Issued: June 25, 2026 Pipeline Investigation Report: PIR-26-04

Exelon Corporation (Baltimore Gas and Electric Company) Natural Gas–Fueled Home Explosion

Location	Bel Air, Maryland
Date	August 11, 2024
Accident type	Leak/explosion/fire
Pipeline	Distribution pipeline 0.50-inch plastic service line carrying natural gas
Fatalities	2
Injuries	3

1 Factual Information

1.1 The Accident

On Sunday, August 11, 2024, about 6:48 a.m., a home explosion and fire occurred at 2300 Arthurs Woods Drive (accident home) in Bel Air, Maryland, resulting in a destroyed home, two fatalities, and three injuries.[1] The explosion also damaged several residences and displaced families. (See figure 1.) At the time of the explosion, it was daylight and clear; the temperature was 67°F with no precipitation.

[1] (a) Visit ntsb.gov to find additional information in the public docket for this National Transportation Safety Board (NTSB) accident investigation (case number PLD24LR006). (b) All times in this report are local.

Figure 1. Aerial view of the accident location. (Courtesy of the Harford County Sheriff's Office.)

The accident home, built in 2007, was a multi-story, single-family structure with stucco exterior and a paving-stone driveway on a 0.28-acre lot. Exelon Corporation (Exelon) owned and operated natural gas pipeline utilities and electrical utilities near the home. Exelon completed some of these functions through their wholly owned subsidiary Baltimore Gas and Electric Company (BGE); this report uses the corporation name "Exelon" throughout and "BGE" as needed for references to that subsidiary.[2] Exelon distributed natural gas to the accident home with a 1.25-inch plastic gas main and a 0.5-inch plastic gas service line.[3] Around the time of the explosion, the gas main and gas service lines near the accident home were operating about 89 pounds per square inch,

[2] See section 1.3 for more on Exelon and BGE.

[3] (a) A *gas main* is a natural gas distribution pipeline, typically located belowground, that serves as a common source of supply for more than one service line. (b) A *service line* is typically belowground and transports natural gas (or other commodities, such as electricity) to a customer.

gauge, below the maximum allowable operating pressure of 99 pounds per square inch, gauge.[4]

Exelon distributed electricity to the accident home with a secondary main and a set of three electrical service lines.[5] The accident gas service-line pipe and the accident electrical service lines were located in a common trench near the accident home driveway.[6] Electric-department procedures at the Exelon subsidiary BGE stated that for new construction, common trenching would not be permitted where a 12-inch separation IN ANY DIRECTION [emphasis in the original] could not be maintained between the gas service-line pipe and the electrical service-line cables. The National Electric Safety Code, an organization that established electrical standards, recommended a 12-inch separation between utilities to prevent damage from arcing, leaks, or maintenance operations.

About 11 hours before the explosion, on Saturday, August 10, 2024, about 7:36 p.m., the accident homeowner's real estate agent reported a power outage at the accident home through an Exelon app.[7] About 7:51 p.m., an Exelon dispatcher for electric service sent an Exelon electric technician to investigate the power outage. Meanwhile, about 0.2 miles south of the accident home, a passerby was walking in the neighborhood and smelled natural gas odorant.[8] About 8:27 p.m., the passerby reported the suspected natural gas leak to Exelon's call center. Because the passerby was not physically located at a building with an associated address, she provided the intersection closest to her, and then Exelon's system identified the home at 2314 Arthurs Woods Drive (nearby home), the home closest to the intersection, as the address of the report. The call-center agent added to the call an Exelon dispatcher for gas service, as Exelon's procedures required, and, about 8:41 p.m., the gas dispatcher sent a gas technician to investigate the suspected natural gas leak at the nearby home. The

[4] Unlike pounds per square inch, a basic pressure measurement, pounds per square inch, gauge, which pipeline systems often use, measures pressure relative to atmospheric pressure (the pressure of the surrounding air).

[5] A *secondary main* in an electrical distribution system carries electricity from a transformer (a device that changes the voltage of electricity) to multiple service lines.

[6] A *common trench* is one that carries multiple types of utility lines (such as gas and electric), instead of carrying only one type of line. (See figure 3.)

[7] The BGE mobile app allowed customers or their representatives to report outages.

[8] Because natural gas is odorless, strong smelling chemical additives called odorants are mixed with natural gas to help reduce the risk that leaks will go unidentified. The most common odorant added to natural gas has a "rotten egg" or sulfurous odor.

National Transportation Safety Board (NTSB) did not find evidence that the accident homeowner contacted Exelon to report a suspected natural gas leak or that the accident home had a natural gas alarm installed. Figure 2 shows the accident neighborhood, indicating the accident home and the nearby home. It also shows the accident leak location, which section 1.2.1 discusses.

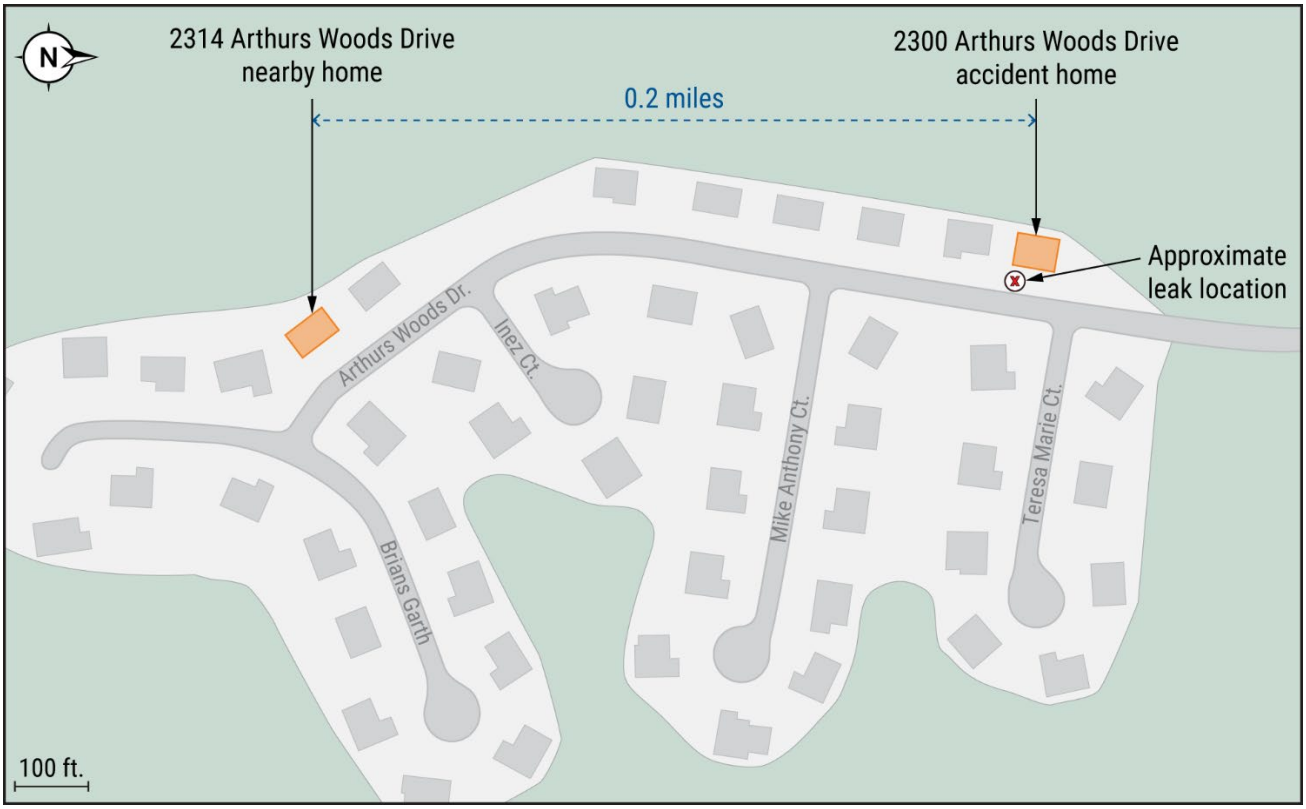

Figure 2. The accident neighborhood.

About 8:34 p.m., an Exelon electric technician, dispatched to an area near the accident home to investigate the power outage, determined that there had been an electrical fault in the area and referred the repair to an Exelon electric contractor.[9] About 8:39 p.m., the electric technician reported to an Exelon electric dispatcher the smell of natural gas odorant at the accident-home address. After diagnosing the electrical fault and reporting the suspected natural gas leak, the electric technician closed the job ticket and left. The electric technician told the NTSB that he was not aware that the electrical service line to the accident home was in a common trench with a gas service line (electric technicians did not have access to this information).

[9] An *electrical fault* is an unintended low-resistance electrical pathway, also known as a short circuit.

About 8:59 p.m., an electric dispatcher, relaying the electric technician's message, reported to an Exelon gas dispatcher the smell of natural gas odorant at the accident-home address. The gas dispatcher, the same one who had responded to the passerby's earlier report, told the electric dispatcher that a gas technician was on the way to the area, giving the address of the nearby home. The gas dispatcher did not send a gas technician to investigate the suspected natural gas leak at the accident home. The gas dispatcher told the NTSB that the electric dispatcher had provided the same intersection that the passerby had provided about a half hour earlier (the intersection closest to the nearby home) as the location where the electric technician had smelled natural gas odorant. However, the NTSB's review of Exelon's electric-dispatcher call logs showed that the electric dispatcher had provided the accident home address, which was 0.2 miles away, as the location of the report; the gas dispatcher had not recorded the correct address of the electric dispatcher's report of the suspected natural gas leak.

About 9:08 p.m., an Exelon gas technician, dispatched to the nearby home to investigate the suspected natural gas leak, started checking the nearby home and several homes north of it for indications of natural gas.[10] About 9:45 p.m., the gas technician reported finding no indications of natural gas at the nearby home and left the accident neighborhood.[11] When the NTSB asked the gas technician whether gas dispatch had told him about another report of a suspected natural gas leak in the area, he said that they had not. Consequently, the night before the explosion, while the gas technician looked for indications of natural gas at several homes in the accident neighborhood, he did not look for indications of natural gas at the accident home.

The next morning, on Sunday, August 11, 2024, about 6:08 a.m., a county water service technician (county worker) who was marking utilities at the accident home smelled natural gas odorant and heard sounds of gas hissing. (He was marking utilities because an Exelon electric contractor was scheduled to perform work at the accident home later that day and needed to know where the buried utilities were located.)[12] He phoned Exelon's call center to report the suspected natural gas leak. The county worker told the NTSB that Exelon's call system prompted him on the nature of his call but that after he had advanced through the prompts, the system went blank, as if the call had not

[10] An *indication* of natural gas is an observable sign, such as a reading from a detection instrument, that natural gas may be present.

[11] The NTSB determined that the gas technician's investigation of the suspected leak was consistent with Exelon's leak investigation procedures.

[12] State One Call systems provide customers, contractors, and excavators with a single phone number to call, 8-1-1, before excavation or construction, which allows utility companies to mark the location of their underground lines.

reached a call-center agent. The county worker dialed Exelon's call center several more times, each time getting the same blank result. After the explosion, the NTSB's review of Exelon call-center logs and its interviews with Exelon employees showed that Exelon's call system had routed the county worker's calls to one of five on-call agents, an agent who was on duty but not responsive (accident call-center agent). About 6:16 a.m., as he was leaving the scene, the county worker notified his supervisor of the suspected leak at the accident home and of his inability to contact Exelon.

At the time of the accident, Exelon's call system automatically answered incoming calls before randomly routing them to an available agent, not requiring the agent to initiate action to answer (or "pick up") the call. The accident call-center agent told the NTSB that he had been drinking alcohol before his shift, which was an unscheduled-overtime shift, and had fallen asleep at his desk. Exelon did not submit the accident call-center agent for postaccident drug and alcohol testing. Therefore, the NTSB could not quantify the extent of the call-center agent's drug or alcohol impairment or determine whether it was a factor in the accident.

About 6:22 a.m., the county worker's supervisor reached an Exelon call-center agent and reported the suspected natural gas leak at the accident home. Because the supervisor's report cited sounds of gas hissing, criteria which Exelon called a "strong" report, in addition to dispatching a gas technician to the accident home, Exelon also contacted the Harford County Fire Department. While the Harford County Fire Department was on the way to the scene, about 6:48 a.m., the accident home exploded and caught fire. An Exelon gas technician arrived on the scene about 7:12 a.m., after the explosion occurred.[13]

The explosion fatally injured the accident homeowner and one of Exelon's electric contractors (two Exelon contractors had arrived on the scene to work on the power outage after the county worker had left). The explosion also injured three other people (including the second electric contractor). Table 1 shows a timeline of the accident events.

[13] This was not the same gas technician that investigated the leak at the nearby home a day earlier.

Table 1. Timeline of accident events.

Date and approximate time	Event
Saturday, August 10, 2024, 7:36 p.m.	The accident homeowner's real estate agent reported to Exelon (through an Exelon app) a power outage at the accident home.
7:51 p.m.	Exelon dispatched an electric technician to the area near the accident home to investigate the power outage.
8:27 p.m.	A passerby in the accident neighborhood reported to Exelon (through its call center) the smell of natural gas odorant. The passerby provided the intersection closest to her as the location where she had smelled natural gas odorant, and then Exelon's system identified the home at 2314 Arthurs Woods Drive (a nearby home), the home closest to the intersection, a home about 0.2 miles south of the accident home, as the location of the report.
8:34 p.m–8:39 p.m.	The electric technician diagnosed an electrical fault near the accident home and referred the repair to an electric contractor. The electric technician also smelled natural gas odorant at the accident home. After reporting the smell to an electric dispatcher, he closed the job and left the scene.
8:41 p.m.	Exelon dispatched a gas technician to the nearby home to investigate the suspected natural gas leak.
8:59 p.m.	An electric dispatcher notified a gas dispatcher of the suspected natural gas leak at the accident home. The gas dispatcher told the electric dispatcher that a gas technician was on the way to the area (to the nearby home) but did not redirect the gas technician from the nearby home to the accident home or send a different gas technician to investigate the suspected leak at the accident home.
9:08 p.m.	The gas technican investigated the suspected natural gas leak at the nearby home, reported to gas dispatch that he did not find a leak there, and left the scene. He did not investigate the leak at the accident home (0.2 miles away) because he was not aware of the suspected leak at that location.
Sunday, August 11, 2024, 6:08 a.m.	A county worker that was working at the accident home smelled natural gas odorant and heard sounds of gas hissing. He tried to report what he suspected was a natural gas leak to Exelon (through its call center) but did not reach a responsive call-center agent, even after multiple attempts.
6:16 a.m.	As he was leaving the scene, the county worker notifed his supervisor of the strong smell of natural gas odorant at the accident home and the sounds of gas hissing. He told his supervisor that he had been unable to reach Exelon through its call center.
6:22 a.m.	The county worker's supervisor reported to Exelon (through its call center) the smell of natural gas odorant and the sounds of gas hissing at the accident home.
6:48 a.m.	The accident home exploded.
7:12 a.m.	A gas technician (not the same gas technician who investigated the suspected natural gas leak at the nearby home) arrived at the accident home and began Exelon's emergency response to the explosion.

1.2 Examinations and Testing

1.2.1 On-Scene Examinations and Testing

After the explosion, Exelon conducted pressure testing and, under the NTSB's direction, bar-hole testing to determine the extent of any natural gas migration.[14] On August 11, 2024, about 2:23 p.m., the afternoon of the explosion, Exelon conducted pressure testing at the accident location to determine whether a leak was present on the tested section of the gas service-line pipe. During these tests, the gas service line to the accident home failed to hold pressure, indicating a leak. Exelon excavated the area of the leak and found a hole in the accident home gas service-line pipe. (See section 1.2.2 for more on the gas service-line pipe leak.)

On August 12, 2024, through August 14, 2024, Exelon conducted bar-hole testing at the accident location to measure whether natural gas was present in the tested soil. This bar-hole testing showed elevated natural gas readings at the gas leak location (under the accident home driveway) that extended toward the perimeter of the accident home.

Excavation of the natural gas utilities also found that the accident gas service-line pipe was in a common trench with multiple other utilities near the accident home driveway. In addition to the gas service-line pipe, the common trench also included a gas service-line tracer wire, remains of the accident electrical service lines, a communication cable, and a wire from an electric-dog fence.[15] Between the natural gas main and the accident home, the separation between the gas and electrical service lines varied, ranging from 3 inches to 15 inches. Because the accident electrical service lines were involved in an electrical fault and large portions of them had melted, the NTSB could not determine the separation distance between the accident gas service-line pipe and the accident electrical service lines at the time of the accident. Figure 3 shows the excavated accident common trench (the gas service-line tracer wire had likely been installed parallel to the gas service-line pipe, and the excavation disturbed it).

[14] (a) *Bar-hole testing* describes a gas measurement technique in which a technician makes a small-diameter hole in the ground with a steel bar, inserts a probe into the hole, and obtains a gas measurement. (b) *Gas migration* occurs when gas escapes from underground piping and travels through soil, rocks, or wells to the surface or to nearby buildings.

[15] A *tracer wire* is a conductive wire installed alongside a nonmetallic pipe to help identify the pipe's location.

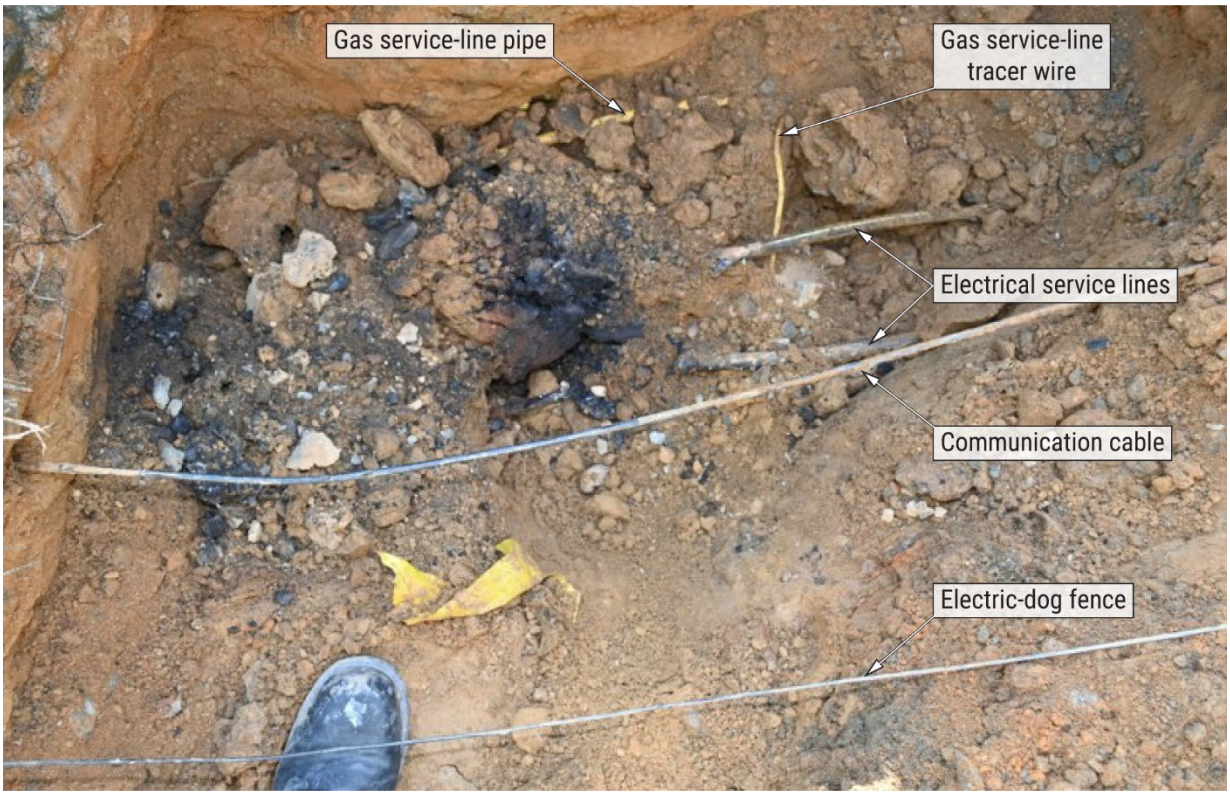

Figure 3. The accident trench.

1.2.2 Laboratory Examinations and Testing

The NTSB examined a portion of the accident service-line pipe that was approximately 87 inches long between the capped end and the coupling end, with a 0.5-inch outer diameter.[16] The examination found that approximately 17 inches upstream of the coupling, the gas service-line pipe exhibited a bulging feature (a "blister") that was about 1 inch long and oval shaped.[17] The blister resulted in a breach of the pipe wall, which allowed the pipe to leak natural gas. (See figure 4.) The accident gas service-line pipe tracer wire, which was in the common trench next to the gas service-line pipe, was thermally damaged and had separated into two pieces. The tracer wire was copper and insulated, which made it a good thermal conductor. The soil and debris in the accident trench contained large masses of vitrified soil that included aluminum slag, evidence of the electrical fault (high temperatures create vitrified soil and aluminum

[16] A *coupling* joins two pipes together.

[17] The upstream end of the gas service-line pipe was the connection between the pipe and the coupling, and the downstream end was the connection to the accident home.

slag). The accident electrical service lines (secondary power cables) were thermally damaged and had missing sections, which had melted as a result of the electrical fault.

Figure 4. The "blister" on the accident service-line pipe.

1.3 Exelon Corporation

At the time of the accident, Exelon was one of the nation's largest utility companies, serving almost 11 million customers through six utilities, including BGE. On March 12, 2012, Exelon acquired BGE through a merger with Constellation Energy Group, Inc. BGE served more than 1.3 million electric customers and 700,000 gas customers in Maryland. The BGE President and CEO led five departments, which comprised customer operations (including the customer-call center), electric, gas, support services, and technical services. BGE electric dispatch was in the electric department, and its gas dispatch was in the gas department.

1.4 Postaccident Actions

The Exelon subsidiary BGE has taken the following actions in response to this accident:

- Transitioned to a call-center system that requires agents working overnight and weekend shifts to manually answer (or "pick up") incoming calls.

- Updated its procedures to require monitoring of natural gas leak calls every hour of the day and every day of the week ("24/7" monitoring). In addition, supervisors and quality assurance team members review the calls in near-real time. Before the explosion, BGE did not regularly review natural gas leak calls in near-real time.

- Enhanced call-handler training. Increased dispatcher and call-agent training from a biannual requirement to a quarterly requirement. In addition, BGE reinforced its requirement for call handlers to use job aids (process guides) during suspected natural gas leak calls and established weekly training on active listening, as part of its training on three-part communication (give the message, repeat the message, and confirm the message).

- Developed a fitness-for-duty questionnaire for call handlers. Established questions supervisors must ask subordinate call handlers (dispatchers and call agents) to determine whether the agents are ready (physically and mentally) to answer emergency calls.

- Updated its procedures for electric technicians responding to electrical faults. Upon arriving on the scene, the electric technician calls an electric dispatcher, who determines whether the electrical utility is in a common trench with a gas utility. If a gas utility is in the common trench, the electric technician must remain on the scene until a gas technician arrives. The gas technician will then evaluate whether a natural gas leak is present. Before this update, electric technicians at the scene of an electrical fault did not have to determine whether the electrical service lines were in a common trench with gas service lines or, upon determining that the electrical services lines were in a common trench, call for a gas technician and wait for the gas technician to arrive and confirm that there was no natural gas leak.

- Created a program to install a device, a resin conduit called a "split," in all common trenches that are opportunistically exposed (uncovered through digging) during construction activities. The split creates a thermal barrier between the gas and electrical service lines.

- Developed a pilot program to provide customers with natural gas alarms. The pilot is scheduled to begin in 2026, pending jurisdictional approval.[18]

2 Analysis

The explosion and fire occurred after natural gas leaked from a gas service-line pipe, migrated to the accident home, and ignited.[19] The service-line pipe breached because the plastic pipe and its tracer wire were in a trench with electrical service lines that had faulted, which elevated temperatures near the service-line pipe and subsequently caused the pipe to melt and leak gas. Starting about 10 hours before the leak, three people, including an Exelon employee, reported to Exelon that they suspected a natural gas leak in the vicinity of the accident home. Exelon did not repair the reported leak before it became hazardous. The NTSB did not identify issues with gas pressures in the area of the leak or the effectiveness of local emergency response agencies.

2.1 Inadequate Separation of Utilities in a Common Trench

The accident gas service-line pipe and the accident electrical service lines were located in a common trench. Although the NTSB could not determine how closely the gas service-line pipe and the electrical service lines were located at the leak site because of the damage the electrical fault caused, an excavation of the accident trench showed that the two utilities were located from 3 inches to 15 inches apart at various points. This indicates that, after the explosion, there were some areas where the utilities had less than 12 inches of separation, the minimum Exelon required between gas and electric utilities in common trenches.[20]

The National Electric Safety Code recommended a 12-inch separation between utilities to prevent damage from arcing, leaks, or maintenance operations. The NTSB found evidence of arcing and a leak in this accident, including the melted electrical

[18] (a) At the time of this report, BGE had not started the natural gas alarm program. (b) Exelon declined to provide information about its other natural gas utilities (Delmarva and PECO). Therefore, the NTSB could not determine whether the postaccident actions Exelon took at BGE would also be appropriate for its Delmarva and PECO subsidiaries.

[19] The NTSB did not determine the source of the ignition.

[20] The NTSB's South Riding, Virginia, investigation of a home explosion that resulted in one fatality and three injuries (one serious) determined that the probable cause of the explosion was inadequate separation between gas and electric utilities. See *Natural Gas Explosion and Fire in South Riding, Virginia, July 7, 1998*. NTSB/PAR-01/01. Washington, DC: NTSB.

service lines and the "blister," a 1-inch puncture, on the gas service-line pipe. The gas service-line tracer wire, which was thermally conductive and located near the gas service-line pipe, likely transferred and localized the heat from the electrical fault to the pipe, causing the blister on the gas service-line pipe.

After the explosion, pressure testing at the accident location identified a leak on the accident home gas service-line pipe (where the NTSB lab examination also identified the leak). In addition, postaccident bar-hole testing showed that the ground around the accident home's perimeter was saturated with natural gas. Therefore, the accident electrical service lines faulted and created a heat source, and the gas service-line pipe tracer wire transferred this heat to the accident gas service-line pipe, damaging it. As a result, natural gas leaked from the damaged pipe, migrated to the accident home, and ignited. After the explosion, BGE began installing "split" devices in exposed common trenches to create a thermal barrier between collocated utilities.

2.2 Ineffective Response to Reports of a Suspected Natural Gas Leak

The NTSB identified deficiencies in Exelon's response to the suspected natural gas leak in several departments (electric, gas, and customer operations) within the organization. The practices and procedures in place at the time of the accident did not ensure adequate collaboration between these different departments. As a result, Exelon failed to mitigate the risk that the accident leak posed, even after three people reported it. Although the first report of the leak (the passerby's report) did not provide the exact address where the leak was located, the second and third reports (the electric technician and county worker reports) did. Exelon had this critical information about the leak at least 10 hours before the explosion occurred. Thus, Exelon's ineffective response to the reports of the accident leak was likely a key factor in the accident.

The electric technician's report of the accident leak exposed shortfalls in electric department practices and procedures. The electric technician told the NTSB that he was not aware that the accident electrical service lines were in a common trench with gas service lines, indicating that BGE had not established clear practices and procedures regarding utilities collocated in a common trench. In addition, although the electric technician had called to report a suspected natural gas leak, he did not stay on the scene until an Exelon gas technician arrived (at the time of the accident, the electric department's procedures did not require him to stay). After the explosion, BGE began requiring electric technicians who respond to an electrical fault to contact electric dispatch to determine whether the service lines are in a common trench and to, when a job involves an electrical fault in a common trench, stay on the scene until a gas technician arrives.

The electric technician's report of the accident leak also exposed shortfalls in gas department practices and procedures. After the electric technician reported the suspected natural gas leak at the accident home to an electric dispatcher, the electric dispatcher reported the leak to a gas dispatcher. However, the gas dispatcher did not send a gas technician to investigate the suspected leak at the accident home. The gas dispatcher told the NTSB that the electric dispatcher had provided the same leak-location address that the passerby had provided (the gas dispatcher was also on the call with the passerby, the first person to report the suspected leak), the address of a nearby home. However, Exelon's call logs indicate that the electric dispatcher provided the accident home address when talking to the gas dispatcher. Thus, the gas dispatcher and the electric dispatcher did not effectively communicate about the suspected leak's location. As a result, a gas technician looked for the leak at the nearby home and did not find it; moreover, he did not look for the leak at the accident home. After the explosion, BGE increased the frequency of its call-handler training, reinforced its requirement for call handlers to use job aids (process guides) during suspected natural gas leak calls, and routinely emphasized the importance of active listening.

The county worker's report of the accident leak exposed shortfalls in the customer operations department practices and procedures. The county worker called Exelon to report the suspected gas leak at the accident home. Exelon's phone system automatically answered ("picked up") the call and routed it to a call-center agent who was technically available but who did not respond to the call. The accident call-center agent told the NTSB that he had been drinking alcohol before his unscheduled shift and that he had fallen asleep at his desk. Because Exelon did not submit the accident call-center agent for drug and alcohol testing, the NTSB could not determine whether drug or alcohol impairment was a factor in the accident.[21]

The county worker called Exelon several times but did not reach a responsive agent. This prevented him from notifying Exelon of the suspected natural gas leak in the critical moments before the explosion occurred. About 25 minutes before the accident, when it was likely too late to prevent the explosion, the county worker's supervisor reached a responsive call-center agent and reported the suspected natural gas leak at the accident home. After the explosion, the BGE call center updated its phone system to require that call-center agents manually answer (or "pick up") incoming customer calls during overnight and weekend shifts (the previous system automatically answered

[21] BGE reported to the NTSB that although it had not made any changes to its drug and alcohol testing processes as a result of the accident and did not plan to make any changes, it continuously reviews company processes for improvement.

incoming customer calls at these times) and developed a fitness-for-duty questionnaire for call handlers.

In this accident, Exelon responded effectively to the first report of the suspected natural gas leak (the passerby report), given the information that it had. However, Exelon did not respond effectively to the second and third reports of the suspect leak (the Exelon electric technician and the county worker reports) because of safety oversights in practices and procedures in its electric, gas, and customer operations departments. Had Exelon responded effectively to the second and third reports of the suspected natural gas leak, the accident would not have occurred. Exelon's ineffective response to reports of the suspected natural gas leak at the accident home resulted in the suspected leak becoming hazardous before Exelon repaired it.

3 Probable Cause

The National Transportation Safety Board determines that the probable cause of the August 11, 2024, home explosion in Bel Air, Maryland, was the Exelon Corporation subsidiary Baltimore Gas and Electric Company's ineffective response to reports of a suspected natural gas leak, which allowed for a suspected leak, caused by electrical arcing of electrical service lines, collocated in a common trench with a plastic gas service-line pipe and its tracer wire, to be left unrepaired for over 10 hours, resulting in gas leaking from the service-line pipe, migrating to the accident home, and igniting.

4 Lessons Learned

The Bel Air accident demonstrates the importance of an effective and coordinated response to reports of suspected natural gas leaks, particularly for companies whose operations include natural gas and electric utilities. Utilities collocated in a common trench, or otherwise located in close proximity, pose a hazard if operators do not ensure that adequate separation is maintained. Operators with multiple subsidiaries and utilities, like Exelon, must identify areas where two or more departments or utilities overlap and then prescribe specific procedures to govern how such departments need to work together to ensure public safety.

This accident showed that natural gas distribution pipeline operators must be able to receive all reports of suspected gas leaks. Operators must ensure that their public-facing phone systems are set up to appropriately receive customer calls and that any call handlers on duty are adequately trained and fit to answer emergency calls. Through our pipeline investigations, we have learned that pipeline safety management

systems can help pipeline distribution operators manage risks related to human errors and interdepartmental-safety concerns.[22]

We found here, and in many previous investigations, that, in the absence of adequate safety procedures and systems, natural gas alarms can be vital safeguards, alerting people to the presence of natural gas leaks. More information about natural gas alarms is available on the NTSB website.[23]

[22] (a) *Pipeline safety management systems* is a framework that assists pipeline operators in improving their safety performance. (b) See "Pipeline Safety Management Systems: Vital for the Safe Operation of Pipelines" (NTSB Safety Alert, SA-095, January 7, 2024).

[23] http://www.ntsb.gov/Advocacy/SafetyIssues/Pages/Natural-Gas-Alarm-Safety-.aspx

The NTSB is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in the other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties … and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)).

For more detailed background information on this report, visit the NTSB Case Analysis and Reporting Online (CAROL) website and search for NTSB accident ID PLD24LR006. Recent publications are available in their entirety on the NTSB website. Other information about available publications also may be obtained from the website or by contacting—

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