

QUICK START GUIDE

Developing

Public Safety

Communications

Programs for

Natural Gas

Utilities



PRESENTED BY:



QUICK START GUIDE

PROGRAMMING YOUR APPROACH

Building a Sustainable Public Safety Communications Program

13

EVALUATING NEEDS, SECURING SPONSORSHIP

Why Effective Safety Communications Are So Critical

9



The first and most important reason to invest in a Public Safety Communications Program is to save lives.

Utility customers, emergency officials, excavators, construction workers, and the general public live and work around natural gas infrastructure every day. That means there is a need for both ongoing education and regular reminders of how to be safe around natural gas utilities. This document can be used at any stage of your program, whether you're just getting started or are well on the way in developing your utility's Public Safety Communications Program.

CHECKING FOR BEST PRACTICES

Key Safety Messages to Consider in Your Communications

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ALREADY COMMUNICATING PUBLIC SAFETY MESSAGES?

Use this guide to help formally organize your Public Safety Communications Program or to generate new approaches to promoting utility public safety and hazard awareness.

This information is suggested as a public service and not as a reflection of a legal duty owed by a utility to its customers, the general public, or any other group. These public safety communications provide a collateral benefit of reducing the opportunity for utilities to be needlessly drawn into litigation and potential liability exposure, in addition to their primary purpose of incident prevention and lives saved.

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Section 01

Even Momentary Lapses in Safe Behavior

Can Have

Tragic,

Fatal Results

Why Effective Safety Communications Are So Critical

The first and most important reason to invest in safety communications is to save lives. Utility personnel, construction workers, excavators, emergency officials, utility customers, the general public, and several other groups need ongoing education and reminders of how to safely use and work around utility services and systems.

Incidents are also expensive. They can result in loss of service, reduced revenues, increased liability, negative regulatory treatment, and increased costs to operate. The value of one saved life cannot be measured; however, every incident that is prevented helps everyone.

Public Safety Communications Programs for specific hazards are also mandated or recommended by many federal, state, and local regulations as well as by industry consensus standards. The brand benefits of strong Public Safety Communications Programs are also far-reaching. For all of these reasons, natural gas utilities need to develop, actively manage, and measure Public Safety Communications Programs for a wide variety of safety issues.

The best safety program is one that does not wait for an incident to occur. By proactively addressing safety issues, utilities can reduce the amount of resources needed for litigation and correction. Instead, those resources can be used for the good of the utility's customers, employees, and the general public.

Building a proactive and effective Public Safety Communications Program often starts with two key drivers: evaluating risks or gaps, and securing the executive sponsorship required to dedicate resources to address those needs. Every utility is different, and so is the population that lives, works, and congregates in its service territory or near its infrastructure. That means the risks, and the most effective ways of communicating with stakeholder populations, will be different as well.

SECTION 01: EVALUATING NEEDS, SECURING SPONSORSHIP

The information in this guide is based on national norms and will likely need to be adapted to your specific market. It's also important to design a program around your utility's specific goals that includes defined audiences, effectiveness measurements, and continuous improvement strategies.

The importance of demonstrated leadership commitment to your Public Safety Communications Program cannot be understated. The resources required for the maintenance and continuous improvement of a Public Safety Communications Program are critical, as known risks and best practices are continually evolving. Addressing these concerns by establishing specific program goals and then using an integrated communications approach coupled with a systematic improvement cycle has been shown to be far more effective than addressing each safety topic and audience individually through a single channel. A high level of utility commitment and executive sponsorship increases the likelihood that risks are continually identified and mitigated, rather than program budgets only being targeted toward preventing past incident types.

As its name implies, this is a guide to developing Public Safety Communications Programs quickly. It is intended to help organize your current programs and suggest other topics that your utility may want to address. The following section provides a programmatic approach to public safety communications and is followed by key messages to consider. For each topic, you will find background information and incident examples, as well as target audiences, communication channels, and ways to measure the effectiveness of your program.



Section 02

Effective

Safety

Communications

Require a

Programmed

Approach

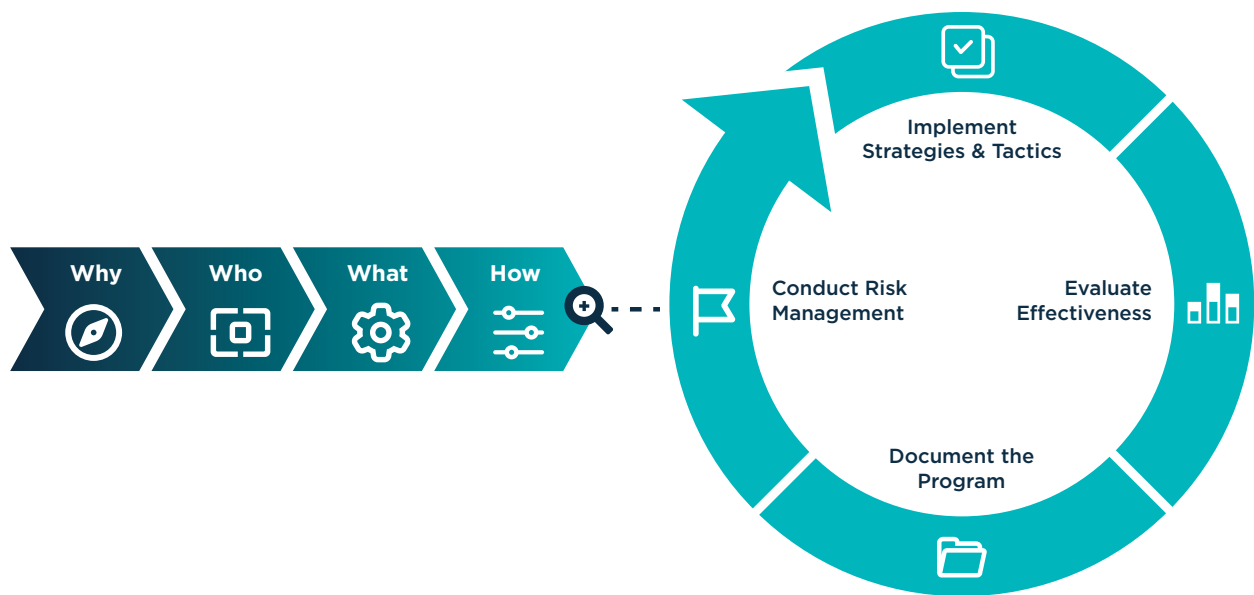
Building a Sustainable Public Safety Communications Program

Individual efforts directed at specific safety topics are not as effective as when all of a utility's communications are coordinated to deliver a consistent safety message across multiple channels in an integrated approach.

Practically speaking, that means translating the why, who, what, and how of your utility's Public Safety Communications Program into a coordinated and ongoing approach that implements specific strategies and tactics. Once implemented, the completeness and effectiveness of those actions should be carefully evaluated and documented. Program data and observations should be carefully analyzed alongside ever-changing risk indicators and industry trends, so that thoughtful improvements and proactive measures can be incorporated into future strategies and tactics.

The Public Safety Communications Program is designed to effectively educate the general public and complement other utility communications programs directed at excavators/contractors, emergency responders, public officials, and residential and business consumers. This section spells out key considerations for each core aspect of establishing your program and should be worked through with a cross-functional group of stakeholders in your utility before being presented to and approved by utility leadership.

This program is not designed to establish or reflect the legal duty of care that any natural gas utility owes to its customers, the general public, or any other group with respect to the communication of safety information. That legal duty is well established in each venue, and it is not the intention of this program to change it. Rather, the purpose of this program is broader. It attempts to assist natural gas utilities in providing safety information—even where there is no legal duty to do so—in order to help prevent incidents and save lives. This is suggested as a public service, and not as a reflection of a legal duty owed by a natural gas utility to its customers, the general public, or any other group. In addition, an important collateral benefit of these public safety communications is that every incident that is prevented—and every life that is saved—will reduce the opportunity for natural gas utilities to be needlessly drawn into litigation and potential liability exposure.



This figure depicts key aspects to consider in establishing, implementing, maintaining, and continuously improving your Public Safety Communications Program. Each item is described in more detail in the following pages.

Why

Program Goals

It's easy to understand why public safety is important. Documenting the specific “why” for your utility’s Public Safety Communications Program in actionable terms is a little more challenging. Setting program goals that drive year-over-year strategies and tactics should include a variety of factors: risks identified in your area, past incidents and claims within and outside your organization, industry regulations and best practices, customer and community feedback, and end-user preferences.

This information may be challenging to locate at first, but there are a variety of resources, including AEGIS and Culver Company. We can fill in the gaps from internal data reviews, peer practice sharing, and compliance assessments in the development of a comprehensive approach.

A few key items to consider when gathering information and ultimately deciding your program goals include:

- **Identifying Risks Specific to Your Area and Utility**
 - Past risk analysis information or data
 - Risk factors associated with your geographic location, local infrastructure, community activities, and at-risk stakeholder communities
- **Review of Past Incidents and Claims**
 - Incidents, hazardous conditions, or other historical event information from within and outside your organization
- **Industry Regulations and Best Practices**
 - Changing safety rules or practices, especially for workers
 - Effectiveness research for changing behaviors of at-risk groups

- **Community Feedback and End-User Preferences**
 - Community concerns or knowledge gaps within your service territory
 - Expectations of end users about receiving safety information from the utility (for example: firefighters expecting utility safety training or homeowners expecting information about protecting property or ensuring the safety of people in the home)
 - Research findings showing the type and frequency of communications at which different audience segments expect to receive safety materials
 - Survey data showing communications channels and formats in which different audiences expect to receive safety information
- **Utility Goals and Safety Commitment**
 - Alignment with key organizational safety aspirations and leadership commitments (for example: extending a “safety first” mindset to the general public in addition to employees)
 - Alignment with utility call center, customer satisfaction, sustainability, and corporate social responsibility long-term goals

Who

Key Audiences & Languages

The most critical element for the development of an effective Public Safety Communications Program is understanding the audience. For any particular safety topic, the audience may be as general as the entire population that lives, works, or congregates in an area, or as specific as people working in a single profession.

When identifying audiences, it is important to consider both your program goals and the opportunity to provide safety education as a public service to the community, even if that means sharing your utility safety message with those beyond your customer base.

The work done to identify your goals in the previous section should set your program on the right track toward identifying target audiences and any important subsets of those audiences. Risk information, safety standards, past incidents and claims, industry data, and best practices—among other items—should all be used to form a full picture of possible audiences. Once the audience has been identified, the message has to be presented in a manner that is appropriate and effective for the members of that group. Because most risk areas or safety topics will have multiple audiences, different materials will need to be developed for various groups.

SECTION 02: BUILDING YOUR PROGRAM

The number and type of audiences will depend on the specifics of your utility, program goals, regulatory requirements, legal/risk management practices, and a variety of other factors. Some regulations specify certain audiences must be targeted (e.g., 49 CFR § 192.616 and § 195.440). While the following is not intended to be a comprehensive list, your plan should consider the following audience types:

- Customers (with new customers as a specific subset), natural gas users/consumers, landlords, tenants, and residents living near gas pipelines or gas facilities
- Public officials, emergency officials, first responders, healthcare professionals, and public safety agencies
- Trade professionals, construction workers, excavators, road builders, plumbers, and public works departments
- Utility personnel, workers at other types of utilities (e.g., water), and public works agencies (e.g., road construction and repair)
- Farmers, farm workers, and others in the agriculture industry
- Students, teachers, and other means of reaching school-aged children
- Individuals traveling into your service territory for work or congregating for specific events (e.g., sporting events)
- Military bases, veterans homes, tribal authorities, and similar authorities, institutions, or establishments

Multilingual Considerations

To be most effective, language must be taken into consideration when planning safety communications. Despite the tremendous multicultural composition of the United States, there are no firm guidelines regarding multilingual public safety communications. Each utility must develop its own standards based on the unique characteristics of its service territory, local census data, and industry best practices.

Some factors to consider in making your decision include:

- **Print and Broadcast Media**
If your market supports commercial TV, radio stations, or newspapers in languages other than English
- **Your Billing Department**
If your company sends bills out in languages other than English
- **Your Marketing Department**
If your company produces promotional materials in languages other than English
- **Healthcare/Emergency Service Providers**
If your local hospitals, police, and fire departments produce literature or train their people in languages other than English
- **Local and State Governments**
If your local or state governments produce materials or conduct official proceedings in languages other than English
- **Census Data**
The U.S. Census provides detailed information on the number of non-native English-speaking people in every area of the U.S.

To find information for your area, visit the [Explore Census Data](#)* website.

Cultural differences can also present challenges. Part of your market may include people who have a different experience with utilities and public safety. These differences should be identified and addressed by an effective communications program.

**If viewing in print, please see listing of URLs in the Table of Contents.*

What

Core Messages & Scheduling

The purpose of any safety communication is to effect a change in awareness, knowledge, or action. The idea of creating a “core message” is clarifying the most essential idea you want your audience to retain. It should be stated simply and guide the development of all materials and activities in the program for the duration of your communications calendar. Beyond language and cultural considerations for each audience, the core message should be communicated in a way that best meets the needs of your specific audience.

The way the materials will be used and end-user preferences should also be taken into consideration. For example, a first responder may be interested in receiving educational materials that are far more detailed and applicable to a wider variety of response scenarios than a message crafted for a homeowner.

“Day One” Information

It is common for public safety communications to be sent out on a rotating schedule through media such as bill stuffers or mailings. In such programs, an “Odor Detection” message may go out in January, “Carbon Monoxide Awareness” in February, “Snow and Ice Removal” in February, etc. This may result in delays of a year or more in new customers receiving vital information on particular topics. For this reason, a “Day One” information package should be developed and distributed to all new customers on their first day of service. The package should include all relevant safety information. When done as a booklet or other bound package, it can provide a year-round safety reference for your customer.

Timing

For each topic in your program, determine the best or most appropriate timing for the delivery of the message. For topics such as snow and ice removal, the timing is obvious. For programs that are a year-round concern, timing may be linked to events or activities that call attention to the message, such as appliance connector inspections when moving into a new home. Other messages may need to be delivered at several times during the year and should be planned at regular frequencies. The timing and trigger for all elements in your program should be documented as a communications calendar within your program.

Frequency

The frequency with which messages are delivered needs to be based on local factors. However, the determined frequency should not be less than that called for by federal, state, and local regulations or industry consensus standards.

Additional Considerations

Messages should always promote a specific contact, such as a utility emergency number or 911, for your area. Messages can be expanded from reporting odors to a more comprehensive “sight, sound, and smell” approach that is recommended by the American Petroleum Institute and incorporated by reference into federal pipeline safety regulations.

Along with the core message, you may also consider providing background information on the distribution, safety, and reliability of natural gas. How this message is conveyed is up to you. Depending on the needs and preferences of your audiences, you might use fear, humor, persuasion, or some other approach to reach stakeholders in the most effective manner.

Outreach Program Activities

After clarifying why your organization needs a Public Safety Communications Program and defining what the goals are, which core messages are critical, and who needs to receive them, it is time to determine the strategies and tactics for how those messages will ultimately be delivered.

There are four key strategies that should be considered for each audience and topic in order to effectively implement a Public Safety Communications Program:

- Public education
- Public relations
- Advertising/traditional media
- Digital media

There are benefits and limitations to each of these methods that should be carefully considered, especially including message traceability and documentation, cost-effectiveness/scalability, and others. An integrated approach across multiple channels is preferable to a single channel for any audience and message. This is a strong reason to take a programmed approach to public safety communications.

1. Public Education

Public education materials should be developed specific to the message and audience. These may include:

- Bill stuffers
- Direct mail
- Email/newsletters/blogs
- Safety brochures/posters
- Displays at health and safety fairs, home improvement shows, events, and malls
- Website information
- “Day One” information package
- Safety messages when new service is established
- Reminders such as magnets and stickers

2. Public Relations

An effective public relations program can deliver safety messages through newspaper articles as well as broadcast news and public affairs programming. Because of the seriousness of utility public safety, the media may be receptive to picking up these stories. Consider working with the local fire department, which can add credibility and impact to messaging campaigns. An effective public relations program may include:

- A spokesperson
- Press releases with data, facts, and requested actions
- Media interviews
- Public service announcements
- Incident press releases, should an incident occur in your market

3. Advertising/Traditional Media

Paid media effectively reaches large numbers of the general public. Since the messaging is a public service announcement, you may be able to negotiate lower fees with the media. However, be aware of the trade-offs; in exchange for lower fees, broadcast media may run your announcements in the dead of night, when few stakeholders are awake to hear your safety message. Media buyers or brokers can be a useful resource for determining the most effective media buy for your utility.

Television

TV can be efficient in reaching large audiences. TV media plans can be costly, especially when the schedules include network affiliates during primetime, evening, and late-night news programs. Local cable and satellite service programming can be more cost-effective but will reach fewer viewers than network programming. Production costs must also be considered.

Radio

In most markets, radio is more cost-effective than TV for reaching large target audiences. It has low production costs, especially when you supply radio stations with scripts.

Newspapers

Newspapers can effectively reach large audiences; however, readership of large-market newspapers has declined in recent years. Newspaper advertising is recommended as a supplement to radio and/or TV campaigns.

Magazines

General interest magazines as well as ones that feature special interests—such as home remodeling or gardening—can be a good promotional vehicle. Consider either magazines that are published in your region or a regional media buy for national magazines.

Billboard and Transit Ads

Billboards, transit advertising, and other forms of outdoor advertising are recommended only as supplements to other media if budget permits. Outdoor advertising increases frequency—the number of

times each member of the audience has an opportunity to view the message—however, the price, based on the amount of street traffic or transit rider loads, can be expensive and not as effective as more direct means of communication.

4. Digital Media

Social Media

Social media is an effective channel that allows utilities to engage customers, demonstrate preparedness during critical times, and provide essential safety information on both a reactive and a planned basis. Nearly every utility now has a social media presence and a social media manager. It is important to focus on providing seasonal and evergreen safety messaging to your social media manager and developing, in advance, a cooperative strategy for using social media to quickly alert the public to immediate safety concerns or incidents.

Social media is a modern and efficient mechanism to reach large quantities of people through various paid and earned/social digital channels. As paid media, this type of channel is an effective means of targeting a specific message to a highly segmented population or geographic area but can be expensive depending on the targeting approach that is used.

The utility's social media strategy should consider ways to engage customers and provide powerful tools such as real-time updates on customer outages and restoration efforts. This strong customer engagement can be leveraged to communicate public safety information.

Online Advertising

There are a variety of mechanisms through which digital advertising can be used to target broad audiences. These include website banners, online magazines or newsletters, streaming music outlets, digital commercials on video programming, paid search, and others.

Effectiveness Evaluation

A critical element of your program is evaluating how effective it is in changing your audience's understanding and actions. To know what your program has accomplished, you first have to gather baseline data.

The baseline data should be gathered before the program is introduced, then compared to a second survey conducted after the program is completed. Additional surveys may be needed during the course of the program, or after the program activities have been completed. Evaluation allows programs to be continually monitored and modified to achieve the best possible results. Surveys are best conducted by independent contractors who have the experience and resources needed for large projects.

Program Documentation

An essential element in managing an effective Public Safety Communications Program is documentation.

Among the items that should be documented are:

- A statement of purpose and commitment
- Key team members, their roles, and their responsibilities
- Identification of safety issues to be addressed
- Listing of all strategies, tactics, media, and schedules implemented
- Samples of all materials produced
- Mailing lists used or media placement orders with clippings of the actual insertion
- Program effectiveness evaluation results

These records should be retained for a minimum of five years, or longer if called for in the program definition. This documentation may be needed as evidence in future litigation.

Risk Management & Continuous Improvement

As your utility gets into a rhythm of identifying audiences and delivering key messages through specific, integrated channels, the next step is to sustain and continuously improve the program. This should be done through analyzing data from a combination of sources, including effectiveness evaluations, trend and risk information, and data-driven industry best practices.

Newly identified risks and opportunities for improvement should be captured through the revision of your program goals before implementing the next round of strategies and tactics. Using this approach and working with your organization's leadership and program sponsors, public safety communications can be a key part of your risk management strategy.

Additional Resources

Trade associations, government agencies, and private organizations offer additional information and materials that may be valuable in the development and implementation of Public Safety Communications Programs.

Section 03

A Comprehensive Safety Communications Program

Can Save Lives,

Prevent Injuries,

and Reduce Costs

Key Safety Messages to Consider in Your Communications

By following the steps outlined in the previous section, you now have a Public Safety Communications Program plan. Next you need to identify the specific safety issues your program must address. In the following section, we focus on the most common utility safety concerns, identify the key audience members you should target, and summarize the core messages you should convey.

Over time, your utility will uncover additional topics until you have created a robust Public Safety Communications Program that can effectively save lives, prevent injuries, and reduce costs.

Work with your leadership, operations, risk management, customer service, claims, and legal departments to prioritize which safety issues are most important to address in your market.

Organize a public safety communications calendar to help coordinate seasonal safety messages.

Reporting Natural Gas Odors, Leaks & Emergencies

Why Address This Issue?

Leaking natural gas can lead to devastating injuries, fatalities, property damage, and other losses. To date, 95% of all closed general liability claims reported to AEGIS for natural gas distribution systems were the result of natural gas explosions or fires. Educating the public to promptly report natural gas odors and/or other signs of a natural gas leak can help prevent significant human and monetary losses and reduce a utility's exposure to these risks.

Your utility has a natural gas Public Safety Communications Program in place in order to meet federal regulations. By instituting a more aggressive campaign aimed at an expanded audience, you may be able to significantly reduce the possibility of future incidents. The liability associated with even a single claim can far exceed the costs associated with your program. Rather than costing a utility more, an effective program aimed at mitigating the risk of fires and explosions through improved public reporting of suspected natural gas leaks can reduce costs and free resources for other critical needs.

Incidents

- Natural gas leaking into a basement exploded when a couple went to investigate the odor and turned on a light. Both individuals were severely injured, and the woman needed more than 20 surgical procedures. A neighbor had smelled the natural gas the previous day but failed to report it.
- A natural gas explosion destroyed a five-story apartment building, killing eight people. Post-incident investigation revealed several residents in the building and in the area smelled gas for days but failed to report it.
- After lightning struck a tracer wire in contact with a plastic service line, melting the material, natural gas permeated the surrounding ground and leaked into a house. A neighbor smelled natural gas at about midnight but failed to report it. The house exploded the next morning, killing its occupants and damaging homes on both sides.
- A natural gas explosion destroyed a residence and injured a family of five. Witnesses interviewed afterward reported there had been natural gas odors for several days that had not been reported. No one called the gas company because they thought the odors were from a nearby refinery.

These incidents reinforce the importance of utility Public Safety Communications Programs. Frequently, witnesses to an incident report that a gas odor had been present hours, days, or even weeks before the incident—however, witnesses rarely alert local utilities or public safety officials. Better, more effective public education about how to recognize and respond to gas leaks can help overcome this problem.

Who: Key Audiences & Languages

By regulation, the target audience for this message is the general public—both customers and non-gas users. Based on how your program is designed (see Section 02, page 13), you may want to also target other groups with a high likelihood of encountering natural gas leaks while performing their jobs. Correctly identifying the specific audiences is key to determining the most effective strategies to communicate your message. In addition to the general public and what was provided in the “Who” portion of Section 02 (page 17), examples of key audiences for this topic may include:

Consumers

- New and existing customers and non-gas users
- Males and females 18 years and older
- Students in kindergarten through eighth grade

Trade Professionals

- Construction workers
- Emergency personnel
- Appliance installers

What: Core Messages

The core message is the most important point or essential idea to be understood and remembered by the target audience. For this topic, the message must cover how to both recognize and respond to a suspected natural gas leak:

A gas leak is often recognized by smell, sight, or sound:

Smell — A distinctive sulfur-like or rotten-egg odor is added to natural gas, so you'll recognize it quickly. This odor may fade or be difficult to distinguish,* and not all natural gas transmission lines are odorized. Do not rely on your sense of smell alone to detect a natural gas leak.

Look — You may see dirt blowing into the air from a hole in the ground; continuous bubbling in water; dead or dying vegetation (in an otherwise moist area) over or near a pipeline; a damaged connection to a gas appliance; or an exposed pipeline after an earthquake, fire, flood, or other disaster.

Listen — You may hear a hissing, whistling, or roaring sound as natural gas escapes from a pipe.

If you suspect a natural gas leak, warn others and immediately leave the area. From a safe location at least 300 feet from the suspected leak, call 911 and [insert specific utility name and emergency phone number], any time, day or night.

**Certain conditions in pipelines and soil can cause "odor fade"—a loss of odorant that makes natural gas undetectable by smell. Additionally, some people may not be able to smell the odor of natural gas because they have a diminished sense of smell, have been exposed to the odor for so long that they no longer recognize it, or because the odor is masked or hidden by other odors from nearby cooking activities, chemicals, or damp/musty conditions.*

Damage Prevention

Why Address This Issue?

Excavation damage accounts for the majority of all reported natural gas pipeline incidents. Even minor damage (such as a gouge, scrape, or dent to a pipeline or its coating) may cause a leak or failure in the future.

To protect natural gas pipelines and other underground facilities, the law requires anyone planning a digging project to contact the local one-call system by dialing 811 or placing an online request, and to observe a state-mandated waiting period before excavation begins. During this waiting period, the one-call system notifies owners of underground utilities in the proposed dig area, and these entities must clearly mark the locations of their buried lines for excavators before earthmoving work begins. Excavation-related incidents often result from the failure of contractors or customers to notify the one-call system and/or to dig with care around marked utility lines.

State one-call systems have extensive advertising and safety communications programs in place to encourage safe digging practices. However, natural gas utilities are also required to have their own public safety outreach programs to promote safe digging. Federal Regulation [49 CFR §192.614](#) requires gas operators to notify the public in the vicinity of their pipelines, as often as needed, about the pipeline operator's damage prevention program. In addition, [49 CFR §192.616 requires gas pipeline owners and operators to conduct continuing public safety awareness education programs that comply with the American Petroleum Institute's \(API\) Recommended Practice \(RP\) 1162](#). These programs must provide documented and continuous public safety awareness education to excavators, emergency officials, local public officials, and other members of the public who live or work near natural gas pipelines.

Incidents

- A backhoe operator excavating for a storm drain ignored the utility's markings and instead relied on outdated maps of the area. The operator punctured a three-inch natural gas line. The resulting explosion destroyed a supermarket, damaged several nearby businesses and residences, and injured 15 people.
- A contractor known for not requesting the location of underground utilities was installing water and sewer lines to a residence. The lines crossed under the natural gas services. The weight of construction vehicles driven across a new ditch where the lines intersected caused the natural gas service to sink nine inches. As a result, a connector separated and leaking natural gas migrated to the house, causing an explosion. A 2-year-old boy received burns over 30% of his body. The boy's mother was killed.

These incidents reinforce the importance of utility Public Safety Communications Programs that motivate excavators to comply with requirements for having buried natural gas lines located and marked before digging or drilling.

Who: Key Audiences & Languages

By regulation, the target audience for this message is the general public—both customers and non-gas users—and professional excavators.

Consumers

- New and existing customers and non-gas users
- Males and females 18 years and older
- Adult “do-it-yourself” (DIY) audience, people who frequent home improvement stores or rent digging equipment

Trade Professionals

- Construction companies
- Excavation companies
- Landscape and fencing companies
- Lumberyards, hardware stores, heavy equipment sales and leasing companies, and rental equipment stores
- Agricultural workers
- Dredging companies
- Any business or agency whose work involves excavation, blasting, boring, tunneling, backfilling, the removal of aboveground structures by any means, and other earthmoving operations

Multilingual Requirements

In many areas of the country, excavation is often performed by people whose native language is not English. This makes it important to target these audiences in their own language.

What: Core Messages

The core message is the most important point or essential idea to be understood and remembered by the target audience. The message for this topic is:

Damage to a gas pipeline or service to a house may create an explosion resulting in injury, death, severe property damage, and loss of vital service. Help prevent damage to buried natural gas pipelines by notifying your local one-call (811) system before you dig, trench, drill, grade, excavate, or move earth in any way. This free service will arrange to have buried natural gas lines and other utilities located and marked, so you can dig safely in the area where these lines are buried.

This message should be supported with instructions for safe excavation. For example:

- Delineate your dig area in white, so one-call system locators can easily identify the dig area and locate and mark buried utilities in the area.
- Notify the one-call system by dialing 811 or making an online request.
- Wait the required time for buried lines in your dig area to be located and identified.
- Respect the marks and maintain them while digging.
- Dig with care near buried facilities, and follow hand-excavating rules.
- Immediately contact the local natural gas utility if you hit, touch, scrape, or damage a natural gas pipe. Even a small gouge, dent, crease, or scrape may cause future safety problems.
- Include information about the dangers of right-of-way encroachments for customers who adjoin your pipeline rights of way.

For additional information and resources, visit [Common Ground Alliance](#) and [call 811](#).

Engaging Public Officials to Protect Pipelines

Why Address This Issue?

Public officials are key partners in preventing natural gas pipeline damage and promoting pipeline safety. As identified leaders in their communities, informed public officials are well positioned to further awareness of one-call system requirements and natural gas leak recognition and response. They are important players in efforts to prevent right-of-way encroachment and in determining the extent of a community's emergency preparedness at every level.

Currently, federal and state pipeline public awareness regulations mandate that natural gas utilities communicate with public officials every three years. A proposed revision to RP 1162, which is the American Petroleum Institute's recommended best practice upon which federal and state pipeline public awareness regulations have been formed, recommends communicating with public officials every two years. However, annual communications may be justified.

SECTION 03: KEY SAFETY MESSAGES

Incidents

- A natural gas explosion destroyed a two-family home, killing a gas company employee. Fire officials were demanding the gas system be shut down, but gas company supervision in charge at the scene did not do it in favor of finding the source of the natural gas leak.

This incident highlights the importance of frequent outreach to public officials regarding the purpose and location of natural gas pipelines in their communities.

Who: Key Audiences & Languages

Local, city, municipality, county, or state elected or appointed officials as well as employees of these entities with responsibilities for planning, land use, or street management, such as:

- Planning and zoning boards
- Licensing, planning, and permitting departments
- Building code enforcement departments
- City and county managers
- Public utility boards
- Local governing councils
- Military installations
- Tribal authorities
- Departments of transportation

What: Core Messages

The core message is the most important point or essential idea to be understood and remembered by the target audience. For public officials, the core message is:

Natural gas transmission pipelines may cross in or near your jurisdiction. Damage to these pipelines can cause dangerous leaks that have the potential to ignite or explode. We encourage you to learn the location of natural gas pipelines in your community and to help us protect them from damage by educating the public, your staff, and your excavation contractors about pipeline safety.

Additional messages should be designed to inform and engage this audience.

Inform public officials about:

- The purpose and reliability of natural gas pipelines
- The potential hazards of natural gas
- Your utility's pipeline integrity management efforts
- The location of local high-consequence areas (HCAs) in their jurisdictions

SECTION 03: KEY SAFETY MESSAGES

- The location of pipeline rights of way and encroachment prevention requirements
- Pipeline markers and their purpose

Engage public officials in your efforts to prevent pipeline damage and promote natural gas safety. Ask for their help and support for your efforts to:

- Educate excavators and other members of their communities about one-call system requirements and how to dig safely near natural gas pipelines
- Educate everyone in their communities about natural gas leak recognition and how to respond to natural gas emergencies
- Conduct training and drills with local emergency responders to prevent and prepare for natural gas emergencies
- Assure that their local emergency operations plans (EOPs) include preparedness planning for catastrophic natural gas leaks, fires, and explosions
- Restrict certain activities in natural gas transmission pipeline rights of way
- Freely access natural gas meters located inside homes or businesses in emergencies and for maintenance and inspections

Disaster Preparedness & Response

Why Address This Issue?

The number, severity, and cost of natural disasters has increased dramatically in recent years.

Every area of the country is vulnerable to the effects of disasters. Floods, mudslides, wildfires, hurricanes, tornadoes, earthquakes, and winter storms can all cause severe damage to natural gas utilities and create extreme hazards for people and property. In addition, the threat of terrorism is now a reality. In order to mitigate the damage, natural gas utilities must educate customers, the general public, and trade workers in disaster preparedness, damage minimization, and post-disaster response.

Who: Key Audiences & Languages

Your customers are the target audience for this topic. Also consider targeting trade professionals who have access to natural gas appliances, and emergency responders.

Consumers

- New and existing customers
- Males and females 18 years and older
- Parents or caregivers of school-age children
- School-age children

Trade Professionals

- Utility company service technicians
- Plumbing contractors
- Heating/cooling contractors
- Appliance installers

What: Core Messages

The core message is the most important point or essential idea to be understood and remembered by the target audience. For this topic, the message is:

Disasters can occur anytime and anywhere. You can protect your family and property by being aware of the hazards and preparing for them, as well as by learning what to do after a disaster to minimize risks and damage.

This message should be supported with the following safety tips:

- Prepare and practice a disaster plan for your family.
- Make sure natural gas appliances are secured to wall studs or bolted to the floor as appropriate in earthquake-prone areas.
- Natural gas appliances or appliance connectors should be inspected and if necessary repaired only by a qualified technician.

SECTION 03: KEY SAFETY MESSAGES

- Store flammable products securely in closed cabinets with latches and away from appliances (see “Flammable Ignition Awareness” section, page 68).
- Know how to turn off the main natural gas service at the meter if instructed to do so.
- Never turn your natural gas service back on yourself. Only your local natural gas utility may restore gas service.
- After a disaster, check for the odor of natural gas and other leak indicators before entering any structure or area.
- If you suspect a natural gas leak, warn others, leave immediately, and call 911 and your local natural gas utility from a safe location at least 300 feet away from the suspected leak area.
- If natural gas appliance or equipment connections are damaged or defective, have them inspected and repaired only by a qualified technician.
- Replace any appliance that has been submerged in water.

You may also want to recommend that people consult [FEMA](#) or the [Department of Homeland Security](#) for more information.

Carbon Monoxide Awareness

Why Address This Issue?

Colorless, odorless, and tasteless, carbon monoxide (CO) is literally a “silent killer.” CO is the leading cause of poisoning deaths in the United States. According to the Consumer Product Safety Commission (CPSC), on average, about 170 people die every year in the United States from CO produced by malfunctioning non-automotive consumer products, including fuel-burning appliances such as furnaces, ranges, water heaters, and room heaters; portable generators; fireplaces; and charcoal that is burned in homes. Per CPSC data, infants, small children, and even unborn babies are among those at greatest risk of CO poisoning, and senior citizens suffer the highest CO poisoning death rate.*

Today’s natural gas appliances provide unparalleled personal comfort and convenience at an amazingly low cost of operation. But in order to sustain peak efficiency and long life, they must be installed correctly and regularly inspected and adjusted. Most CO incidents and their unfortunate consequences are due to improper equipment installation or poor maintenance, and are preventable.

* [CPSC’s Carbon Monoxide Fact Sheet](#)

Incidents

- The malfunctioning vent of a natural gas-fired driveway heater caused three CO poisoning deaths. To melt ice and snow, the owner, who was one of the victims, turned on the driveway heater, which was powered by a natural gas-fired boiler located in the garage. Family members were overcome by CO after they went to bed. The investigation revealed that an obstruction in the vent had prevented combustion products from safely escaping. This caused the CO to accumulate in the garage and seep through the garage ceiling into the two bedrooms located over the garage.
- Two children were overcome by CO at home after their mother left for work. A small space heater, the only source of heat in the residence, was not vented to the outside as required. Three days prior to the incident, natural gas service had been initiated to the house. The gas technician followed the company turn-on procedures, told the customer not to use the space heater, as it might need to be vented, and left the heater turned off at a valve. Within 15 minutes after the serviceman left the premises, the mother lit the heater and used it continuously. The young girl recovered with few residual problems. However, her brother remains in a coma, and is not expected to regain consciousness.

SECTION 03: KEY SAFETY MESSAGES

- A 74-year-old woman was found dead in her home of acute CO poisoning. Family members—who came from out of town to attend her funeral—were also overcome by CO while staying at her home. Investigation of this incident revealed the vent pipe for a floor furnace had rusted through. It also showed the gas company had performed a periodic meter change two years earlier. The service technician wrote in his report at the time that a small leak was repaired at the meter riser shutoff, and the range and water-heater pilots were re-lit. The report also stated, without explanation, that the floor furnace was not lit.

Educating the public about proper equipment installation and maintenance as well as the benefits of CO alarms can help prevent CO incidents. Additionally, many natural gas utility technicians have the opportunity to observe and, if qualified, correct situations posing a danger of CO accumulation when they enter customer premises, light pilots, service natural gas appliances, or otherwise witness natural gas appliance installation and operation.

Who: Key Audiences & Languages

Your customers are the target audience for this topic. Also consider targeting healthcare professionals, EMTs, and trade professionals who have access to natural gas appliances, such as installers, plumbers, and heating/cooling contractors.

Consumers

- New and existing customers
- Males and females 18 and older
- Infants, small children, and pregnant women
- School-age children
- Senior citizens

Healthcare Professionals and EMTs

Trade Professionals

- Utility company service technicians
- Plumbers
- Heating/cooling contractors
- Appliance installers

What: Core Messages

The core message is the most important point or essential idea to be understood and remembered by the target audience. For this topic, the message is:

Carbon monoxide, also known as CO, is a silent killer. Ensure that fuel-burning appliances are installed, maintained, and used correctly and safely. This includes having an annual inspection of heating and venting equipment by a qualified technician prior to the heating season, and proper installation and use of a CO alarm that meets current standards.

Since CO is a silent killer, the vital secondary message is:

Everyone should learn to recognize the symptoms of CO poisoning. Symptoms can occur immediately or more gradually after long-term exposure.

Common symptoms include:

- Dizziness
- Confusion
- Shortness of breath
- Nausea
- Headaches
- Fainting

If you have these symptoms after being in an enclosed area, get fresh air immediately and go to a hospital emergency department. Be sure to tell your doctor that you may have CO poisoning. Call a qualified technician to check your fuel-burning appliances.

Snow & Ice Issues

Why Address This Issue?

Heavy snow and ice storms with the potential to compromise aboveground natural gas infrastructure can occur almost anywhere in the continental U.S. Although these storms are most common in the North and West, utilities everywhere need to be prepared to respond to emergency situations.

Federal regulations require natural gas operators to inform the public of possible hazards relating to snow accumulation on pipeline facilities. The regulations stress the importance of monitoring the potential impact of snow accumulation on these facilities as well.

Damage to natural gas service meters and pressure-regulating stations may result from stresses imposed by the additional load of snow or ice as well as the impact of snow or ice falling from roofs. Moisture accumulations in equipment and snow/ice blocking regulators or relief valve vents can prevent them from functioning properly. In addition, exhaust and combustion air vents for natural gas appliances must be clear of snow and ice to prevent CO accumulation in buildings or to prevent operational problems for the combustion equipment.

Snow and ice damage is a common danger that has little public awareness. In areas where snow and ice are a normal part of winter, a Public Safety Communications Program at the start of the heating season can alert customers to the dangers. Because snow and ice storms can hit even where they are not expected, all utility companies should have a program ready for implementation following major storms.

Incidents

- Heavy snowfalls in California, Nevada, and Utah damaged natural gas service equipment. Consumers compounded the problem by clearing their roofs. Several fires occurred, causing 20 injuries and six deaths.
- A series of heavy snowfalls and subzero temperatures caused damage to natural gas distribution facilities, resulting in numerous incidents. The damage was related to stress from snow and ice as well as frost heave. The impact of falling snow and ice from roofs also caused damage.
- Moisture accumulations in equipment, regulators, and relief valves blocked by snow and ice have prevented them from functioning properly.
- Numerous injuries and deaths from CO have been attributed to exhaust and combustion air vents for natural gas appliances blocked by snow and ice.

These tragic incidents, which may have been prevented if the individuals involved were aware that accumulated snow and ice can damage natural gas service equipment, reinforce the importance of utility Public Safety Communications Programs.

Who: Key Audiences & Languages

Your audience is anyone living in areas subject to icy conditions and heavy snowfall who is responsible for the maintenance of natural gas service equipment. This may include customers and members of the general public who have maintenance responsibilities.

Consumers

- New and existing customers
- Males and females 18 years and older
- Multi-unit and commercial property owners and managers

What: Core Messages

The core message is the most important point or essential idea to be understood and remembered by the target audience. The message for this topic is:

Snow and ice can damage natural gas meters and pipes and interfere with the safe operation of your natural gas appliances. Use a broom to keep natural gas service equipment clear during the winter. Chimneys and vents for natural gas appliances must be cleared following a major snow or ice storm to enable proper venting and prevent carbon monoxide accumulation. (See “Carbon Monoxide Awareness” section, page 45.)

SECTION 03: KEY SAFETY MESSAGES

Secondary messages should include tips for snow and ice removal:

- Remove snow and ice from a natural gas meter or appliance vent pipe carefully with a broom. Do not use a shovel or other sharp tools to cut or chop away snow and ice because they can damage the meter or lines close to the meter.
- Avoid using a snowblower or snowplow near your natural gas meter and any associated piping.
- Do not shovel snow up against the meter or vent pipe.
- Remove icicles from overhead eaves and gutters to ensure dripping water does not splash and freeze on the meter or vent pipe.
- Do not kick or hit your natural gas meter to break or clear ice.
- Check your meter and pipes often throughout the winter.

Consider distributing these messages as an important safety reminder at the start of the cold weather season.

Cross Bore Awareness: Blocked Sewer Lines

Why Address This Issue?

To minimize restoration costs, many utilities install underground pipelines and cables via horizontal directional drilling, a trenchless technique that avoids damage to sidewalks and landscapes. Unfortunately, some sewer laterals serving private property may go undetected when new utility lines are installed in this manner. As a result, a utility line can be bored directly through a sewer lateral in what is known as a “cross bore.” Cross bores can go undetected for months or even years, until a sewer backup develops and a property owner calls a plumber to remove the blockage or attempts to remove it without the help of a professional.

Homeowners and plumbers frequently use mechanical rotary devices to clear sewer lines. These devices can damage a utility line that was unintentionally installed through a sewer lateral. Cutting an electric line may result in serious injury. If a natural gas line is cut, leaking natural gas may migrate undetected through the sewer line and concentrate in the home or nearby structures, posing a risk of fire and explosion.

Utilities can reduce the risks associated with cross-bored natural gas lines by educating consumers, plumbers, drain cleaners, and public sewer agencies about how to respond when a cross bore is suspected or detected.

Incidents

- The Gas Technology Institute reported 18 major cross-bore incidents between 2002 and 2012. The Cross Bore Safety Association reports claims paid have been as high as \$30 million for incidents that involved a single house and those injured.
- An explosion and fire destroyed a single-family home and substantially damaged others surrounding it. The incident occurred when the homeowner was trying to clear a clogged sewer pipe with a drain auger device. The machine became stuck in the sewer pipe and his efforts to clear the device were unsuccessful. He decided to leave it and retry the next morning. He placed a rag over the open sewer line because he stated the odor from the sewer was very strong. The next morning the homeowner returned to the crawl space to attempt to clear the obstruction. His wife went to the second floor and opened a window to let fresh air in because of the strong odor in the house. It was shortly thereafter the explosion occurred. The husband sustained second-degree burns and minor injuries. The wife injured her knee and sustained minor burns.

These incidents highlight the importance of educating homeowners, plumbers, and drain cleaners to recognize the hazards associated with cross-bored natural gas lines and to take all precautions to avoid damaging them.

Who: Key Audiences & Languages

The target audiences for this topic are homeowners, plumbers, sewer cleaners, drain cleaners, and public sewer agencies.

Consumers

- New and existing customers, and non-gas users
- Males and females 18 years and older
- Adult “do-it-yourself” (DIY) audience

Trade Professionals

- Plumbing contractors/sewer “clean out” contractors
- Construction companies
- Hardware stores and equipment rental stores

Public Sewer Agencies

- Sewage/sanitation districts
- Public works departments

What: Core Messages

The core message is the most important point or essential idea to be understood and remembered by the target audience. The message for this topic is:

If you encounter a blockage in a sewer lateral, it could be caused by a natural gas line that was inadvertently drilled or bored through the sewer line in what is known as a “cross bore.” Cutting into a cross-bored natural gas line can result in a fire or explosion. Before clearing any blocked sewer lateral, take precautions to determine whether a cross bore exists and use the least invasive equipment possible.

SECTION 03: KEY SAFETY MESSAGES

The message can be supported with the following:

- Before clearing, look for trees or landscaping whose roots could be causing the obstruction. If there are none, a cross bore could be involved, so proceed with caution. If you own or can obtain access to an inline camera, use it to assess the blockage before attempting to clear it. (If the camera view is obstructed due to the clog, vacuum it out first.) If a camera is not available, run a hydro-jetter through the sewer line to clear it. Do not use a cutting tool.
- During clearing, if you cannot verify the cause of the blockage, use the least invasive equipment possible, such as a hydro-jetter. If you sense resistance that does not resemble a tree root or other common obstruction, do not force it. Stop immediately and call the local natural gas utility.
- If you are present when a sewer line is being cleared, be alert for any of these gas leak indicators: the distinctive, sulfur-like or rotten-egg odor of natural gas; hissing sounds; blowing dirt; or continuous bubbling water in odd places such as a puddle or a toilet.
- If you think you have hit a natural gas line and/or you suspect a natural gas leak, warn others and evacuate the premises immediately. Then, from a safe location, call 911 and the local utility and keep others a safe distance away (300 feet).
- Do not operate any electrical device that may create a spark (including cell phones); operate any below-ground valves; turn equipment on or off; or operate light switches, remotes, or electrical appliances.

Buried Fuel Line Inspections

Why Address This Issue?

Corrosion, neglect, digging incidents, and improper repairs may all result in natural gas leaks from customer-owned fuel lines. New property owners may not know about the location of fuel lines on their property, the history of any damage or repairs to them, or the need for regular fuel line inspections and maintenance.

Federal Regulation 49 CFR §192.16 requires natural gas operators that do not maintain their customers' buried piping to notify their customers at least once, in written form, of the need and importance of this maintenance. That action must be taken within the first 90 days of the customer's receipt of natural gas service. (Customer piping refers to natural gas piping that is typically downstream from the outlet of the gas meter.)

Even when a utility is not responsible for the maintenance of customer-owned buried fuel lines, it may still be a target of litigation for any incidents that result from lack of maintenance of these lines. Educating new customers about buried fuel line maintenance in compliance with 49 CFR §192.16 can help prevent fuel-line related incidents.

Incidents

In 1988, a series of five service line incidents killed four people and injured 16 others. While those incidents, as well as the ones that follow, involved jurisdictional service lines, the conditions described could also occur on customer-owned fuel lines. It was for this reason that [49 CFR §192.16](#) was created.

- Natural gas leaking from a customer-owned portion of a steel service line migrated through the soil into a residential dwelling. Natural gas accumulated, ignited, and resulted in an explosion and fire that killed a woman and seriously burned her son and daughter-in-law. The leak source was a failed threaded joint, caused by a combination of corrosion and excessive downward force.
- Natural gas leaking from a service line migrated into a retail store, where it accumulated and ignited. The result was an explosion that killed eight people, severely burned another person, and totally destroyed the store. The cause of the natural gas leak was determined to be a separation between a plastic service line and a plastic coupling, which had been installed without authorization by an excavation contractor. Six months before the incident, an employee of the contractor had severed the natural gas line while operating a backhoe without notifying the utility or reporting the damage.

These tragic incidents may have been prevented if the involved property owners had conducted regular inspections and maintenance of their buried fuel lines. Safety education programs and messages can educate the public about such hazards.

Who: Key Audiences & Languages

By regulation, the target audience for this message is the new customer. However, you should consider targeting your existing customers on a regular basis and expanding your audience to include trade professionals as well.

Consumers

- New and existing customers
- Males and females 18 years and older
- Adult “do-it-yourself” (DIY) audience, people who frequent home improvement stores or rent digging equipment

Trade Professionals

- Plumbing, heating/cooling contractors
- Excavation and landscape contractors
- Remodeling contractors
- Agricultural workers

What: Core Messages

The core message is the most important point or essential idea to be understood and remembered by the target audience. The message for this topic is:

All natural gas pipes downstream of the natural gas meter (the “building” side) belong to the property owner. The property owner is responsible for maintenance and operation of this portion of the fuel line system.

SECTION 03: KEY SAFETY MESSAGES

The core message should be supported with the following secondary messages:

- If you own a home or property served by natural gas, be aware of the location of buried fuel lines on your property.
- Buried natural gas piping should be:
 - Regularly checked for safety and inspected for leaks by a qualified technician
 - Periodically inspected for corrosion if the piping is metallic
 - Repaired if any unsafe condition is discovered, or the flow of natural gas should be shut off
- When planning to excavate, buried natural gas fuel lines should be located and marked in advance of plans to excavate. Excavating performed near these lines should be done by hand.
- In addition to locating buried customer-owned fuel lines, you should notify your local one-call (811) system before you dig, trench, drill, grade, excavate, or move earth in any way. This free service will arrange to have utility-owned natural gas lines and other utilities located and marked, so you can dig safely in the area where these lines are buried.

Interior Piping & Appliance Connectors Safety

Why Address This Issue?

The safe use of natural gas in homes and other structures relies on the integrity of interior natural gas piping and appliance connectors. Hanging clothing and other items from exposed interior piping can compromise pipe joints and appliance connectors, and connectors may be compromised or improperly linked when appliances are replaced or newly installed.

In 1997, the U.S. Consumer Product Safety Commission (CPSC) determined that certain kinds of connectors manufactured between 1970 and 1980 may fail over time. The agency requested all natural gas operators to inform their customers of the need to have corrugated appliance and equipment connectors inspected and replaced as necessary by qualified persons. As a result, many faulty connectors were replaced, but many are still in use.

Incidents

Old and defective appliance connectors were the subject of a U.S. Consumer Product Safety Commission letter* to chief executives and utility managers. The letter was prompted by incidents such as the following:

- A mother and two small children were severely burned in a home natural gas explosion. A broken fuel line for the kitchen range had been taped over to stop an apparent leak. Two days prior to the explosion, a neighbor reported the smell of natural gas and a hissing sound coming from the meter at the house. The gas company did not send a representative to investigate.
- A gas company service technician was dispatched to turn on a meter for a mobile home. Upon inspection, he found that the appliances were designed for use with propane fuel. He did not hook up the appliances, but left the natural gas on at the meter. The next day, an explosion resulted, with one fatality and severe burns and scars to an 8-year-old girl. The explosion occurred as a result of natural gas escaping from an uncapped line under the trailer.

Educating the public about proper inspection and protection of interior piping and appropriate appliance connectors can enhance indoor natural gas safety and avert similar incidents related to this equipment. Additionally, many natural gas operators have the opportunity to observe and, if qualified, correct dangerous situations involving piping and connections when they enter customer premises, light pilots, service natural gas appliances, or otherwise witness natural gas appliance installation and operation.

** Letter to Chief Executives and Utility Managers, from Ann Brown, Chairman of the U.S. Consumer Product Safety Commission, September 2, 1997*

Who: Key Audiences & Languages

Your customers are the target audience for this topic. Also consider targeting trade professionals who have access to natural gas appliances, such as installers, plumbers, and heating/cooling contractors.

Consumers

- New and existing customers
- Males and females 18 years and older
- Adult “do-it-yourself” (DIY) audience, people who may disconnect an old appliance

Trade Professionals

- Plumbing contractors
- Heating/cooling contractors
- Appliance installers

What: Core Messages

The core message is the most important point or essential idea to be understood and remembered by the target audience. The message for this topic is:

Have your natural gas appliance and equipment connectors inspected regularly by a qualified professional and replaced as needed. Certain kinds of flexible connectors manufactured between 1970 and 1980 may fail over time and should be replaced immediately.

This message can be supported with the following:

- Only a qualified professional should check your natural gas appliance connectors and replace them if needed. Don’t try to do this yourself.
- After disconnecting natural gas appliances, natural gas connectors should always be removed and the fuel line should be plugged and capped.
- Protect your interior natural gas pipes from damage. Do not use them to hang clothing or other items, and do not allow children to play on or around them.

Corrugated Stainless Steel Tubing Safety

Why Address This Issue?

Corrugated Stainless Steel Tubing (CSST) is a flexible pipe used to supply natural gas in homes and commercial/industrial structures. If lightning strikes a structure containing improperly installed CSST, the lightning will travel along the structure's natural gas piping and could cause a leak or fire.

CSST has been installed in as many as 10 million U.S. homes since the 1990s, according to some manufacturers' estimates. Any CSST installation should meet the requirements of local building codes, the National Electrical Code (NFPA 70), the National Fuel Gas Code (NFPA 54), and the manufacturer's instructions. CSST needs to be connected or "bonded" to the electrical grounding system in a structure, and CSST installations must be approved by local electrical and mechanical inspectors and building officials.

Incidents

- Many lightning-related fires and natural gas leaks involving CSST have been reported nationwide. From 1996 to August 2011, 141 fires involving lightning and CSST were reported in the U.S.*
- A couple was entertaining a friend at their new home when a clap of thunder appeared to set off their burglar alarm. The husband and the friend went to the garage to get a ladder so they could disable the system when an explosion occurred. The husband was able to climb out from under the buckled garage door. The friend's body was found at the rear of the garage. Investigators believe he opened the drop-down staircase, not realizing the attic was ablaze. Oxygen rushed in and caused a back-draft explosion that killed him. Investigators found that lightning had struck the metal cap on the chimney, descended into the attic, then "arced" to the CSST pipe, where it punched a number of tiny holes in the thin wall. The holes allowed natural gas to escape and ignite, creating small "flame jets" that quickly spread to the rest of the attic.
- During a thunderstorm, lightning struck or hit near a residence. The home was built in 2003 using CSST that was not bonded or grounded. The energy from the lightning strike migrated to the CSST and caused a perforation, releasing natural gas and causing real and personal property damage.

Many older homes built before states began tightening building codes governing CSST have likely not been retrofitted to reflect the new recommendations. Licensed electricians can remedy the problem, while educating the public about this potential hazard can help ensure appropriate remediation measures are taken.

* *"Validation of Installation Methods for CSST Gas Piping to Mitigate Lightning Related Damage, Phase 1," by SEFTIM. Copyright 2011 by Fire Protection Research Foundation.*

Who: Key Audiences & Languages

Your customers are the target audience for this topic. Also consider targeting trade professionals who have access to natural gas appliances, such as installers, plumbers, and heating/cooling contractors.

Consumers

- New and existing customers
- Males and females 18 years and older
- Adult “do-it-yourself” (DIY) audience, people who may disconnect an old appliance

Trade Professionals

- Plumbing contractors
- Heating/cooling contractors
- Appliance installers

What: Core Messages

The core message is the most important point or essential idea to be understood and remembered by the target audience. The message for this topic is:

If your home or business was built after 1990, or you’ve had work done to the natural gas system, it is likely that corrugated stainless steel tubing (CSST) was installed. If lightning strikes a structure containing improperly installed CSST, the lightning will travel along the structure’s natural gas piping and could cause a leak or fire. Consult a licensed electrician to ensure your CSST is safe.

The message can be supported with the following:

- Have a professional inspect your building or home for CSST if you cannot do it yourself. If you find CSST, have a licensed electrician make sure it’s bonded and grounded properly.
- All types of natural gas pipes should be properly maintained and never used for unintended purposes, like hanging clothes or children’s play.

Flammable Ignition Awareness

Why Address This Issue?

According to the Consumer Product Safety Commission (CPSC), each year about 2,000 fires in U.S. homes involve natural gas appliances and flammable vapors. These fires result in more than 300 injuries or deaths. While a number of commonly used liquids such as paint thinner, adhesives, solvents, and other cleaning agents emit hazardous vapors, gasoline remains the primary contributor to flammable vapor fires. Gasoline is one of the most volatile flammable liquids because its vapors can ignite at temperatures well below zero.

Accidental gasoline vapor ignition typically occurs when gasoline is used for purposes other than a motor fuel, especially indoors or in an area with inadequate ventilation. Accidental ignition may also occur when gasoline is stored in an unapproved container, near ground level, on the floor, or on an open shelf where it is accessible to young children or where it can be knocked over, leading to spillage.

Children are often the victims of these incidents because their caregivers use gasoline in the home or because gasoline was left where children can reach, spill, or play with it. Regardless of actual responsibility, awards to victims can be very high, particularly when the injured party is a child.

Incidents

- A natural gas water heater ignited gasoline vapors in a residential garage while a father was using gasoline to clean paint from his daughter's clothing. Both experienced serious burns and injuries. The child died.
- One summer evening, three young children were playing in their garage when they knocked over and spilled a container of gasoline. Fumes from the spilled gasoline ignited after reaching the pilot light on a water heater located in a room adjacent and open to the garage. The ensuing explosion completely engulfed the children, who suffered third-degree burns over 90% of their bodies. Their injuries will require constant care for the remainder of their lives.
- A 50-year-old woman suffered second- and third-degree burns to more than 80% of her body when a natural gas-fired water heater installed in the kitchen of her home ignited gasoline vapors. The woman, her son, and his girlfriend were using the highly flammable liquid to clean paint spatters and spills from the floor of the newly remodeled kitchen. The son and his girlfriend escaped without injury, but the woman was engulfed in flames. She reportedly could not recall the first three months of her hospitalization due to slipping in and out of consciousness during that time.

These types of incidents can almost always be prevented through minor behavioral modification and correct appliance installation. Additionally, many natural gas operators have the opportunity to observe and, if qualified, correct dangerous situations involving flammable liquids when they enter customer premises, light pilots, service natural gas appliances, or otherwise witness natural gas appliance installation and operation.

Who: Key Audiences & Languages

A diverse sampling of data, incident reports, and opinions gathered from the [CPSC](#), the [National Fire Protection Association](#), and the [Air-Conditioning, Heating, & Refrigeration Institute](#) yield two conclusions that help clarify the target audience:

1. Approximately two-thirds of flammable vapor fire victims are male.
2. Two age groups suffer 41% of flammable vapor fire injuries: children under age 5 and adults ages 25–34.

These findings suggest that males are the primary users of gasoline around the home, and young children are not cognizant of the hazards of flammable liquid products.

Also consider targeting trade professionals who have access to natural gas appliances, such as installers, plumbers, and heating/cooling contractors.

Consumers

- New and existing customers
- Males ages 25–34
- Adults with children under age 5
- Adult “do-it-yourself” (DIY) audience, people who frequent home improvement stores and purchase flammable liquids for DIY projects
- Children, kindergarten through eighth grade

Trade Professionals

- Utility company service technicians
- Plumbers
- Heating/cooling contractors
- Appliance installers

What: Core Messages

The core message is the most important point or essential idea to be understood and remembered by the target audience. The message for this topic is:

Never use gasoline or other flammable liquids indoors. Always store them in an approved container, away from children.

The message should be supported with the following safety tips:

- Keep gasoline and other flammable liquids away from children.
- Gasoline is a motor fuel. Never use it as a cleaner.
- Never use gasoline or other flammable liquids indoors or in the same room or area as a natural gas appliance or other ignition source.
- Keep gasoline ONLY in an approved gasoline container. Make sure the container is tightly sealed. Never store gasoline in plastic milk jugs or glass containers.
- Never fill gasoline containers to the top. Allow room for vapor expansion.
- Store gasoline in a safe container on a high shelf, in a cool place, away from fuel-burning appliances or equipment.
- Talk to your children about the dangers of flammable liquid products.

Space Heater Safety

Why Address This Issue?

In many warmer parts of the country, consumers rely on natural gas space heaters for the few times of the year that heat is needed and/or to avoid the expense of a standard furnace. In colder regions, they are often installed in areas such as garages, barns, and service buildings where flammable materials and liquids are stored.

Because of the light usage of these devices, they are typically not serviced regularly, and new and used units are often improperly installed by “do-it-yourselfers” without the help of qualified service personnel. This may result in a hazardous situation of which the consumer is unaware. These space heaters pose a double danger. They may be sources of explosive incidents, and also present a threat of CO poisoning. According to the [U.S. Consumer Product Safety Commission](#), a major cause of CO poisoning is the improper venting of propane and natural gas space heaters.

Incidents

- A mother left her two children in a home heated with only a space heater. The mother set the heater to “medium.” The two children were overcome by CO. The heater control was found set to “high” when the children were found unconscious later that day. Investigation revealed that the heater was emitting dangerous levels of CO at over 2000 ppm. The space heater was not vented to the outside as required. Three days prior to the incident, natural gas service had been initiated to the house. The gas technician followed the company turn-on procedures, told the customer not to use the space heater, as it might need to be vented, and left the heater turned off at a valve. Within 15 minutes after the technician left the premises, the mother lit the heater and used it continuously. Both children were seriously injured.
- A fire destroyed a small building, killing five children and seriously injuring four other people. The dwelling had originally been built as a horse barn and had no heating system. The landlord improperly installed a furnace in the kitchen as a space heater. As a result of the improper installation, there was a flame rollout that ignited a nearby pile of clothes.

A Public Safety Communications Program that educates the public about how and where to use space heaters safely can help prevent incidents. Additionally, natural gas utility representatives have the opportunity to observe and, if qualified, correct the dangerous usage of space heaters when they enter customer premises, light pilots, service natural gas appliances, or otherwise witness natural gas appliance installation and operation.

Who: Key Audiences & Languages

Your customers are the target audience for this topic. Also consider targeting trade professionals who have access to natural gas appliances, such as installers, plumbers, and heating/cooling contractors.

Consumers

- New and existing customers, and non-gas users
- Males and females 18 years and older
- Adult “do-it-yourself” (DIY) audience, people who frequent home improvement stores and would attempt to install a space heater on their own
- Customers subject to service shutoff
- Tenants who may not be the bill payer

Trade Professionals

- Plumbing contractors
- Heating/cooling contractors
- Appliance installers

What: Core Messages

The core message is the most important point or essential idea to be understood and remembered by the target audience. The message for this topic is:

Natural gas space heaters are a safe way to heat, provided you use them properly, have them installed and serviced by a qualified professional, and maintain them correctly.

Support the message with:

- Always have your natural gas heater and venting system professionally installed and inspected according to local codes. (See “Carbon Monoxide Awareness” section, page 45.)
- Do not reinstall used space heaters.
- Keep gasoline, flammable liquids, and other combustible materials away from fuel-burning appliances and other sources of ignition. (See “Flammable Ignition Awareness” section, page 68.)

Scalding from Excessively Hot Tap Water

Why Address This Issue?

Excessively hot tap water causes approximately 2,600 burn injuries and 159 deaths each year. Most of these incidents involve children under 5 years old and adults over the age of 65.

Tap water scald burns are usually more severe than burns from hot liquid spills. Most tap water scalds occur in the bathtub and cover a larger portion of the body. It takes about a half a second for a baby to suffer a severe burn in 150°F water, versus four minutes in water at 120°F.

Many variables can affect the water temperature at the tap: incoming water supply temperature, plumbing design, and the number of taps requiring water, such as showers and sinks, dishwashers, clothes washers, and other appliances.

Incidents

Scald burns associated with children are often the result of the caregiver placing the child in the water without checking the temperature. Older adults' burn injuries are often due to their slower response time, or slips/falls in showers that expose the victims to hot water for a long period of time. Twin-handle faucets can also increase the risk of burns because the hot water faucet supplies water that is not mixed with cold water, as it is in single-handle faucets.

- A mother was bathing her 9-month-old child in a bathroom basin. The mother left the child unattended to check on another sibling. While the mother was out of the room, a 3-year-old sibling turned on the hot water. The 9-month-old experienced third-degree burns over 80% of her body. The natural gas utility, water heater manufacturer, plumbing contractor, and property owner were sued.
- An elderly man was taking a shower and had a seizure that may have been related to his medication. In an attempt to break his fall, he grabbed the mix valve handle, and accidentally turned on more hot water. The bathtub began filling with excessively hot water, causing third-degree burns over a major portion of his body.

These tragic incidents, which may have been prevented if the individuals involved were aware of the hazards associated with excessively hot tap water, reinforce the importance of utility Public Safety Communications Programs.

Who: Key Audiences & Languages

Since most tap water scald burns involve children under age 5 and older adults, it's important to consider all caregivers when thinking about target audiences. These may include customers and non-customers such as babysitters, daycare providers, and relatives. Also consider targeting other professionals who have access to water heaters, such as installers, plumbers, and heating/cooling contractors, who can help consumers set their water heater to a safe temperature as recommended by the manufacturer.

Consumers

- New and existing customers, and non-gas users
- Adults with children under age 5
- Daycare providers
- Older adults
- Eldercare facilities

Trade Professionals

- Plumbing contractors
- Heating/cooling contractors
- Appliance installers
- Appliance sales outlets

What: Core Messages

The core message is the most important point or essential idea to be understood and remembered by the target audience. For this topic, the message is:

Make sure your water heater is set to a safe temperature, per the manufacturer's recommendations. Always check the water temperature before placing a child in the bathtub or getting into the bath yourself. Never leave a child alone or with other young children in the bathtub.

**DEVELOPING PUBLIC SAFETY
COMMUNICATIONS PROGRAMS FOR
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