

# **REDUCE DAMAGES TO UNDERGROUND UTILITIES WITH HONEYWELL LINE LOCATING**

Our transformative solution, expert service and reliable data can help protect valuable underground utility assets from costly, dangerous and disruptive damages.

**Honeywell**

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# ABSTRACT

Electric, gas, water and telecommunication lines have a few things in common. They provide necessary, basic resources to our homes and businesses. They're heavily regulated by federal and local organizations. And, though some are overhead, they can all be found underground.

Millions of miles of public and private utility networks and infrastructure exist below the surface because the ground provides protection against external forces. It can keep pipelines, wires, cables and other transmission and distribution components safe from extreme water events, downed trees and vehicular collisions. Placing utilities underground also helps increase overhead visibility and property values.

With plans to expand the already vast network of underground infrastructure, however, utilities are up against a growing challenge. Buried utility lines, especially those just a few feet below the surface, are susceptible to utility strikes more than ever because of increased construction projects, lack of reporting and aimless digging. Utility strikes, when a utility line is damaged or hit during excavation, can lead to hazards like electrocution, power outages, leaks, fires, flooding and loss of service.

Accurate utility locates can help excavators reduce the annual rate of incidents and prevent damage to valuable assets. Unfortunately, utilities often lack the resources and expertise needed to locate underground infrastructure with precision. Until now.

Honeywell transforms how utilities locate lines with cutting-edge equipment and expert service, providing accurate, reliable, accessible locate data to utilities. This data — stored in digital libraries that help create updated maps of underground infrastructure — can help prevent damage, protect assets and enhance the safety of excavation projects now and in the future.



# INTRODUCTION: OVERHEAD OR UNDERGROUND?

If you look around a suburban neighborhood, a metropolis or a rural area, you'll likely see overhead transmission and distribution lines that hum with power, delivering energy to public and private premises. What you won't see, however, are the miles of gas, water, electric and telecommunications networks underground. Starting only a few inches below the surface, these utility lines deliver critical resources to homes, businesses and communities worldwide. We don't usually think about them, but they're always there.

In the United States, there are more than 20 million miles of utility lines beneath our feet.<sup>1</sup> And soon, 20 million will become 21 million. Urban development, grid reliability efforts, demand for renewable energy sources and public safety concerns necessitate the burial of more utility lines. While gas and water utility components like mains, transmission lines and pipes are often underground already, electric and telecommunication networks are increasingly located below ground because of the subsurface advantages compared to overhead lines:



## LIMITED EXPOSURE TO THE ELEMENTS

The ground provides protection and reliability against unpredictable environmental conditions and extreme weather events. Utility lines and infrastructure are more likely to remain functional during strong winds, bird strikes, wildfires, thunderstorms, freezing temperatures, heat waves or fallen trees. Sixty-two percent of power outages in the United States occur because of bad weather or trees that contact our 5.5 million miles of overhead utility lines.<sup>2</sup> Gas, water, electric and telecommunications infrastructure can usually continue operating normally despite unfavorable circumstances.



## REDUCED THREAT TO PUBLIC SAFETY

Overhead lines are susceptible to damage from bad weather, contact from fallen trees, construction mishaps and vehicular collisions — about 20% of vehicular collision fatalities result in a vehicle hitting fixed objects like utility poles, transformer boxes and cables.<sup>3</sup>



## AESTHETICALLY PLEASING

When poles and wires aren't visible or near homes, it can increase property values. Underground utilities also lead to unobstructed views, strengthening the visual appeal of public areas and landscapes.

Increased reliability, safety and overhead visibility are standard features with underground utility lines. But these lines don't benefit homes, businesses or communities when they've been damaged. And that happens far too often.

# WHAT ARE UTILITY STRIKES?

One of the leading causes of damage to buried utility lines is utility strikes, the term for what happens when an underground utility line is damaged or hit during excavation by landscapers, construction workers, contractors or even homeowners. In North America, between 400,000 and 500,000 utility strikes occur each year.<sup>4</sup> That's more than 1,000 electric, gas, water and telecommunications lines, cables or pipes that are damaged every day.

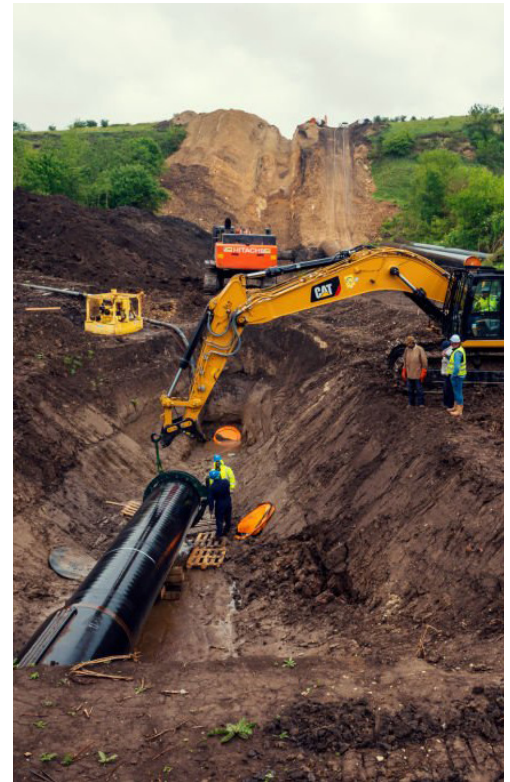
But that's not all. With this massive amount of struck utility lines, there are also considerable financial and safety implications:

- In the U.S., the annual cost of damages to underground utilities amounts to \$30 billion.<sup>5</sup>
  - » There are also more than 2,000 injuries and 400 fatalities from utility strikes and their effects each year.<sup>5</sup>
- In Canada, a fifth of the total damages from utility strikes result in life-threatening injuries, while the societal cost of these damages totals more than \$1.2 billion.<sup>5</sup>

Over time, these statistics haven't improved. In fact, from 2020 to 2022, utility strikes trended upward, putting greater strain on infrastructure, public safety and utilities' costs. Here's the number of **unique damages and events to underground utilities in the U.S. from consistent reporting entries**:<sup>6</sup>



However, reporting is not always consistent — or even completed. That's why there's a disparity between the number of utility strikes that occur each year and the number of reported utility strikes. Failure to report activities that result in utility strikes is also one of three main reasons why these events still occur often, with no signs of slowing down.





Increases in construction, outdated utility maps and failure to alert organizations dedicated to underground utility safety before digging contribute to the steady rise in utility strikes year after year. What's more? These causes are interrelated. Utility strikes are more likely to occur when accumulating construction projects operate with outdated utility maps or without the proper inquiries made to 811 (U.S.) or [clickbeforeyoudig.com](http://clickbeforeyoudig.com) (Canada).

## THE MAIN CAUSES OF UTILITY STRIKES:

### Increases in Construction

Residential, commercial and home-improvement construction rates and building projects are rising monthly, necessitating excavation equipment and heavy machinery that can lay the right foundations for new gardens, porches, pools, patios, homes or skyscrapers. When equipment is misused, projects are rushed or minimal care is put into planning excavations, contractors, homeowners and builders can hit critical utility lines, disrupting services throughout entire neighborhoods and delaying project timelines.

### Outdated Utility Maps

Underground utility maps share precise location details of buried pipelines and cables, serving as a guide on where to dig. But they're largely outdated, inaccurate or incomplete — some maps have yet to be digitized and still exist in their original paper forms. Operating with the wrong data and insufficient

records of where utility lines are located can result in poor planning, operational errors and damages.

- In 2022, 94% of underground utility damages were caused by fragmented, unreliable subsurface infrastructure data:<sup>7</sup>
  - » 67% due to locator error
  - » 14% because of missing/incomplete markings
  - » 10% due to incorrect utility maps/records
  - » 3% because of abandoned/forgotten/out-of-use lines

### No Calls to 811 or No Visits to [clickbeforeyoudig.com](http://clickbeforeyoudig.com)

811 is the United States' nationwide call-before-you-dig phone number that helps provide the approximate location of buried utilities to construction personnel and homeowners before digging.<sup>8</sup> Similarly, [clickbeforeyoudig.com](http://clickbeforeyoudig.com) is an online resource available in Canada to help the same individuals identify utility lines and prevent damages.<sup>9</sup>



# CALLING OR CLICKING BEFORE DIGGING: WHAT IT CAN PREVENT

Underground utility lines are almost everywhere, which is why 811 and clickbeforeyoudig.com are accessible across North America. Both resources are localized, with state- and province-level services that make it easy for homeowners and contractors to request underground utility maps or utility lines to be confirmed and marked by utility companies before starting excavation projects.

Calls and online requests are free of charge because digging before calling 811 or notifying the online service is illegal in some states, like North Carolina. Mandates like this further encourage homeowners and contractors to take steps that limit utility damages, keeping excavators and neighborhoods safe from the potential dangers that can occur when lines are struck:

## ELECTRIC

When electric utility lines are struck, hazards like electrocution, fires, energized buildings or power outages may occur.

## GAS

Striking gas lines, especially high-pressure service pipelines, can cause a natural gas leak in seconds. Not only does the release of natural gas harm the environment, but it can increase the risk of fires and explosions — and disrupt service.

## WATER

Damage to water utility lines can cause leaks (which can then damage other underground utilities), flooding, groundwater contamination and stress on a finite resource.

## TELECOMMUNICATIONS

When telecommunications infrastructure is affected, one's ability to contact emergency services is likely limited. Striking telecommunications lines can also lead to shocks, burns and other life-threatening injuries.

**“Every 9 minutes, an underground utility line is damaged because someone decided to dig first without calling 811.”<sup>10</sup>**

Utilities have a few business days (varies by state and province) to respond to requests for marking utility lines, typically with a spray-and-flag approach. However, despite efforts from 811 and promoting safe excavation practices, utility strikes still create physical hazards and disruption.

Instead of scrambling to fix a damaged line (and dealing with the associated costs), causing service disruptions and risking resource loss and injuries, what if there was another effective way to help prevent utility strikes?

# HONEYWELL LINE LOCATING

At Honeywell, we offer a transformative utility line locating solution and service to utilities to help them reduce the risk of damage to their underground assets. With advanced equipment, accurate technology and skilled service technicians, Honeywell also enables utilities to create efficiencies safely and become leaders of change in the locating industry.

Not only are we a trusted, recognized name in the utility sector, but we are also known for steadfast commitment to continuous innovation and solving customer challenges. Our innovative line locating solution and service is no different, carrying out these commitments with speed and reliability.



## THE SOLUTION

The physical locating equipment and technology fare extremely accurate. With survey-grade, global navigation satellite system data accuracy, **capturing the latitude and longitude of utility locates, lines and infrastructure within 3 centimeters** is possible. Every measurement matters, especially for thin electric lines. The Locate Walk Back Feature also provides exact GIS coordinates of original locations.

## THE SERVICE

Technicians with three to four weeks of intensive, robust training are made available to utilities that need to identify locates. The technicians can expertly use the equipment and are trained to transfer locates and relevant data into a utility's internal GIS system.

## THE BENEFITS

**Efficiencies and Cost Reductions** — Once Honeywell helps verify that a locate is accurate via GIS data points, technicians do not need to repeatedly locate lines. The reliability, accessibility and efficiency of the data from Honeywell's line locating solution **reduce buffer zones** (areas that cannot

be excavated due to potential interference with utility lines), **811 tickets, truck rolls and administrative costs.**

**Identification of Leaks** — The line locating solution and service can help utilities pinpoint resource loss and leaks, saving utilities substantial amounts of time and money.

- » Honeywell's line locating solution and service helped a prominent Southeastern water utility identify a leak within three days after five months of the utility's unsuccessful attempts to find and stop the leak. The equipment provided a clear image of what happened beneath the surface and an exact location that led technicians to the leak's source. Click [here](#) to learn more about Honeywell's line locating success.

**Mapping the Future** — Every time data points are captured during a locate request, they're stored for potential future projects and use. This helps utilities build a valuable **underground digital library**, which improves safety and prevents damages via accurate data on where utility lines are located electronically. This also expedites utility locate requests for urban/residential planning, utility development and routine maintenance.



# THE IMPORTANCE OF LOCATES AND MAPS FOR GAS UTILITIES

Mapping the future — making sure underground utility maps are updated, accurate and complete — is a critical component and benefit of our line locating solution and service, especially for gas utilities in the U.S.

Gas utilities are highly regulated by the U.S. Department of Transportation (DOT) Pipelines and Hazardous Materials Safety Administration (PHMSA) to help ensure greater safety across operations, especially the transmission and distribution of natural gas. PHMSA is responsible for making sure gas utilities are compliant with safety regulations to limit incidents, like utility strikes, and emergencies, like leaks.<sup>11</sup> Because underground

infrastructure is growing in response to increased demand for natural gas — nearly two-thirds of the energy consumed in the U.S. is transported through pipelines, making underground infrastructure more susceptible to strikes and their dangerous effects — gas utilities need updated maps, service records and measurements more than ever.<sup>11</sup>

Thankfully, the Natural Gas Distribution Infrastructure Safety and Modernization (NGDISM) Grant program provides funding to gas utilities that can assist in identifying and reducing natural gas distribution pipeline incidents and fatalities.<sup>11</sup> This funding means gas utilities can use our line locating

solution and service to create detailed, reliable maps of the miles of their underground infrastructure, helping strengthen overall safety.

Currently, Honeywell is helping a natural gas provider in the Southeast update maps of their underground infrastructure after they diagnosed more than 400,000 inaccurate or missing service records. This utility contacted Honeywell because of our experienced locators and cutting-edge equipment, to capture and transfer accurate data into its own GIS system to remediate the inaccurate and nonexistent locates.



**Maximizing precise, reusable data provided by Honeywell's line locating solution and service takes the guesswork out of locating and lowers the chance of utility strikes for all utilities.**

# CONCLUSION: LOOKING AHEAD RIGHT NOW

Protecting millions of miles of unseen yet critical infrastructure is a goal shared by the electric, gas, water and telecommunications utility sectors, by utility solutions providers like us and by key organizations and administrations. Common Ground Alliance (CGA) is one of these organizations.

Since 2000, CGA has helped prevent damage to underground infrastructure in North America.<sup>12</sup> One of its most recent efforts is **50 in 5**, an industry challenge that began in 2023 to reduce damages to buried utilities by 50% in five years via three focus areas:<sup>13</sup>

- Utilizing 811 and [clickbeforeyoudig.com](https://clickbeforeyoudig.com)
- Improving excavator practices
- Accurate utility locating

As a partner focused on safety and quality, Honeywell can help utilities and CGA make 50 in 5 — and other damage prevention efforts — achievable right now by protecting assets and building underground digital libraries with the right data. Our transformative equipment, technology and services help lower the direct costs of damage to buried utilities and reduce the indirect costs and effects for greater safety and reliability.

**WHAT'S UNDERGROUND SHOULDN'T BE  
UNNOTICED. WITH HONEYWELL, IT NEVER IS.**

1. Alliance for Innovation and Infrastructure. "The Longest Running Statistic." 18 August 2020. <https://www.aii.org/the-longest-running-statistic/>.
2. Sentient Energy. "Strategic undergrounding: resources and how to better achieve expected reliability improvements." *Utility Dive*. 11 July 2022. <https://www.utilitydive.com/spons/strategic-undergrounding-resources-and-how-to-better-achieve-expected-reli/626785/>.
3. Insurance Institute for Highway Safety and Highway Loss Data Institute. "Fatality Facts 2022. Collisions with Fixed Objects and Animals." Accessed 21 September 2024. <https://www.iihs.org/topics/fatality-statistics/detail/collisions-with-fixed-objects-and-animals>.
4. Rod Radar. "When Preparing to Excavate, Avoid the Blame Game." 9 April 2024. <https://rodradar.com/when-preparing-to-excavate-avoid-the-blame-game>.
5. Utility Locating Information. "A Global Perspective on Utility Damage and Injury Prevention Statistics." Accessed 22 September 2024. <https://www.utilitylocatinginformation.com/blog/facts-and-figures-about-utility-strikes/#t-1709899549089>.
6. Common Ground Alliance. "DIRT 2022 Analysis and Recommendations." September 2023. <https://commongroundalliance.com/Publications-Media/DIRT-Report/2022-DIRT-Report-PDF>.
7. Ground Penetrating Radar Systems, LLC. "New Report Highlights the Cost of Inaccurate Utility Data in the Construction Industry." Accessed 23 September 2024. <https://www.gp-radar.com/article/new-report-highlights-the-cost-of-inaccurate-utility-data-in-the-construction-industry>.
8. Call 811. "Before You Dig." Accessed 23 September 2024. <https://call811.com/Before-You-Dig>.
9. Click Before You Dig. "Know What's Below." Accessed 23 2024. <http://www.clickbeforeyoudig.com/>.
10. Alliant Insurance Services. "Utility Strikes." Accessed 10 September 2024. <https://alliant.com/media/gcojagwl/pc-utility-strikes-campaign-one-sheet-2023-120-vf.pdf>.
11. Brown, Tristan. "Fueling America's Economy: Legislation to Improve Safety and Expand U.S. Pipeline Infrastructure." U.S. Department of Transportation. 18 January 2024. <https://www.transportation.gov/fueling-americas-economy-legislation-improve-safety-and-expand-us-pipeline-infrastructure>.
12. Common Ground Alliance. "What We Do. About CGA." Accessed 25 September 2024. <https://commongroundalliance.com/Membership-Engagement/What-We-Do>.
13. Common Ground Alliance. "Common Ground Alliance Announces '50 in 5' Industry Challenge to Cut Damages to Buried Utilities in Half by 2028." Accessed 25 September 2024. <https://commongroundalliance.com/Publications-Media/Press-Releases/common-ground-alliance-announces-50-in-5-industry-challenge-to-cut-damages-to-buried-utilities-in-half-by-2028-4>.

## For more information

<https://automation.honeywell.com/us/en/services/smart-energy>

## Honeywell Smart Energy

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FUTURE  
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