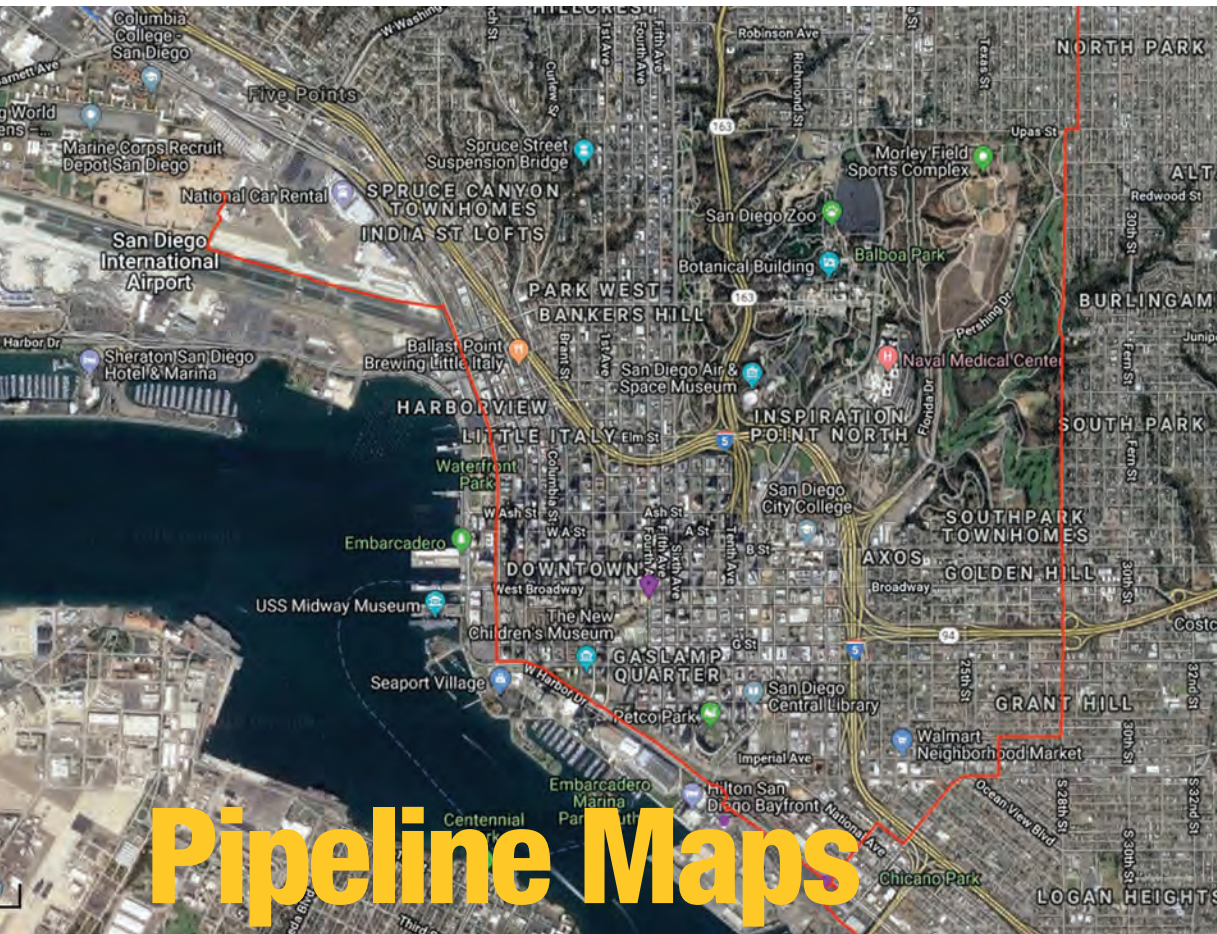


# pipeline awareness

**Safety Information  
for Local Leaders,  
Community Planning &  
Emergency Management**



## In this issue

- Scuba Inspections
- Gold Shovel Communities
- Robot Repairs
- New Firefighter Tools

*The red line in this image shows the location of a hazardous liquids pipeline in California and its proximity to specific roads, neighborhoods and critical facilities.*

*Photo Credit: PHMSA*

## Pipeline Maps Enhance Community Safety

**W**eb-based mapping systems are improving the way communities and pipeline operators analyze and share information. California's Office of Emergency Services (CAL-OES) launched an on-line Geographic Information System (GIS) almost two years ago that layers location-based information in meaningful ways for emergency preparedness and response.

Similar GIS technology is rolling out across the country to help planners and

permitting departments understand the relationship between proposed projects and existing above and belowground infrastructure. The Pipeline and Hazardous Material Safety Administration (PHMSA) provides pipeline maps to federal, state and local officials through the National Pipeline Mapping System (NPMS).

Officials can access pipeline maps in their jurisdiction using the password-protected **Pipeline Information**

### Mapping Management Application (PIMMA).

PHMSA recently updated PIMMA, expanding the information available to government officials online and simplifying the process for obtaining mapping files through the system. PIMMA is now available as a free mobile application from the app stores.

*See page 3 for details regarding how to register for PIMMA.*

**FREE Mapping Webinar! Register at [pipelineawareness.org/news/webinars](http://pipelineawareness.org/news/webinars)**

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# Technology – Improving Safety and Information Sharing

The first pipeline was built in 1879. Today, pipelines form an underground highway system comprised of 2.6 million miles of gathering, transmission and distribution pipelines transporting the energy we use every day in our homes and businesses.

In addition to being safer, pipelines are consistently more reliable than other methods of transportation. Utilizing pipelines instead of additional tanker trucks or rail cars reduces traffic and wear on roads and rails. A single high-volume pipeline can eliminate the need for up to 1,500 tanker trucks every day.

For more than a decade, this publication has served as a trusted information resource for local public officials and has facilitated increased pipeline awareness across the country. Each issue includes reference information and updates on current topics related to pipeline safety.

In this issue, we highlight technologies that are improving public safety, land use planning and information sharing. We also discuss how new industry partnerships with the National Volunteer Fire Council and city leaders in California, Indiana and Michigan are changing the way communities prevent pipeline leaks and prepare to respond if one occurs.

Enjoy this issue!



**Jeff Farrelis,**  
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**Pipeline Association**  
for Public Awareness

16361 Table Mountain Parkway  
Golden, CO 80403

*If you have questions about the pipelines in your community or need additional information from our pipeline members, please fill out the online information request form at*

***[pipelineawareness.org/stakeholder-resources/request-information/](https://pipelineawareness.org/stakeholder-resources/request-information/)***

*Your request will automatically forward to all of our pipeline members in your county.*

**Information Request Form**

Please complete the form below to request additional information from Pipeline Companies. Your request will be forwarded to all Pipeline Member Companies operating facilities in your State/County. Please print the information clearly in each field. All fields must be completed to process information requests.

Organization Name:

State and County:

Contact Person:

Contact Email:

Contact Phone:

Request:

This form may be completed online at:  
<https://pipelineawareness.org/stakeholder-resources/request-information/>

Pipeline Association  
for Public Awareness





# What is a **pipeline** right-of-way?

*A pipeline employee patrols the right-of-way. Rights-of-way provide access to the pipeline for monitoring, maintenance and during emergency situations.*

**A** pipeline “right-of-way” is the land governed by easement agreements put in place with landowners, utilities or government agencies during pipeline construction. Rights-of-way provide access to the pipeline for monitoring, maintenance and during emergency situations.

Easement agreements typically contain certain right-of-way restrictions designed to enhance public safety and protect the pipeline. The following activities are often prohibited within the right-of-way or require special approval from the pipeline operator:

- Building fences, sheds or barns
- Pouring a driveway
- Installing a swimming pool or sprinkler system
- Storing vehicles or flammable materials
- Planting trees, shrubs or gardens
- Removing tree stumps

County officials maintain and can provide copies of easement agreements. Public officials in land use planning or municipal utilities are encouraged

to review easement agreements when making permitting and project decisions.

The federal government provides additional guidance for land use planning near pipelines through the **“Pipeline Informed Planning Alliance”** (PIPA). PIPA tools are available online at <http://bit.ly/PIPA-Tools>

## **PIPA Tools for Planners**

Permitting and planning decisions can impact the community living and working near pipelines.

Check out tools for planners developed by PIPA including:

### **-Land Use Checklist**

Planning, design, communication, permitting and site plan review checklists

### **-Consultation Zones**

Tools to encourage communication between pipeline operators, contractors and land developers in your community

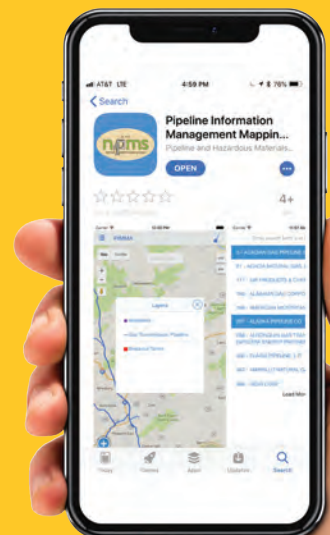
<http://bit.ly/PIPA-Tools>

## **SIGN UP FOR PIMMA**

Don't have access to maps through PIMMA? Apply for access.

<http://bit.ly/AccessPIMMA>

The Pipeline Information Mapping Management Application (PIMMA) provides mapping data layers for local and state officials that are not available to the general public.





## TYPES OF PIPELINES

### GATHERING PIPELINES

collect oil and natural gas from production fields. These pipelines are generally found in rural areas.

### TRANSMISSION PIPELINES

carry larger quantities of energy resources like oil, natural gas and other fuels longer distances from production areas to refineries, processing plants, storage facilities and distribution system connection points.

### DISTRIBUTION PIPELINES

deliver natural gas to manufacturing, commercial and residential customers to produce electricity, provide heat, cook food and run machines that make products and provide services.



# Pipeline Markers

**P**ipeline markers identify the general location of underground pipelines and utility lines and provide critical safety information to the public. Markers include the name of the operator, the product in the pipeline or type of utility line and an emergency phone number.

Pipeline markers do not designate the exact location, depth or number of

pipelines in the area and lines below do not always run in a straight line between markers. Always call 811 before digging near underground lines to have the location of lines marked with stakes, whiskers, flags and paint.

Pipeline markers are located along the path of larger transmission pipelines. Markers may or may not be located continuously along gathering lines or distribution lines. Most gas

service lines that connect to homes and businesses do not have pipeline marker signs.

Markers are protected by federal law, and intentionally damaging one can result in a fine. If you notice a missing or damaged pipeline marker, call the pipeline operator using the number on a nearby sign so it can be replaced.



## New Tools for Volunteer Firefighters

**A** new partnership between the National Volunteer Fire Council (NVFC), pipeline operators and Department of Transportation's Pipeline and Hazardous Material Safety Administration (PHMSA) aims to help volunteer fire fighters prepare to respond to a pipeline emergency in their community.

Pipeline incidents are infrequent, and many volunteer fire fighters will never experience one in their career. Likewise, agencies tend to focus training and drills on more frequently occurring emergencies.

"We want to make pipeline incident readiness a priority," explains NVFC Program Manager Allison Moore. "We want to help strengthen their ability to respond if one occurs."

The NVFC worked closely over the last year with pipeline operators and emergency response experts from PHMSA to create a toolkit for volunteer fire departments. The toolkit includes templates and other resources to support a multi-agency response to a pipeline emergency and align with National Incident Management System (NIMS) standards.

**Access the NVFC toolkit at [nvfc.org/pipelines](http://nvfc.org/pipelines).**



## EMERGENCY RESPONSE

### Is your community ready to respond?

Emergency preparedness tips from Judge Allen Dodson who served as the Local On Scene Coordinator for emergency response during a 2013 pipeline spill in Mayflower, AR.

- Learn and become proficient in the National Incident Management System (NIMS), Incident Command System (ICS) and unified command. Know your role, your duty and the legal limits of your authority.
- Access available resources at the local, state and federal level. Understand how response evolves from the time of the incident through immediate response and then to formal operations by a large, structured response organization.
- Conduct response exercises with pipeline operators. Be involved no matter your role and learn other roles. Be prepared to think on your feet and make decisions quickly with the information you have available.

*Reprinted from an interview with Judge Dodson in 2017.*



# KNOW THE HAZARDS

## PRODUCTS AND FACILITIES SAFETY INFORMATION FOR PUBLIC OFFICIALS

**NATURAL GAS** is a naturally occurring resource formed millions of years ago because of heat and pressure acting on decayed organic material. It is extracted from wells and transported through gathering pipelines to processing facilities. From these facilities, it is transported through transmission pipelines to distribution pipeline systems. The main ingredient in natural gas is methane (approximately 94 percent). Natural gas is odorless, colorless, tasteless and nontoxic in its natural state. An odorant (called mercaptan) is normally added when it is delivered to a distribution system. At ambient temperatures, natural gas remains lighter than air. However, it can be compressed (CNG) under high pressure to make it convenient for use in other applications or liquefied (LNG) under extremely cold temperatures (-260° F) to facilitate transportation.

**PETROLEUM GAS** is a mixture of gaseous hydrocarbons, primarily propane, butane and ethane. These products are commonly used for cooking, heating and other industrial applications. They are easily liquefied under pressure and are often stored and transported in portable containers labeled as Liquefied Petroleum Gas (LPG). When transported in transmission pipelines they may also be identified as Highly Volatile Liquids (HVLs) or Natural Gas Liquids (NGLs). Vaporized LPG may also be found in smaller gas distribution systems. Typically, LPG is a tasteless, colorless and odorless gas. When transported via transmission pipelines it normally will not have odorant added. Odorant is added when LPG is offloaded to a distribution pipeline system or transport tanks to facilitate leak detection. Ethylene and propylene do have a faint natural odor like petroleum.

**PETROLEUM LIQUIDS** is a broad term covering many products, including: crude oil, gasoline, diesel fuel, aviation gasoline, jet fuel, fuel oil, kerosene, naphtha, xylene and other refined products. Crude oil is unrefined petroleum that is extracted from beneath the Earth's surface through wells. As it comes from the well, crude oil contains a mixture of oil, gas, water and other impurities, such as metallic compounds and sulfur. Refinement of crude oil produces

petroleum products that we use every day, such as motor oils and gasoline. Crude oil is transported from wells to refineries through gathering or transmission pipelines. Refined petroleum products are transported in transmission pipelines to rail or truck terminals for distribution to consumers. Odorant is not added to these products because they have a natural odor.

**ANHYDROUS AMMONIA** is the liquefied form of pure ammonia gas. It is a colorless gas or liquid with an extremely pungent odor. It is normally transported through transmission pipelines and is used primarily as an agricultural fertilizer or industrial refrigerant.

**CARBON DIOXIDE** is a heavy gas that is normally transported in transmission pipelines as a compressed fluid. It is a naturally occurring, colorless, odorless and tasteless gas used in the petroleum industry. Under normal conditions, carbon dioxide is stable, inert and nontoxic. However, it can act as an asphyxiant.

**ETHANOL** (also called ethyl alcohol) is a colorless liquid that is widely used as an additive to automotive gasoline. It may be transported in buried transmission pipelines.

**HYDROGEN GAS** is commonly produced from the steam reformation of natural gas. It is frequently used near its production site, with the two main uses being petrochemical processing and ammonia production. Hydrogen is a flammable gas that is colorless, odorless and lighter than air. It is nontoxic, but can act as an asphyxiant.

**"SOUR" CRUDE OIL AND "SOUR" GAS** refer to products containing high concentrations of sulfur and hydrogen sulfide. Products containing little or no sulfur are often referred to as "sweet." Hydrogen sulfide (H<sub>2</sub>S) is a toxic, corrosive contaminant found in natural gas and crude oil. It has an odor like the smell of rotten eggs or a burnt match. Exposure to relatively low levels of hydrogen sulfide (500 ppm) can be fatal.

# LEAK, HAZARD & EMERGENCY RESPONSE INFORMATION

Natural gas  
Petroleum gas  
Petroleum liquids  
Anhydrous Ammonia  
Carbon Dioxide  
Ethanol  
Hydrogen Gas  
Sour Gas (H2S)  
Sour Crude Oil (H2S)  
Liquids & Natural Gas

## INDICATIONS OF A LEAK

SEE - liquid pooling on the ground			●			●			●	●
SEE - a white vapor cloud that may look like smoke		●		●						
SEE - fire coming out of or on top of the ground	●	●					●	●		●
SEE - dirt blowing from a hole in the ground	●	●		●	●		●	●		●
SEE - a sheen on the surface of water		●	●						●	●
SEE - an area of frozen ground in the summer	●	●			●		●	●		●
SEE - an unusual area of melted snow in the winter	●	●			●		●	●		●
SEE - an area of dead vegetation	●	●	●			●	●	●	●	●
SEE - bubbling in pools of water	●	●			●		●	●		●
HEAR - a loud roaring sound like a jet engine	●							●		●
HEAR - a hissing or whistling noise	●	●		●	●		●	●		●
SMELL - an odor like rotten eggs or a burnt match	1	1						●	●	1
SMELL - an odor like petroleum liquids or gasoline		●	●			●			●	●
SMELL - an irritating and pungent odor				●				●	●	

## HAZARDS OF A RELEASE

Highly flammable and easily ignited by heat or sparks	●	●	●			●	●	●	●	●
Will displace oxygen and can cause asphyxiation	●	●		●	●		●	●		●
Vapors are heavier than air and will collect in low areas		●	●	●	●	●		●	●	●
Contact with skin may cause burns, injury or frostbite		●	●	●	●	●	●	●		●
Initial odor may be irritating and deaden the sense of smell								●	●	
Toxic and may be fatal if inhaled or absorbed through skin				●				●	●	
Vapors are extremely irritating and corrosive				●				●	●	
Fire may produce irritating and/or toxic gases	●	●	●	●		●	●	●	●	●
Runoff may cause pollution			●	●		●			●	●
Vapors may form an explosive mixture with air	●	●	●			●	●	●	●	●
Vapors may cause dizziness or asphyxiation without warning	1	1			●		●	●	●	1
Is lighter than air and can migrate into enclosed spaces	●						●			●

## EMERGENCY RESPONSE

Avoid any action that may create a spark	●	●	●			●	●	●	●	●
Do NOT start vehicles, switch lights or hang up phones	●	●	●			●	●	●	●	●
Evacuate the area on foot in an upwind and/or uphill direction	●	●	●	●	●	●	●	●	●	●
Alert others to evacuate the area and keep people away	●	●	●	●	●	●	●	●	●	●
From a safe location, call 911 to report the emergency	●	●	●	●	●	●	●	●	●	●
Call the pipeline operator and report the event	●	●	●	●	●	●	●	●	●	●
Wait for emergency responders to arrive	●	●	●	●	●	●	●	●	●	●
Do NOT attempt to close any pipeline valves	●	●	●	●	●	●	●	●	●	●
Take shelter inside a building and close all windows				2	2			2	2	

**Note (1)** The majority of these products are naturally odorless and only certain pipeline systems may be odorized.

**Note (2)** Sheltering in place is an alternative to evacuation when the products are toxic or the risk of fire is very low.



Photo Credit: PG&E

*The gold shovel presented to Sacramento Mayor Darrell Steinberg is a symbol of the city's commitment to safe digging.*

# Gold Shovel Standard Communities

Reduce Third-Party Excavation Damages

**A** growing number of cities are adopting a new approach to reduce damage to underground pipelines and utilities and improve public safety. Will your community be next?

Carmel, Indiana recently joined the growing list of Gold Shovel Standard Communities after gas lines in the community were damaged more than five times in a week. Each damage impacted

public safety and increased awareness of the city's problem.

Public officials in Carmel put a halt on excavation work and enacted a city ordinance requiring all excavators and sub-contractors to be certified through the Gold Shovel Standard, a nonprofit organization committed to improving workforce and public safety and protecting buried infrastructure. Gold Shovel Standard focuses on training, non-punitive reporting and collaborative partnerships.

"The problem of line strikes must be a shared responsibility among asset owners, locators and excavators," said Carmel Mayor Jim Brainard. "Gold Shovel Standard helps municipalities reduce damages to buried assets – saving lives, maximizing commerce and avoiding wasteful use of municipal resources."

Sacramento Mayor Darrell Steinberg agrees: "In a Gold Shovel Standard Community, everyone wins." Last year, Sacramento signed on as a



# State One Call Law Updates

**States are actively updating their One-Call laws in response to guidance from the Pipeline and Hazardous Material Safety Administration. Review your state's law and see how it compares.**

<http://bit.ly/811Laws>



Gold Shovel Standard Community and it's working. Bids to work on buried utility lines in Sacramento are awarded exclusively to certified contractors. Dig-ins to Pacific Gas & Electric's underground gas and electric lines have declined since the announcement due to increased focus and coordination.

Last year, Michigan announced the first statewide program with plans to roll out the Gold Shovel Standard in at least 100 municipalities by the end of 2020.

**"Gold Shovel Standard helps municipalities reduce damages to buried assets – saving lives."**

"In Michigan, we believe the Gold Shovel Standard compliments our state damage prevention law in unique ways," explains Bruce Campbell, CEO of MISS DIG 811, Michigan's Notification Center for Underground Utility Safety. "In addition to promoting 811 and the One Call safe digging process, we are helping communities embrace the tools and performance metrics offered to Gold Shovel Standard Communities."

Municipalities pay an annual \$1,500 fee to join as a Gold Shovel Standard Community. A hardship waiver is available to qualifying communities. Learn more about how the Gold Shovel Standard can help your city or county and sign up to become a Gold Shovel Standard Community at <http://bit.ly/GSSCommunities>



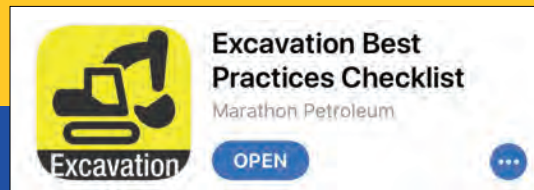
*Photo Credit: Infrastructure Resources*

*This underground utility line was damaged during installation of street signage.*

## **EVERY 9 MINUTES A UTILITY LINE IS DAMAGED**

According to national data analyzed by the Common Ground Alliance (CGA), an underground utility line is damaged every nine minutes in the United States during excavation activity.

Learn more about underground infrastructure damages in your state and across the country using CGA's free interactive data reporting tool available online at <http://bit.ly/DamageData>



## **Free Mobile App Promotes Excavation Best Practices**

Access checklists for safe digging near underground pipelines and utility lines using a free mobile app sponsored by Marathon Pipe Line. The app promotes consensus-driven best practices developed by the Common Ground Alliance with input from municipalities, excavators, locators and utility operators. Search for "Excavation Best Practices" in the app store and download to your phone today.

# Building & Maintaining Safe Pipelines

## Scuba Diver Inspections

Pipeline operators are using drones with infrared cameras, cars with methane detectors and even scuba divers to inspect lines. In this photo, an expert scuba diver inspects an underwater line.



Photo Credit: Enbridge

**P**ipeline operators maintain detailed integrity management plans that include ongoing operations and maintenance activities, right-of-way patrols, in-line inspection, sampling and other activities. They also follow specific engineering, design and construction standards.

Contact the operator's integrity management department directly for an overview of their **Integrity Management Plan** and for more details regarding how they build and maintain safe pipelines. Most operators take the following steps to ensure the safety of their lines:

### ADVANCE PLANNING & CONSTRUCTION

- Evaluating the potential risks posed to the pipeline under different operating conditions
- Designing the strength and thickness of pipelines to adhere to or exceed standards
- Burying new pipelines at or below minimum depths, depending on the type and location of the pipeline
- Coating the pipeline to prevent corrosion and damage
- Installing cathodic protection (a low voltage current that runs over the pipeline) to safeguard the steel from external corrosion
- Examining X-rays depicting the welds of pipe connections for any signs of possible defects or cracks
- Conducting pressure tests to confirm the integrity of the pipe before the pipeline becomes fully operational
- Placing pipeline markers at regular intervals aboveground to visually indicate the presence of the pipeline



## ONGOING PREVENTATIVE EFFORTS

- Monitoring pressure and flow inside the pipeline
- Adding an odorant with a distinctive smell (normally like rotten eggs or a burnt match) to consumer-ready gas distribution systems so people are able to recognize a leak
- Injecting corrosion inhibitors to prevent corrosion from occurring inside the pipeline
- Participating in local one call notification systems and promoting 811 and "Call Before You Dig" messaging to ensure safe digging
- Making sure that all pipelines are properly marked prior to excavation activities
- Inspecting the interior of the pipeline using current technology at regular intervals

- Maintaining a clear right-of-way around the pipeline to accommodate periodic inspections (either by foot or by airplane) to identify any signs of a leak, obstruction or encroachment
- Providing training to pipeline employees to meet qualification standards
- Training emergency responders to recognize a potential release and know how to properly respond



*Above and below: Expert scuba diver and technician inspect portions of an underwater pipeline.*



*Photo Credit: Enbridge*



## Robot Repairs

Robots are crawling through natural gas pipelines operated by Con Edison and National Grid in New York City and elsewhere helping repair and maintain cast iron pipelines in half the time and for less than half the cost of conventional repair strategies.

Gas utility companies worked jointly with a robotics company to develop the robotic cast iron joint sealing system. The robot is outfitted with six cameras allowing technicians to examine the inside of cast iron gas mains and monitor the robot's work.

## COPIES OF MATERIALS PROVIDED TO THE GENERAL PUBLIC OR EMERGENCY RESPONSE OFFICIALS

Pipeline members will send you copies of the materials they provide to the general public or emergency officials in your area.

Email your request to the company contact person listed in the Pipeline Member Directory. Access the directory at <http://bit.ly/PAPAMembers>

## MEMBER INFORMATION

If you have questions about the Pipeline Association for Public Awareness, our programs or need more information from any of our members, please visit [pipelineawareness.org](http://pipelineawareness.org).

You can find information about our members including contact information at <http://bit.ly/PAPAMembers>

## FREE MAPPING WEBINAR

Join your peers for a training webinar led by PHMSA's NPMS team. You'll learn how to apply for PIMMA access, view and read online pipeline maps and request mapping files to integrate into your mapping system.

## DATES

September 18, 2018

February 7, 2019

## REGISTER AT

[pipelineawareness.org/news/webinars/](http://pipelineawareness.org/news/webinars/)

## Additional Information



Resources  
just a  
click away.

## Online Information Request Form

**QUESTIONS ABOUT THE PIPELINES IN YOUR COMMUNITY?  
SUBMIT YOUR INFORMATION REQUEST ONLINE AT**

[pipelineawareness.org/stakeholder-resources/request-information/](http://pipelineawareness.org/stakeholder-resources/request-information/)