Section of the Office of Gas and Water with specific details on how they plan to improve. Staff will continue to monitor LDC performance, and trends will be analyzed in additional performance measure reports.

**Appendix A**

**Reported Damage Data**

LDC Reported Totals	# One Call Tickets		Damages due to Mismarks		No-Call Damages		Co. & Co. Contractor Damages		Excavator Error Damages		Total Damages	
	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004
Con Edison	77576	87340	53	53	62	107	47	37	129	88	291	285
Central Hudson	14979	17869	9	13	42	14	2	2	62	57	115	86
CNG	2045	2750	5	3	5	11	0	0	5	12	15	26
KED LI	70718	83137	70	88	214	296	24	34	328	226	636	644
KED NY	56132	63335	94	114	107	110	12	9	286	285	499	518
NFG	71772	68887	100	96	127	132	7	13	208	224	442	465
NIMO	73613	77667	140	94	129	115	13	23	374	294	656	526
NYSEG	51252	48590	36	41	54	39	5	0	104	113	199	193
O&R	17274	17512	21	19	52	41	13	37	87	72	173	169
RG&E	43550	52513	20	24	85	62	7	8	121	98	233	192
St. Lawrence	2268	2604	1	1	9	5	0	1	10	7	20	14

**Normalized Damage Data**

LDC Computed Performance	# One Call Tickets		Damages due to Mismarks		No-Call Damages		Co. & Co. Contractor Damages		Excavator Error Damages		Total Damages	
	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004
Con Edison	77576	87340	0.68	0.61	0.80	1.23	0.61	0.42	1.66	1.01	3.75	3.26
Central Hudson	14979	17869	0.60	0.73	2.80	0.78	0.13	0.11	4.14	3.19	7.68	4.81
CNG	2045	2750	2.44	1.09	2.44	4.00	0.00	0.00	2.44	4.36	7.33	9.45
KED LI	70718	83137	0.99	1.06	3.03	3.56	0.34	0.41	4.64	2.72	8.99	7.75
KED NY	56132	63335	1.67	1.80	1.91	1.74	0.21	0.14	5.10	4.50	8.89	8.18
NFG	71772	68887	1.39	1.39	1.77	1.92	0.10	0.19	2.90	3.25	6.16	6.75
NIMO	73613	77667	1.90	1.21	1.75	1.48	0.18	0.30	5.08	3.79	8.91	6.77
NYSEG	51252	48590	0.70	0.84	1.05	0.80	0.10	0.00	2.03	2.33	3.88	3.97
O&R	17274	17512	1.22	1.08	3.01	2.34	0.75	2.11	5.04	4.11	10.02	9.65
RG&E	43550	52513	0.46	0.46	1.95	1.18	0.16	0.15	2.78	1.87	5.35	3.66
St. Lawrence	2268	2604	0.44	0.38	3.97	1.92	0	0.38	4.41	2.69	8.82	5.38

**Appendix B**

**Reported Leak Data**

2004 Total Leak Repairs on Mains by Type								
	Unprot. Bare	Unprot. Coated	Prot. Bare	Prot. Coated	Plastic	Cast/Wrt. Iron	Copper	Other
Con Edison	2571	104	0	69	31	3307	0	0
Central Hudson	22	15	0	25	2	95	0	3
Corning	85	0	0	0	0	0	0	0
KED LI	2237	411	107	141	108	333	0	0
KED NY	212	0	0	113	124	2987	0	0
NFG	2015	0	417	101	115	302	0	21
NIMO	117	65	0	0	28	634	0	50
NYSEG	346	0	0	167	25	25	0	0
O&R	226	0	0	36	99	54	0	0
RG&E	233	25	0	215	17	225	0	0
St. Lawrence	0	0	0	3	0	0	0	0
Total:	8064	620	524	870	549	7962	0	74

2004 Total Leak Repairs on Services by Type								
	Unprot. Bare	Unprot. Coated	Prot. Bare	Prot. Coated	Plastic	Cast/Wrt. Iron	Copper	Other
Con Edison	2891	176	0	219	114	0	307	0
Central Hudson	14	87	0	43	27	2	0	5
Corning	56	0	0	1	3	0	0	0
KED LI	1507	599	50	175	390	0	31	0
KED NY	527	0	0	203	521	0	697	0
NFG	767	0	0	105	192	0	0	43
NIMO	416	123	0	0	150	54	26	112
NYSEG	265	0	0	195	92	0	0	90
O&R	257	0	0	42	138	0	0	0
RG&E	222	32	0	214	104	0	10	0
St. Lawrence	0	0	0	2	0	0	0	0
Total:	6922	1017	50	1199	1731	56	1071	250

2004 Leaks Repaired by Type of Leak						
LDC	Type 1	Type 2a	Type 2	Sub-Total	Type 3	Total
Con Edison	4397	1329	1772	7498	2291	9789
Central Hudson	102	44	53	199	141	340
Corning	26	14	69	109	32	141
KED LI	1141	739	2247	4127	1962	6089
KED NY	2737	671	766	4174	1210	5384
NFG	848	411	898	2157	1921	4078
NIMO	742	170	534	1446	329	1775
NYSEG	242	113	358	713	492	1205
O&R	376	139	201	716	136	852
RG&E	388	128	694	1210	87	1297
St. Lawrence	3	0	0	3	2	5

2004 Leaks Discovered by Type of Leak						
LDC	Type 1	Type 2a	Type 2	Sub-Total	Type 3	Total
Con Edison	2090	832	956	3878	1839	5717
Central Hudson	120	45	46	211	99	310
Corning	32	12	52	96	15	111
KED LI	1537	943	1885	4365	2940	7305
KED NY	2998	337	210	3545	522	4067
NFG	834	424	910	2168	2102	4270
NIMO	729	158	414	1301	267	1568
NYSEG	241	115	367	723	615	1338
O&R	389	131	219	739	457	1196
RG&E	368	132	664	1164	136	1300
St. Lawrence	3	0	0	3	2	5

**Backlog of Leaks Requiring Repair**

LDC	Leak Backlog	
	2003	2004
Con Edison	98	106
Central Hudson	30	14
Corning	6	2
KED LI	419	177
KED NY	139	197
NFG	172	213
NIMO	151	56
NYSEG	52	11
O&R	55	47
RG&E	32	30
St. Lawrence	0	0

**Repaired Leaks Requiring Repair**

LDC	Leaks Repaired	
	2003	2004
Con Edison	7769	7498
Central Hudson	184	199
Corning	58	109
KED LI	6327	4127
KED NY	5359	4174
NFG	2741	2157
NIMO	1407	1446
NYSEG	665	713
O&R	456	716
RG&E	1022	1210
St. Lawrence	5	3

**Calculated Leak Management Metric**

LDC	LM Performance	
	2003	2004
Con Edison	0.01	0.01
Central Hudson	0.16	0.07
Corning	0.10	0.02
KED LI	0.07	0.04
KED NY	0.03	0.05
NFG	0.06	0.10
NIMO	0.11	0.04
NYSEG	0.08	0.02
O&R	0.12	0.07
RG&E	0.03	0.02
St. Lawrence	0.00	0.00