Filed Session of March 25, 2010

STATE OF NEW YORK
DEPARTMENT OF PUBLIC SERVICE

March 10, 2010

TO: THE COMMISSION

FROM: Office of Electric, Gas & Water – Safety Section

SUBJECT: CASE 09-G-0380 – In the Matter of a Natural Gas Explosion at 80-50 260th Street, Queens, New York on April 24, 2009, Within the Natural Gas Service Territory of Consolidated Edison Company of New York, Inc.

SUMMARY: Con Edison is in the process of implementing the nine recommendations contained in the Staff report presented to the Commission at the November 12, 2009 session. Staff is working to ensure Con Edison fully implements all of the recommendations.

Background

At the November 12, 2009 Commission Session, Staff presented a detailed final report (Staff Report) on its investigation into the natural gas explosion that occurred on April 24, 2009 at 80-50 260th Street in the Floral Park area of Queens, New York, in the territory of Consolidated Edison Company of New York, Inc. (Con Edison or the company). The explosion destroyed the house and resulted in the death of a resident. The Staff Report included a discussion of the causes of the explosion and Con Edison's response to the report of gas odors on the block received prior to the explosion. The Staff Report also included nine recommendations intended to enhance the safety of the company's gas operations.

Also, on November 12, 2009, the Secretary issued a Notice seeking comments on Staff's Report (the Notice). The Notice

stated that Staff's investigation identified numerous problems with Con Edison's internal processes including, but not limited to the receipt and handling of gas odor reports, the ability to contact emergency responders, the process for dispatching emergency responders, the availability of adequate equipment for emergency responders, the execution of the leak investigation procedures and the adequacy of separation between electric and gas facilities. The Notice directed Con Edison to respond to the report by December 11, 2009. Con Edison filed a response on that date as directed.

On January 7, 2010, two public statement hearings (afternoon and evening) were held in the Floral Park area of Queens to receive comments from the public regarding Staff's Report as well as Con Edison's December 11, 2009 reply. Staff believes that neither Con Edison's response nor the public's comments warrant any modifications to the Staff Report.

The Notice also stated that, to varying degrees, the types of problems identified in this investigation echo those seen in other recent incidents including the Long Island City electric outage in July 2006, the steam pipe rupture in Manhattan in July 2007, and the Sunnyside, Queens gas explosion in November 2007. The Management Audit conducted by the Liberty Consulting Group concluded that Con Edison needs to improve its Enterprise Risk Management. The report stated that Con Edison:

> Needs to change from a reactive to a proactive organization. This is a multi-faceted problem with no single solution. However, a key element to making that transition is to anticipate and address problems before they turn into incidents and accidents that produce crash programs to address the consequences.

The Notice directed Con Edison to address the Commission's broader concerns about whether the company's internal systems, controls and management oversight are adequately designed to

enforce existing procedures, detect weaknesses, and implement improvements.

This memorandum provides a status report on Con Edison's implementation of the recommendations contained in Staff's Report, and an analysis of relevant comments from the public statement hearings. This memorandum also summarizes Con Edison's response to the Commission's broader concerns about the company's internal systems, controls and management oversight.

A brief summary of the incident follows:

At 3:22 p.m. on April 24, Con Edison received a report of a partial electric outage from 80-46 260th Street, next door to the incident building. At 3:34 p.m. a resident at the same location reported an outside gas odor to Con Edison.

The gas odor report was transmitted to Con Edison's Gas Emergency Response Center (GERC), which is responsible for dispatching a qualified mechanic to the site. A delay occurred in dispatching a mechanic due to other routine calls distracting the dispatcher and some mechanics failing to answer their radios. A mechanic was eventually dispatched at 3:56 p.m. and arrived at the location at 4:05 p.m.

The mechanic noticed a strong odor of gas as soon as he drove onto the block and immediately began investigating for a leak. He tested two sewer manholes in the street near house 80-46, and got positive gas-in-air readings (20% gas) in each. He then contacted his dispatcher and requested that additional personnel respond to assist him.

At about 4:13 p.m., the mechanic entered house 80-46 and found no indications of gas with his detection instrument in the atmosphere on the main floor or in the basement. He obtained a reading of 10% gas-in-air in the electric pull box (the entry point of the electric service into the basement). In post-

incident interviews with Staff, he also said he detected slight gas odors inside the house. The mechanic reported this finding to the dispatcher and confirmed that further assistance was coming.

The mechanic then spent approximately 26 minutes testing sewer manholes along 260th Street in both directions from house 80-46, obtaining readings of 20% gas-in-air in all sewer manholes tested. During this time he also identified an electric service box in the street in front of house 80-53, across the street from house 80-50. The service box cover was solid which prevented him from testing for the presence of gas in the service box. He did not attempt to lift the cover. Instead he tested for gas in a grass area beyond the curb line but near the service box and obtained very high gas-in-air readings (90%) at three points along the curb line.

At approximately 4:42 p.m., an additional Con Edison mechanic and a helper arrived at the location. At the request of the first responding mechanic, they partially lifted the cover on the electric service box and got an 80% gas-in-air reading within it. They had fully removed the cover to vent it, while the first responding mechanic was checking electric service records to identify buildings connected to that manhole. The mechanic noted that house 80-50 was served by this service box, and was about to exit his vehicle to approach the house when the explosion occurred at 4:50 p.m.

On the following day, the investigation led to discovery of a hole in the two-inch high-pressure steel gas distribution main near the connection of the gas service for house 80-50. The investigation also revealed a metal conduit containing the electric service to house 80-50 in direct contact with the gas main.

Examination of the electric conduit and cable, in the area where it contacted the gas main, revealed indications of failure, with some of the insulation completely melted off and the cable melted in spots. Another area of damage to the electric conduit was found approximately 19 feet west (towards house 80-50) of the crossing of the electric conduit and gas main. The steel conduit was bent upward, and a coupling connecting two sections of conduit had been compromised by corrosion and conduit deformation. The bend in the conduit appeared consistent with previously unreported contact by machinery during past excavation activities. The investigation found that construction projects had occurred on 260th Street in 1987 (to install water and sewer mains) and 2000 (to reconstruct the roadway). The damage to the electric conduit might have occurred during either of these construction projects.

Affected gas and electric facilities were removed and taken to an independent laboratory for analysis. The laboratory's preliminary[1] determination is that a fault in the electric service cables most likely originated in the area where the conduit was damaged near the west curb line, causing fault current to flow into the steel electric conduit and arc onto the two-inch gas main at the point where they crossed. The arcing created holes in both the electric conduit and the gas main, and also caused localized damage to the insulation and one conductor of the electric service cables. Once the hole was created in the gas main, the escaping gas migrated through routes in the soil and subsurface facilities, ultimately accumulating in the house at 80-50 260th Street.

[1] Laboratory testing has been delayed, due to pending litigation, until various involved parties reach agreement on matters such as testing protocols, schedules, who will observe the testing, etc.

As a result of its own investigation and analysis of this incident, including discussions with Staff and the New York City Fire Department (FDNY), Con Edison implemented a number of revisions to its procedures and policies. These revisions provide for identifying situations that require enhanced emergency response, getting more personnel on the scene quickly in such situations, venting subsurface structures, and checking and evacuating nearby buildings if necessary. The details of these actions are described in Appendix C of Staff's November 2009 report.

To enhance and/or complement the actions taken by Con Edison, Staff made several recommendations for further changes to policies and procedures related to receiving odor reports from the public, dispatching personnel, leak investigation and emergency response, equipment carried by mechanics and separation of electric and gas facilities.

Status of Recommendations

The following is a status report on Con Edison's implementation of Staff's recommendations. Each recommendation is listed (**in bold**), followed by a description of the actions Con Edison has taken and Staff's analysis of those actions. It is important to note that Staff's recommendations build upon the actions Con Edison implemented on its own. Staff believes that taken together, Con Edison's post-incident revisions and Staff's recommendations improve public safety.

Customer Service Representative (CSR) Scripts

Con Edison should modify the script used by CSR's when handling gas leak/odor reports to have the CSR obtain a confirmation that the caller understands the instructions and intends to evacuate. If the caller does not answer affirmatively, the CSR should re-emphasize the hazard. (Staff Report, p. 40)

Con Edison has revised its scripts to more strongly emphasize the need to evacuate a building when a caller reports a gas leak. The new script reads "THIS IS A POTENTIALLY HAZARDOUS CONDITION. FOR YOUR SAFETY, YOU MUST LEAVE THE PREMISES IMMEDIATELY AND TELL OTHERS TO LEAVE ALSO. GET WELL AWAY FROM WHERE YOU SUSPECT THE GAS IS LEAKING…" The CSR will then ask if the caller will evacuate the area immediately. If the caller indicates he or she is not evacuating because of a need for assistance, Con Edison will call 911. If the caller indicates that he or she will not evacuate for any other reason, the CSR will state: "DUE TO THE POTENTIALLY HAZARDOUS NATURE OF THE SITUATION I MUST RE-EMPHASIZE THE IMPORTANCE OF EVACUATING THE PREMISES NOW…"

Staff agrees that Con Edison has adequately implemented the recommendation.

Ability to Contact Personnel

Con Edison should take appropriate action with Mechanic A to address the inability of the dispatcher to reach him because he had left his radio in his vehicle. (Staff Report, p. 40)

Con Edison informed Staff that the employee identified in the Staff Report as Mechanic A was suspended for three days as a disciplinary measure.

Con Edison should … review and revise, as necessary, its policies regarding the ability to immediately contact all on-duty employees whose duties include responding to emergency situations, including provisions that such personnel have their communication devices with them at all times while on duty. (Staff Report, p. 40)

Con Edison has instructed its personnel to have radios with them at all times. The policy has been put in writing and employee signatures acknowledging that the employees have received and understood the instructions are obtained during a Documented On-The-Job Training (DOJT)[2] session. The company will also conduct unannounced verifications[3] and take corrective actions as necessary.

Con Edison also reports that radio communications have been enhanced since the Floral Park incident. Dispatchers enforce

[2] Con Edison utilizes DOJTs to provide training and directions to its employees, as well as to document who has completed which sessions.

[3] Con Edison indicates it will perform these unannounced verifications on a quarterly basis for the first year, and then reassess whether the frequency should be adjusted.

first responder[4] radio sign on at the beginning of each shift by issuing a test page to each first responder to ensure communication and establish radio functionality. The company has eliminated private mode conversation capability between the GERC and emergency personnel in the field. Instead, all such conversations are in group-mode, meaning they are broadcast to the entire operating area.[5] This provides greater awareness of emergency situations in the field through dissemination of up-to-the minute information to other field personnel who may be available to assist those already responding to an emergency call.

Staff agrees that Con Edison has adequately implemented this portion of the recommendation.

Con Edison should also equip its personnel with communication devices that provide better coverage in "blind spots" such as basements. (Staff Report, p. 40)

Con Edison is in the process of field testing a new-model radio, and explains that the initial results indicate that it provides better coverage, signal strength, battery life, and voice clarity. However, Con Edison is working with the manufacturer to resolve issues associated with delays in switching between Con Edison's radio network and the wireless provider network. The company reports that coverage in commercial buildings and basements is a challenge for all wireless communication systems, and it is currently working with wireless phone carriers to resolve technical difficulties. The company has established a process for employees to provide

[4] As used herein, a first responder refers to any field personnel who could be assigned to respond to a gas leak or emergency call.

[5] Con Edison has four distinct operating areas: Bronx, Manhattan, Queens, and Westchester.

feedback on known problem areas, so that the company can continually seek to improve coverage. Con Edison reports that it expects to complete the field testing by June 1, 2010, and to complete the roll-out to all the operating areas by the end of 2011, with prioritization based on areas that have coverage issues.

Staff acknowledges that there are technical issues to be resolved, but is concerned about the pace of implementation of this recommendation. Staff will continue to monitor Con Edison's progress toward implementation of its new communication system as expeditiously as possible.

Dispatching Policies and Procedures

Con Edison should conduct an analysis of its policies and procedures for dispatching personnel to emergencies with emphasis on giving higher priority to emergencies than to routine matters. The analysis should examine, but not be limited to, the issues discussed earlier in this report such as minimizing distractions due to unrelated routine calls, and balancing employee proximity to the emergency versus routine matters. For example, the company should perform an analysis of the approach of having personnel strategically placed throughout the territory during each shift who are assigned routine work that can be set aside if an emergency arises. The company should respond in writing to the Department providing its analysis and results and a description of recommended changes. (Staff Report, p. 41)

Con Edison has revised its operating procedures so that GERC supervisors will control the field response for significant

leak conditions[6] or incidents. The GERC supervisor will handle tasks such as accessing Byers[7], and providing guidance to the first responder until a field supervisor arrives at the scene. Con Edison also is in the process of hiring additional clerical-type personnel for the GERC to assist with routine tasks such as transmitting forms to mechanics or verifying that permits have been obtained. The company has also identified some routine tasks[8] and communications that had previously involved dispatchers, but can be handled directly between the field personnel and other company personnel. All of these actions reduce distractions for the dispatchers and allow them to concentrate on dispatching.

Con Edison submitted a report on February 22, 2010, stating that since the incident, incumbent and new dispatchers have had training on work priorities and other key responsibilities, and this training is now an annual requirement for all dispatchers. The training emphasizes the priority of emergency work over routine work, and the need to immediately redirect field personnel from routine jobs as emergencies arise.

Con Edison also reported that, in response to this recommendation, it performed an evaluation of the sufficiency of its manpower and scheduling to handle the anticipated emergency workload during each shift. The company reviewed how GERC prioritizes incoming work, average dispatch times, percent dispatched within specified time frames, workloads for weekdays and weekends, and workloads for specified time frames within the workday. The company's study determined that the current

[6] For a discussion of what the company considers a significant leak, see the discussion of "Code MuRRE" on page 16.

[7] Byers is the computer-based electric, gas and steam facility mapping system, which can be accessed from the company vehicle via a laptop.

[8] Such tasks include making calls for locksmiths, plumbers, vehicle towing, etc.

schedule for the GERC, incorporating changes made since the Floral Park incident,[9] is optimal to handle the anticipated volumes of emergency work at all times during the day.

Each operating area also analyzed its schedules for field personnel that would respond to emergency calls to ensure optimal coverage for emergency work at all times, and particularly during shift changes. Improvements were made to schedules of first responders and management to provide additional overlapping shift coverage.

At the start of each shift, management for each operating area considers factors such as call volumes, weather, special events, and road closings in deploying first responders geographically in order to optimize emergency response. During the shift the GERC strives to maintain the strategic and geographic spacing of its field personnel by assigning short interval tasks (e.g., main valve inspections, inspections of public buildings) to mechanics throughout the day so that, if necessary, a first responder can easily and quickly be reassigned to respond to an emergency.

Con Edison also reports that a Dispatcher Daily Checklist has been developed and implemented in the GERC, which dispatchers use at the start of each shift to ensure the availability of the tools (e.g., Byers mapping system) required to quickly and efficiently dispatch personnel to emergency work and provide assistance to all field personnel. The checklist also includes confirming with a GERC supervisor that the first responders scheduled to be on duty in the operating area actually are on duty. A GERC Daily Exception Report, documenting problems with radio and mobile dispatch communications, provides immediate feedback to ensure that timely corrections are made.

[9] These changes are described on pages 58-59 of the Staff Report.

To monitor and manage dispatcher radio and telephone communications, monthly audits are conducted for each dispatcher, reviewing audio tapes, rating conversations, and sharing the results with the dispatchers.

The GERC is working with the company's Information Resources (IR) unit to develop reports that document dispatch time trends, individual dispatcher performance, and performance by area, time of day, day of week, etc. These indicators will be included as a key component of dispatcher performance reviews.

Con Edison has also developed a methodology for identifying events that are outliers for key indicators (dispatch time, response time, and made safe time). The GERC is working with IR to develop reports to capture this data and provide feedback to dispatchers and first responders to advance continuous improvement.

Staff will continue to monitor Con Edison's progress in implementing this recommendation.

Identification of Buildings Connected to Subsurface Structures

Con Edison should enhance the procedure by which GERC will access Byers to identify buildings and structures connected through subsurface electric facilities and provide guidance to field crews, by specifying that GERC have this information available early in the dispatching process, so that it is available to the responder upon arrival at the scene. (Staff Report, p. 41)

As discussed above, regarding Staff's recommendation on dispatching policies and procedures, the Dispatcher Daily Checklist includes ensuring that the Byers application is on at

the start of each work shift, and GERC supervisors will handle tasks such as accessing Byers and providing guidance to the first responder for significant leak conditions. Con Edison's leak investigation procedure[10] now requires that, for significant leaks, the GERC will be prepared to provide the location of gas and electric subsurface facilities to the responder upon arrival at the scene. The procedure also calls for the GERC to provide the fire department with information on company subsurface structures and electric facilities, and provide guidance and support, if the fire department finds gas readings in any buildings or subsurface structures prior to the arrival of company personnel. The procedure for responding to any reported gas leak requires the first responder to "when necessary, request the GERC to provide information on company SSS (*subsurface structures*) and electric facilities."

Con Edison reports that dispatchers and supervisors now routinely access the mapping system in anticipation of providing information to those in the field. The company also reports that additional computer monitors were added to dispatcher consoles to allow dispatchers to simultaneously view gas and electric maps along with their normal displays. Mapping system access has been enhanced to provide an electric overlay button that allows a dispatcher to quickly access the electric and gas plate information together and an additional overlay option that provides detailed sub-surface structure connection information.

Staff agrees that Con Edison has adequately implemented the recommendation.

[10] G- 11809 – PROCEDURE FOR OUTSIDE GAS LEAK REPORTING, CLASSIFICATION, SURVEILLANCE, REPAIR AND FOLLOW-UP INSPECTION

Leak Investigation Procedures

Con Edison should add provisions to its leak investigation procedures to provide better clarity and direction regarding which and how many buildings on both sides of the street adjacent to a manhole in an urban setting will be checked in the event positive gas readings are found within subsurface structures. (Staff Report, p. 41)

Con Edison revised its Procedure G- 11809 as shown below. The italicized material addresses this specific Staff recommendation. The entire section is reprinted to show how it relates to other issues that arose during the investigation, and how those issues have been addressed.

6.12 - Any gas leak in a manhole, sewer manhole, steam manhole, telephone manhole/service box, or in an electric manhole/service box must be investigated for gas migration into adjacent/connected manholes/service boxes and buildings. *In all cases, a minimum of three (3) buildings on both sides of the street shall be checked for gas migration (In cases where there are less than three (3) buildings on one or both sides of the street, then at a minimum, all of those buildings shall be checked for gas migration)*.

Note: *If readings are found in a SSS [subsurface structure] in an intersection, at a minimum, the building on each corner shall be checked for gas migration*.

If a reading of 4% or greater is obtained in any SSS, that structure must be vented immediately. The venting must be done before completing the migration pattern. After venting, investigate adjacent and connected buildings on both sides of the street, before completing the migration pattern. Upon arrival of additional Company personnel and/or Fire Department to assist with investigation of buildings and SSS, the first responder shall continue completing the migration pattern. For leaks which require immediate and continuous action, contact GERC for information on buildings and Company SSS connected to electric facilities. Utilize Byers for all other conditions.

Note: If gas readings are found in any buildings or Con Edison SSS by the Fire Department or other agency prior to arrival of

Company personnel, GERC shall provide information on Company SSS and electric facilities to those agencies.

Con Edison also reports that the GERC has implemented a "Code MuRRE" (Multiple Resource Response Event) program to alert field personnel if situations arise in the field that require heightened response (e.g., combined gas and electric events, contractor damage to gas facilities, gas readings above the lower explosive limit in multiple subsurface structures). The Code MuRRE program is a significant change to Con Edison's outside gas leak response procedures.

Additionally, company procedures now mandate that the company request fire department assistance when the first responder identifies certain specifically defined potentially high hazard leaks where additional personnel are needed at the scene quickly. Fire department assistance allows the company first responders to start inspecting buildings and evacuating customers earlier in the leak investigation process. Con Edison now requests fire department assistance with inspecting homes and evacuating residents, if necessary, as well as assisting with opening manhole covers so that company personnel can complete the investigation of the gas leak migration pattern to determine the extent of the hazardous condition.

Staff agrees that Con Edison has adequately implemented the recommendation.

Equipment

Con Edison should create a first responder checklist of required tools and equipment, including but not limited to those mentioned in this report such as radios, cones, waffles, barricades and manhole cover lifting devices, etc. The list should be reviewed and updated as needed, and the company should

periodically verify that all mechanics are properly equipped. (Staff Report, p. 42)

Con Edison developed a checklist of essential equipment, which includes each of the items listed in Staff's recommendation, to be carried in first-responder vehicles. Supervisors and mechanics will use it on a daily basis to verify that vehicles are properly equipped. The company's Gas Quality Assurance section will conduct periodic reviews to ensure compliance.

Staff agrees that Con Edison has adequately implemented the recommendation.

Combined Gas and Electric Events

Con Edison should implement a process to identify reports of electric and gas problems at approximately the same time in close geographic proximity. In such situations, additional company personnel and the Fire Department will be immediately dispatched. (Staff Report, p. 42)

Con Edison has developed a computer application that monitors the locations of customer calls and notifies both GERC and the Electric Control Center of potentially related gas and electric service trouble reports. This application alerts the supervisor by way of a pop-up box on the computer with an audible alert. These trouble reports will trigger an enhanced response with immediate notification to the fire department. Additionally, the revised CSR scripts require the representative to ask the caller if there is also an electric problem. This information appears on the gas ticket transmitted to the GERC to alert the dispatcher.

Staff agrees that Con Edison has adequately implemented the recommendation.

Electric and Gas Facility Separation

Con Edison should document discovered instances of insufficient clearance between facilities, and the actions taken to correct the situation. (Staff Report, p. 42)

The company has implemented a process requiring personnel to document locations where gas and electric facilities have been discovered with insufficient clearance and the corrective actions taken. Con Edison has also implemented DOJT sessions addressing gas and electric facility clearances. The training explains the required minimum separation distances between facilities, the required installation of an appropriate protective board between facilities if the clearance cannot be achieved, and the new documentation policy.

Staff agrees that Con Edison has adequately implemented the recommendation.

Facilities Replacement

Con Edison should make proximity to gas facilities a priority for replacement when exposed electric conduit is found in a deteriorating condition. (Staff Report, p. 42)

Regarding planned cable replacement, locations where gas and electric facilities have been found in close proximity will be used in developing the priority ranking. On all secondary rebuild projects the designers will review existing maps. Projects where gas and electric facilities are mapped in unusually close proximity will be elevated in priority.

Additionally, Con Edison states that when deteriorated electric conduit is discovered, its preference is to repair the condition by installing split duct around the exposed deteriorated section of conduit. The DOJT on separation of electric and gas facilities also addresses this topic.

Staff agrees that Con Edison has adequately implemented the recommendation.

Issues Raised at the Public Statement Hearings

On January 7, 2010, two public statement hearings (afternoon and evening) were held in the Floral Park area of Queens to receive comments from the public regarding Staff's November 12, 2009 report, as well as Con Edison's December 11, 2009 response. Staff has analyzed the relevant comments from the hearings below.

Recognition of Gas Odor

The President of the Bellrose-Hillside Civic Association, who stated that he spent over 25 years as an inspector for Con Edison, expressed concern that the public does not always recognize the rotten-egg odor of gas. He stated that many years ago Con Edison sent *scratch and sniff* cards, with a gas-odor sample, to customers as bill stuffers, and recommends that this be done again.

In the past, Con Edison has provided scratch and sniff cards, however, it has not done so for several years. Con Edison management relayed a story to Staff that a prior mailing of scratch and sniff cards required the evacuation of a Post Office when a batch of outgoing bills started giving off the gas odor. The company has informed Staff that it intends to include these in a future mailing, once it finds a suitable product from a vendor.

Employee Training

Mr. David Weprin, who was the City Council member representing the area at the time of the incident, stated that the DPS Staff did not emphasize the need to train and retrain

Con Edison personnel in emergency response procedures. He otherwise concurred with Staff's recommendations, but stated that the Commission should add this training component to its final report.

Mr. Weprin is correct that Staff made no explicit recommendations regarding training. Staff also acknowledges that the discussions of employee training in the Staff Report may have been obscure to members of the public. However, the Staff Report did note (page 16) that the Operator Qualification records of the Con Edison personnel involved in the response to this event were reviewed and found in compliance with 16 NYCRR §255.604. Section 255.604 requires gas operators to have Operator Qualification programs for employees that perform safety-related functions, to provide training to employees, ensure that employees are qualified to perform their assigned tasks, maintain records, etc. Additionally, Appendix C of the Staff Report, which discussed the actions taken by Con Edison in response to the incident, noted that the company has provided enhanced training for dispatchers, and has conducted training/drills for its GERC personnel, first-responders, and the fire department.

Mr. Weprin is correct that training is an important component of emergency-response preparedness. However, Staff continues to believe that additional recommendations are not necessary because the issue is already adequately addressed by the gas safety regulations and is being addressed by Con Edison in its response to the incident.

Consistent Practices among New York City Utilities

The Chairperson of Community Board 13 noted that Con Edison provides gas service to part of its area, and National Grid NY serves the remainder. He commented that any recommendations

instituted after this investigation to ensure a comprehensive emergency response must be required of other operators within New York City.

Safety Section Staff has discussed this incident with the other New York State gas operators through the working committees of the Northeast Gas Association. An ad hoc committee (the Committee) was created, including DPS Staff (and National Grid), to review existing gas leak response procedures and, in view of the lessons learned from this incident, identify actions that should be included in the procedures. The goal of the Committee is to develop appropriate procedures to allow early identification of conditions that indicate a more serious hazard so that appropriate company and non-company emergency responders can be dispatched quickly.

In fact, the provision that Con Edison incorporated into its leak response procedure, to check a minimum of three buildings on each side of the street in the case of gas readings in a subsurface structure, was already in effect as part of National Grid NY's leak response procedures prior to the Floral Park incident. The Committee is reviewing and identifying the best practices among currently-used procedures in terms of receiving gas odor reports from the public, dispatching personnel to the location, and inside and outside leak investigation procedures, including venting of manholes and evacuating buildings. Although there may be some differences in response procedures for urban versus rural territories, Staff expects that this process will result in Con Edison and National Grid NY having substantially similar procedures.

While Con Edison personnel have access to information on both the company's electric and gas subsurface structures, Staff is concerned about the prompt sharing of subsurface structure information where different utility companies provide the

electric and gas service at a given location, as with Con Edison and National Grid NY in some parts of New York City. This also occurs in upstate locations such as Buffalo, with National Grid (electric) and National Fuel Gas Distribution Corporation. In addition, other combination utilities in New York State should have processes to share subsurface structure information across their gas and electric departments. Staff expects expeditious action to address these concerns. Staff will continue to work with the Committee on these issues, and will bring the matter to the Commission if the issues cannot be satisfactorily resolved.

Condition of Electric and Gas Facilities

Since the root cause of this incident was the burnout of an electric cable, several speakers expressed concerns about the age and condition of Con Edison's electric system. One speaker recommended that the company "gradually replace the most dangerous of them in an orderly sequence."

Con Edison has an Underground Secondary Cable Replacement Program for mains designed to increase overall system performance reliability and minimize public safety events such as electric shock, manhole fire and manhole explosion incidents. The program reinforces the safety and reliability of the secondary grid infrastructure by targeting secondary cable replacement based on past performance, age, conductor size, conductor type, and cable loading. The Company also gains information regarding the health of the secondary system from the five-year Inspection Program, which requires opening and inspecting inside service boxes and manholes. The results from this program are utilized to target replacement of underground secondary cable that will improve the secondary system reliability and prevent future failures. For the years 2007 - 2009, Con Edison replaced a total of 3,770 miles of main,

service, and streetlight cable throughout its system, including 905 miles in Queens. Service cables are replaced as a result of previous failures, discovery of stray voltage conditions, or problems discovered during manhole fire or explosion events.

A representative of Community Board 13 (Board) commented that most of the gas infrastructure in the area is over 50 years old, and that at a Board meeting on May 18, 2009 Con Edison representatives stated that the company was scheduled to replace 36 of the 822 miles, approximately 4.5%, of gas mains in Queens in 2008-2009. The speaker noted that such a replacement rate meant it would take over 20 years to upgrade the entire Queens system.[11]

Con Edison uses computer modeling to prioritize candidates for gas main replacement, by identifying pipe segments most vulnerable to developing leaks. Factors other than age have a greater impact on a pipe segment's susceptibility to leakage,[12] such as pipe material and operating condition/environment. Pipe made of cast iron, and steel that is not protected from corrosion, is most prone to developing leaks. Con Edison has approximately 428 miles of such pipe in Queens.

The Commission's mission is to ensure safe, secure and reliable utility services at just and reasonable rates. Con Edison spends approximately $100 million per year, throughout its entire gas system, on replacement of leak-prone piping, and has accelerated its replacement activity in recent years.

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[11] The minutes of the May 18, 2009 meeting indicate that Con Edison stated it replaced 17 miles in 2008 and planned to replace about 19 miles in 2009. This rate would require approximately 45 years to replace 822 miles of gas main. However, this assumes that the entire 822 miles of gas main needs to be replaced in that timeframe, which is not the case.

[12] The gas leak that led to this incident was not related to the age of the gas main, which was in good condition and not corroded.

Although it may be desirable to quickly replace piping that is relatively more prone to developing leaks, the cost and rate impacts must also be considered. It should also be noted that although some pipe may be considered "leak-prone," that does not mean the pipe will soon develop leaks. The company integrates data from its leakage survey and corrosion control programs, as well as pipe material, diameter, wall-thickness, operating history, etc., in order to achieve the greatest useful life from its infrastructure while maintaining a safe system. In addition, as a result of the most recent Management Audit of Con Edison, the company's Gas Engineering Department is working with a consultant to evaluate the gas steel and cast iron distribution system and develop an optimum replacement strategy. This work will help determine the appropriate rate of main replacement to ensure consistent system improvement.

Management Control and Oversight

The Notice seeking comments on the Staff Report noted that, to varying degrees, the problems uncovered during Staff's investigation of this incident echo those seen in other recent incidents involving Con Edison. It also noted that the recent Management Audit of the company by the Liberty Consulting Group (Liberty) concluded that Con Edison needs to improve its Enterprise Risk Management and even offers gas explosions as an example. Con Edison was directed to provide comments on the Staff Report and address the broader concerns about whether the company's internal systems, controls and management oversight are adequately designed to enforce existing procedures, detect weaknesses, and implement improvements.

The Management Audit conducted by Liberty examined four aspects of Work Management: Cost Management; Work Planning; Resource Management; and, Performance Measurement. Liberty

concludes that overall, Con Edison is doing many things well in work management. However, numerous opportunities for improvement were identified. With respect to cost management, Liberty believes that implementation of an expanded view of cost management, termed "holistic cost management," will pay major dividends and "…elevate an already-strong organization to best in class." With respect to work planning, Liberty states "…the Company generally earns high marks." Liberty recommends that Con Edison perform in-depth reconciliation on cost estimates with substantial overruns to better understand the root causes of deviations. Liberty found numerous opportunities for improvement in Resource Management. According to Liberty, Resource Planning, particularly as it applies to long-term skill needs and changing work load, is a weakness. With respect to Performance Measurement, Liberty stated: "Measures of performance relating to physical work are particularly strong at Con Edison. There is an especially impressive catalog of productivity measures, including integration of the work breakdown structure, person-hours and physical quantities installed. The multiple levels at which such data are available sets the stage for what could be a very effective analytical capability".

Generally, Liberty's evaluation of the various aspects of Work Management was at a somewhat higher level than the detailed investigation that Staff conducted of the particular concerns that this incident raised. Con Edison's December 11, 2009 reply to the Notice stated that the company has a number of programs, procedures and practices in place to provide management controls and oversight and to identify problems before they result in incidents. Appendix A contains a condensed version of Con Edison's reply.

In response to discussions with Staff, Con Edison also provided information on how it is addressing four specific recommendations from the management audit that would improve management oversight and control processes that could lower the risk of gas leaks and explosions, and make the response to gas leaks more effective. This information is attached as Appendix B.

As discussed in the Staff report at the Commission's March 4, 2010 session, the full implementation of the management audit recommendations will take time and Staff evaluation of the adequacy of Con Edison's implementation of these recommendations to address the issues will likewise be ongoing.

Conclusion

Con Edison has taken steps to implement the recommendations contained in the Staff Report presented to the Commission at the November 12, 2009 session. Staff will continue to work with Con Edison to ensure that all nine recommendations are fully implemented.

Respectfully submitted,

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Appendix A

Summary of Con Edison's Reply Relating to Management Control and Oversight Issues

Procedures

Con Edison's Gas Operations have over 400 gas procedures which are reviewed/revised at least every five years by Gas Engineering and subject matter experts (SMEs), based on changes in work practices; Quality Assurance reviews, internal and external audits; input from SME's i.e. managers, supervisors, instructors and field mechanics; federal or state code changes; federal advisory bulletins; and changes in material or equipment.

Training

Con Edison Gas Operations employees receive in-depth training consisting of extensive classroom instruction, leak response training on "Leak Street",[1] shop instruction on essential tasks, and a hands-on lab with gas appliance and heating equipment. Con Edison's Operator Qualification Plan exceeds regulatory requirements in terms of frequency and demonstration of knowledge and skill.

Key Performance Indicators (KPIs)

KPIs reinforce management oversight from planning to completion. The KPI system provides a set of hierarchical performance goals for all management levels, from the corporate level down to the lower management level. The KPIs become increasingly more specific to the task of the individual employees and are linked to management compensation. Senior and local management review KPIs on a monthly basis.

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[1] "Leak Street" is a full-scale street simulating a city block with buildings and underground structures.

Gas Dispatching

To quickly locate and dispatch the closest available mechanic to a gas leak call, the company uses a computer-aided dispatching (CAD) system. Laptop computers installed in Company vehicles allow field mechanics to access electronic maps, records and data. Gas Dispatching is centralized at the GERC to facilitate communication and sharing of resources in the event of an emergency from the different operating areas. The company's analysis of dispatch time over the past two years for emergency versus routine work shows that emergencies are dispatched on average in just over four (4.2) minutes compared to 175 minutes for routine jobs. Company mechanics arrive at the location of a leak call within 30 minutes more than 80% of the time.

System Safety and Reliability

Gas Operations has been continually improving the safety and reliability of the gas distribution system through initiatives designed to upgrade infrastructure and address problems before they turn into incidents and accidents.

Communications

In May 2002, Con Edison implemented a then state-of–the-art radio system as a cost of $25 million to improve coverage across the entire service territory. The 23 dedicated radio antenna sites enable communication between control centers and field crews, even in the event of a major disruption of phone, radio or electric service. Coverage in both commercial buildings and basement is a challenge for all wireless communications systems. The company continues to investigate new technology to improve reception in hard-to-reach locations such as basements.

Emergency Response Coordination

The company claims it has developed an excellent working relationship with the emergency officials in its service territory. As examples of its efforts, the company notes that it has:

- Incorporated the use of the Incident Command System (ICS) for coordinated response to emergencies.
- Provided FDNY with gas detection devices to improve their assistance in gas leak calls.
- Trained Fire Departments on gas hazards and response training
- Conducted drills with emergency agencies in NYC and Westchester.

Public Awareness

Con Edison's Public Awareness Program involves educating the public to be aware of leak hazards and gas safety. Some of the initiatives include:

- Bill inserts on gas safety.
- Gas safety information communicated through newspaper ads, radio announcements, community events.
- Joint training sessions and drills for emergency officials.

Benchmarking

Con Edison participates in industry-wide benchmarking efforts at national and local levels in a proactive effort to identify and integrate best practices in our operation, such as the American Gas Association (AGA) Best Practices Benchmarking Programs for Gas Distribution and Gas Transmission. Examples of best practices adopted from other utilities through Con Edison's benchmarking efforts include:

- Computer Aided Dispatch
- Computer main replacement modeling
- Gas Supervisory Control and Data Acquisition system
- Vehicle rear vision camera/monitors
- Training and promotional process improvements

Quality Assurance

Con Edison's Corporate Quality Assurance (QA) Program is designed to maintain the safety and integrity of the electric, gas and steam systems by ensuring that work practices comply with the established sets of processes, policies, procedures, or requirements. Gas Operations has an independent QA section that reports to the VP of Gas Engineering. The Gas QA group is responsible for:

- Conducting operational reviews,
- Identifying potential procedural violations,
- Recommending improvements to work practices to ensure that the Company is in compliance with federal, state and city codes as well as internal operating procedures and specifications,
- Recommending corrective actions on findings and verifying they have been implemented,
- Monitoring and tracking open action items to maintain and monitor commitments
- Responding to gas incidents, participates in the investigations, and assists in reviewing the response and actions taken,
- Participating in Gas Operations Self-Assessment Program,
- Holding open employee forums to discuss findings, concerns and questions on work procedures/specifications.

Auditing

Con Edison's Corporate Auditing section (Auditing) conducts a broad and comprehensive program of internal audits, including management/operational audits of the operating elements of the Company. The audits focus on field policies, procedures, practices, organizational structures, utilization of resources and performance effectiveness. The audits also evaluate computer information systems along with related functions and activities to assess the adequacy of related controls. Recently, Auditing has initiated a restructuring plan to better

address the responsibilities of Auditing. These changes will ensure expanded audit coverage of Company operations, closer alignment with enterprise risk management programs, and improved focus on investigations, policy and compliance programs.

Auditing's restructuring plan includes: creating a new Director position responsible for investigations, ethics compliance and training, the Ethics Helpline, EH&S audits FERC compliance, and corporate policies and procedures; and creating a new section responsible for Energy Services, and construction and contractor activities.

In 2010, Auditing will be conducting audits of compliance with the recommendations contained in Staff's Floral Park report and additional gas operational and management oversight audits including:

- Gas Control Center Communications: Assess effectiveness of communications between Gas Emergency Response Center and gas field operations, particularly during emergencies;
- Call Center: Assess handling of customer calls including leak notifications and other customer inquiries and complaints;
- Event Notifications: Assess gas event notification policies and procedures;
- Gassing-In Procedure: Assess compliance with policies and procedures used when restoring gas service to a premise.

Personal Responsibility

The Company states it has always placed a great emphasis on accountability and responsibility and has a number of standards and programs to reinforce the importance of accountability, responsibility and avenues for employees to provide feedback. These include:

- Standards of Business Conduct that include "The Way We Work" principles, which embody the corporate value to seek and accept responsibility,

- Procedural review process, KPIs and performance reviews that are linked to employee compensation, appropriate feedback to improve performance, and use of lesson learned,
- Time Out program promotes safe work practices and adherence to specifications by empowering employees to immediately stop a job if the employee has concerns regarding any assigned task,
- The Ethics Helpline, established in 1993, and the Corporate Ombudsman , established in 1998, provide mechanisms for employees to anonymously report and raise any work related issues and concerns,

Con Edison's Response to Management Audit Recommendations Relating to Lowering the Risk of Gas Leaks and Explosions and Making the Response to Gas Leaks More Effective

- Recommendation 2 - Take the Enterprise Risk Management (ERM) process associated with operating risks to the next level.
- Recommendation 35 - Optimization of Main Replacement Program (MRP).
- Recommendation 74 - Staff a project coordination/specialist group under the Chief Distribution Engineer to assist in the execution of distribution capital projects, such as Main Replacement Program
- Recommendation 10 - Make consideration of Enterprise Risk Management a more structured part of audit planning.

In April 2009, the Company engaged a consultant, PricewaterhouseCoopers (PwC), to evaluate its Enterprise Risk Management (ERM) program against best practices in an effort to bring it to the next level. In July 2009, PwC issued its report with 21 recommendations for improvements. The Company plans to implement these recommendations which will help in further integrating ERM into the Company's planning and budgeting process.

The implementation of recommendations proposed will specifically address recommendation #2, for all of Con Edison. The company needs to change from a reactive to a proactive organization. A key element to making this transition is to anticipate and address problems before they turn into incidents.

Gas Engineering, with support from ZEI Consultants, is evaluating the gas steel and cast iron distribution system and developing an optimum replacement strategy. This work will help determine the appropriate rate of main replacement to ensure consistent system improvement.

In addition, Gas Engineering has staffed a project coordination/specialist group under the Chief Distribution Engineer to assist in the execution of distribution capital projects, such as the Main Replacement Program. This new group, comprised of one program manager and four project engineers, under the Chief Gas Distribution Engineer, will support the distribution main replacement programs for each operating area. The implementation of this recommendation will improve cost and schedule accountability, resulting in more effective main replacement.

Auditing has integrated the risks identified as part of the ERM Program into its annual Audit Plan. Both Directors in Auditing continue to participate on both the Administrative Risk and Operating Risk Committees and provide substantial input in the risk identification, assessment and evaluation process. As part of the development of the 2010 Audit Plan, Auditing adopted a more structured approach and cross-referenced each planned audit to an identified administrative or operating risk. This allows Auditing to have a more structured process to ensure coverage of the key risks in the 2010 Audit Plan. This Plan includes a review of Gas Operations' gassing in procedure, Floral Park Incident Action Plan and Gas Operations contractor review.