

The background of the lower half of the page is a dark grey field filled with several large, semi-transparent, light grey arrows pointing to the right. These arrows are layered and slightly offset from each other, creating a sense of movement and direction.

NEXT

PRACTICES INITIATIVE

Pathways to Improving U.S. Damage Prevention

STATUS REPORT

October 12, 2021

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Introduction

For more than half a decade, the rate of damage to underground infrastructure in the U.S. has increased or remained stagnant. The hundreds of thousands of individual damages that occur across the country each year cost communities approximately \$30 billion annually, according to analysis from the **2019 DIRT Report**.

The Common Ground Alliance (CGA) launched its **Next Practices Initiative** in 2020 to address the damage prevention industry's most persistent challenges and systemic inefficiencies, with the goal of achieving the next significant reduction in damages to buried utilities. The Next Practices Initiative is led by an Advisory Committee of damage prevention leaders and guided by industry data, quantitative surveys and stakeholder input. In February 2021, CGA published the **Next Practices Report to the Industry**, which identified three critical issues standing in the way of preventing damages and proposed four of the highest-ROI opportunities for improving the damage prevention system as a whole (see below).

CGA convened working groups of subject matter experts and stakeholder representatives to evaluate each of the four opportunities for systemic improvement, and this Pathways to Improving U.S. Damage Prevention Status Report summarizes the working groups' deliberations, information gathering and analysis over the last eight months, as well as their vision for the future of damage prevention.

Key findings from the [Next Practices Report to the Industry](#):

Critical Issues

1. Facilities not marked accurately and on time
2. Excavator errors in the field
3. Effective and consistent use of 811

Opportunities for Systemic Improvement with Greatest ROI Potential

- Contractually incentivize adherence to Best Practices and address incidents via effective enforcement mechanisms.
- Pursue an accurate, accessible GIS-based mapping system/database.
- Increase effective implementation of electronic white-lining.
- Utilize technology/software to account for variability in demand (for locates and across the damage prevention process).

A New Cost-Benefit Calculus For Damage Prevention

CGA's Next Practices Initiative set out to clearly identify and focus the industry on the advancement of the most effective solutions to address critical damage prevention challenges, and perhaps the most foundational finding from the Initiative's work has been **how systemic inefficiencies have eroded stakeholder confidence in the damage prevention process**. Because preventing damages relies on the shared responsibility of all stakeholders, restoring confidence in the system – and ultimately reducing damages – will also require each step of the damage prevention process to become more efficient.

Reevaluating the U.S. damage prevention system from this perspective reveals that stakeholders should consider a new cost-benefit calculus: **Underinvesting in safety at the beginning of a project leads to overpaying for damages**. In other words, increasing investments in the damage prevention process upfront will result in avoiding the multitude of costs that result from utility strikes. Throughout this Report, the collaborative work of those involved in the Next Practices Initiative demonstrates how more strategic and integrated investments in damage prevention will drive efficiencies across the system that create better safety outcomes.

For example, investments in accurate, accessible real-time GIS mapping of facilities make the processes of planning/design, notifying facility owners, and locating facilities much more efficient. Contracts with construction and locating vendors can be structured to require adherence to Best Practices, incentivize damage prevention and include more upfront safety investments in exchange for eliminating a great deal of risk. Additionally, investment in technology that can make the locate request process more effective will also improve overall damage prevention efficiency. A greater focus on these investments will yield less overall waste in the system, increase system integrity, and lead to **an overall reduction in costs following a reduction in damages**.

As facility owners, utilities and pipelines can demonstrate leadership in investing in damage prevention by holding themselves accountable to Best Practices and Next Practices to restore confidence in the system. **Facility owners and operators are already paying for inefficiencies in the damage prevention process**. This includes over-notification that occurs when excavators, as well as the utilities themselves, submit additional locate requests to ensure some projects will be ready for excavation at any given time; facility construction and repair work that is delayed by late locates or conducted without adherence to damage prevention Best Practices; and/or costs associated with damages. Collectively addressing common barriers and challenges standing in the way of progress is the most efficient path for advancing the damage prevention industry. By taking a less siloed, more holistic view of damage prevention and upfront investments in safety, damage prevention stakeholders can more strategically direct funding to reduce costly damages.

Industry Call-to-Action

Over the next several pages, the Next Practices initiative details an analysis of barriers and incentives for each systemic improvement identified in its initial [Report to the Industry](#), documents practices or pilot programs that are already in place across the country and are achieving damage reduction goals, and finally identifies pathways for exploring and documenting additional improvements.

However, this Pathways Status Report is not the culmination of the Next Practices Initiative's work; it is instead the first of many stepping stones to incentivize additional innovation in damage prevention. The Next Practices Initiative will continue to document and share leading-edge programs, technologies and solutions that reduce damages. As Next Practices identifies additional systemic opportunities for improvement, the Initiative commits to compiling examples for the industry to work from by documenting practices, reporting data that gauges effectiveness of new practices, identifying related research, encouraging pilot projects and connecting stakeholders.

If your organization has developed an innovative damage prevention approach, practice, program or dataset that addresses a critical damage prevention challenge, please [submit your information to the Next Practices Initiative for consideration](#). We look forward to continuing to document and advance solutions that will move the industry forward in significantly reducing damages to buried infrastructure.

Systemic Improvement

Contractually incentivize adherence to Best Practices and address incidents via effective enforcement mechanisms.

Contracts can be powerful tools in improving safety outcomes and damage prevention efficiency. In its discussions, the Next Practices Contracts/Effective Enforcement Mechanisms Working Group focused on how to contractually incentivize use of Best Practices, the inclusion of reducing or eliminating damages within contracts, and the importance of structuring contracts to consider both safety and efficiency.

Impacts of Weak Contracts

- **Lack of consequences:** Consistent and balanced enforcement undoubtedly drives a higher degree of performance. When there is an environment of weak damage prevention enforcement through regulatory intervention, contracts become an incredibly important mechanism for accountability to Best Practices. Without strong, safety-focused contracts in place that are consistently enforced, there are often few consequences for failing to follow the proper procedures.

- **Erosion of confidence in the system:** When stakeholders observe locate requests not being marked on time, or other excavators failing to adhere to Best Practices, it exacerbates their lack of trust in the damage prevention system as a whole and encourages poor safety practices across the system.
- **Costly damages:** The damages that occur because of nonadherence to Best Practices can be severe, including the potential for injury and loss of life; can be incredibly expensive, in terms of both direct and indirect costs; and can result in reputational damage.

Barriers to Strong Contracts

- **Siloed procurement and damage prevention departments:** Without substantive integration between procurement and damage prevention departments, contracts are often awarded based solely on low price and fail to include meaningful parameters around adherence to safety standards.
- **Buy-in from less regulated facility owners:** Highly regulated facility owners/operators are more likely than their less regulated counterparts to structure contracts in a way that incentivizes good safety outcomes. In addition, highly regulated owner/operators often have an extensive pre-qualification process for vetting contractors' safety performance as a condition to participating in bid opportunities. When selected contractors go to work, they are then required to adhere to Operations & Maintenance (O&M) procedures and training requirements.

Incentives for Strengthening Contracts

- **Better damage prevention outcomes at a lower cost over the long term:** Lowest bid contracts that don't prioritize safety performance are likely to lead to a higher incidence of costly damages, whereas companies utilizing best value contracts are able to reduce overall costs by reducing damages.
- **Environmental, Social and Corporate Governance (ESG):** With increasing pressure on organizations to implement ESG programs, a strong case for a focus on damage prevention exists to improve environmental and societal outcomes.

Documenting Next Practices

- [Southwest Gas: Reducing Utility Infrastructure Damage Frequency Through Best Value Contract Deliverables](#)

Earlier this year, Next Practices published a living case study summarizing the success of Southwest Gas Corporation's use of best value contracts to-date. Unlike lowest bid contracts, best value contracts take a collaborative approach to formally structuring expectations and accountability around safety and quality. By having cross-departmental internal discussions around the company's needs prior to bidding, Southwest Gas holistically determines not only what core deliverables it needs from contractors, but also the damage prevention practices and safety standards that contractors must meet. For example, line locating contract deliverables include metrics for on-time performance of locate requests, while pipeline construction contracts include deliverable language requiring the protection of facilities, and robust quality assurance and control processes.

Then, from pre-bid meetings to regular summits and check-ins between Southwest Gas executives and contractors, the company maintains regular and candid contact with line locating and pipeline construction vendors to troubleshoot and ensure high safety standards. As a result of its comprehensive damage prevention efforts, including implementation of best value contracts for line locating and pipeline construction, **Southwest Gas's damages per thousand tickets ratio has improved from 1.39 in January 2019 to 1.09 in May 2021 - a 21.6% reduction in just over two years.**

Not only are best value contracts delivering safety improvements for Southwest Gas, they are also welcomed by contractors themselves. Read the living case study [here](#) for a full description of Southwest Gas's program, and be sure to stay tuned for updates.

"Since the start of Southwest Gas Corporation's best value contract model, Quanta has seen nothing but positive results in both damage prevention and overall safety improvements. This has been accomplished through Southwest Gas's commitment to engaging all contracting stakeholders to meet regularly to discuss best practices, lessons learned and overall collaboration between all Southwest Gas Corporation's contractors."

-Giff Ludwigen, Senior Vice President, Quanta Services

• Elements of an Effective Locating Contract

The Next Practices Advisory Committee, Next Practices' Contracts/Effective Enforcement Mechanisms Working Group members, and CGA board members collaborated to produce their insights on the elements of effective locating contracts: contracts that are structured in a way that prevents damages and promotes partnership among stakeholders. Next Practices and CGA's Board of Directors also identified contractual elements that negatively impact locating companies' ability to be successful in completing locates accurately and on-time.

According to this analysis, effective locating contracts are long-term (three to five years), results-focused rather than process-focused, and are structured around partnership: regular meetings that include executives, jointly agreed-upon service levels, direct lines of communication between the contract administrator and the contractor, off-season or alternate locating work, joint quality and safety assurance reviews that include root cause analysis, and mutual termination language. Conversely, harmful locating contract structures are those which are laden with financial penalties or in which volume fluctuations driven by the facility owner are unchecked. Read the full Elements of an Effective Locating Contract analysis [here](#).

Pathways Forward

Moving forward, the Next Practices Initiative's Contracts/Effective Enforcement Mechanisms Working Group has identified several pathways for documenting and sharing additional resources for the industry, including:

- Develop and publish considerations for contract selections for each type of contract.
- Issue recommendation to CGA's Best Practices Committee to identify effective contract elements for formal inclusion in the Best Practices Guide.
- Continue to update the Southwest Gas living case study with ongoing metrics regarding financial benefits and improved damage prevention outcomes.
- Identify and document other examples of effective contracts in use.
- Investigate contracts in other industries with unchecked demand, e.g., emergency services/hospitals.
- Document the practice of asking contractors to sign non-disclosure agreements in conjunction with large-scale project coordination meetings, which accomplish the dual goals of avoiding issues around competition while better preparing contractors for safety processes and goals.
- Document contract elements that incentivize Best Practices and address some of the greatest damage root causes as identified by CGA's DIRT Reports, including failure to pothole and failure to maintain clearance.

Systemic Improvement

Pursue an accurate, accessible GIS-based mapping system/database.

The lack of centralized, accurate utility location information makes engineering and locating incredibly inefficient, and thus the damage prevention process as a whole less efficient. The Next Practices GIS-Based Mapping System/Database Working Group's discussions have focused on the need to provide operators with materials that demonstrate that mapping is the best decision for safety and efficiency in both the short- and long-term, the portability of data and best practices related to sharing of data.

Impacts of Inaccurate, Inaccessible Facility Maps

- **Planning and design revisions:** Without highly accurate facility maps, the planning and design phase of projects cannot truly account for existing underground infrastructure, which leads to the need for design changes down the road, additional locate requests, and a higher chance of striking a buried utility.
- **Inefficient locating:** While facility maps should never replace the process of locating prior to excavation, outdated and inaccurate maps make the locating process more time consuming than necessary.
- **Over-notification to facility owners:** Imprecise and/or outdated facility maps can lead to owners being notified by the one call center unnecessarily, overburdening an already overburdened system.
- **Failing to arm excavators with additional safety information:** Currently, very few facility owners are sharing GIS maps of their assets with excavators due to liability and security concerns, despite the fact that access to that information could help improve jobsite safety and should never replace the process of locating prior to excavation.

Barriers to Creating and/or Sharing GIS Facility Maps

- **Lack of political will to share information:** Whether related to competitive, security or liability concerns, there is not a strong industry focus on sharing highly accurate facility location information across stakeholder groups. In some instances, an organization may begin the structural and technical processes necessary to facilitate the sharing of maps only to have the effort paused when leadership changes.
- **Upfront costs:** Initial investments in GIS technology (mapping, software and hardware) and staff (GIS specialists) can be significant, although they are likely to lead to overall financial efficiencies, thus a reduction costs over the life of a project (see below).

- **Technology development:** Seamlessly and automatically sharing GIS facility location data across organizations would require the development of an API to aggregate that information. Additionally, there is a need to develop a data portability standard for facility location data in general, and from locating devices to base maps in particular.
- **Lack of centralized body or stakeholder to own/operate a national GIS database:** Without a trusted organization to maintain and manage access to a comprehensive database of sensitive facility location information, the damage prevention industry is unable to responsibly centralize this data in a way that would eliminate inefficiencies.

Incentives for Creating and/or Sharing GIS Facility Maps

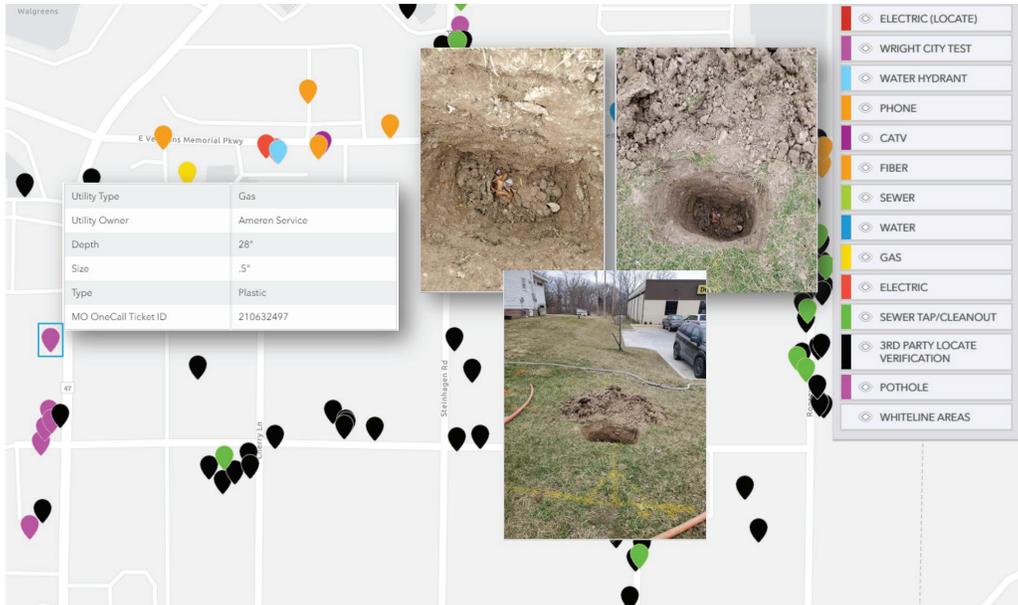
- **Locating efficiency:** As discussed previously, locates can be completed more quickly and accurately when highly accurate facility information is available as a starting point.
- **Excavator safety:** While never replacing the process of locating facilities, providing GIS facility maps to excavators would provide an additional layer of jobsite safety, especially given that 32% of damages are attributed to locating practices in CGA's most recent DIRT Report (2020 DIRT Report).
- **Cost savings over time:** Over time, facility owners can realize cost savings as a result of efficiencies achieved via GIS map-sharing. For example, they will benefit from more precise notification from one call centers (resulting in fewer overall tickets), fewer floods of notifications to facilitate engineering and design processes, less time spent per locate, a reduction in risk, and ultimately, fewer costly repairs.

Documenting Next Practices

- **[UtiliSource: Impact of Accurate, Accessible GIS Mapping at the City Level](#)**

Next Practices published a living case study of UtiliSource's ambitious project to pothole and GIS map the city of Warrenton, Mo.'s, complete underground utility infrastructure in conjunction with its installation of 374,000 linear feet of fiber optic cable. Utilizing specialized locating devices and a mobile web application, UtiliSource was able to record the precise location of third-party locates and UtiliSource-completed locates, as well as the actual depth and location of utilities via the potholes, all within a singular software application. As a result of this process, company leadership estimates that it can achieve approximately 15% better time efficiency on projects where they can begin the planning and design stages with an accurate understanding of the location of buried infrastructure, and cut time spent potholing to verify facilities by 50%.

Read the living case study [here](#) for a full description of UtiliSource’s mapping program in Warrenton. The company is currently analyzing and comparing the accuracy of locates based on its potholing verification and will update the living case study with that information.



Screenshot of the application UtiliSource uses to record and compare locates and potholing data on facility locations and depth.

- **Dominion Energy and GPS/GIS Mapping**

Dominion Energy began implementing GPS mapping of facilities (including retired/abandoned lines) in 2011, significantly increasing the spatial accuracy of newly collected as-built facility location data tied to its GIS maps and continually updating legacy base maps and facility location data with improved spatial accuracy. Dominion publishes all collected GPS and GIS data to a third-party field viewer, which is updated with new data points nightly and allows internal teams to view all facility data, even if it hasn’t yet been mapped into enterprise GIS.

By sharing GPS/GIS facility data with key contractors, Dominion is able to realize process efficiencies: Its contract locators can more easily locate and mark facilities. Other stakeholders may receive PDF facility maps to assist with engineering, planning or excavation, which don’t contain sensitive data on pipe integrity or pressure. Additionally, Dominion’s highly accurate maps (in conjunction with high-resolution imagery from Utah’s Automated Geographic Reference Center) have enabled Blue Stakes of Utah to improve the accuracy of the one call center’s ticket mapping by utilizing Dominion’s non-proprietary land base maps.

• **Spire and GIS Mapping**

Spire initially digitized its facility maps into a GIS system in 2005 and began capturing GIS location data for all new installs from that point forward to create highly accurate facility maps. On a weekly basis, Spire shares updated maps with its contract locators to enable more efficient and accurate facility marking. By regularly uploading updated GIS mapping into its ticket management system, Spire is also able to filter out locate requests that are not close to its infrastructure. The gas distribution company has developed a process for providing PDFs of facility maps to municipalities and engineering firms in the planning and design phases of a project, and occasionally grants requests for PDF maps from excavators. Maps provided by Spire contain a disclaimer that facility information cannot be used in place of locating; company leadership noted that Spire might consider sharing maps more frequently with excavators if there were assurances that excavators would still request locates through the appropriate one call center. Currently, Spire is piloting the use of advanced locating devices that would capture GPS location information of its facilities to achieve the highest possible spatial accuracy in facility maps.

Pathways Forward

Moving forward, the Next Practices Initiative's GIS-Based Mapping System/Database Working Group has identified several pathways for documenting and sharing additional resources for the industry, including:

- Document how other industries and countries have achieved location data sharing without compromising security; e.g., some other countries' damage prevention systems regularly share facility maps within precise, limited geographies.
- Work towards gaining industry support and consensus for the development of a data portability standard being led by the Association of Equipment Manufacturers' (AEM) and Underground Equipment Manufacturers Counsel (UEMC).
- Track and document effective uses of GIS technology, maps and applications as these become increasingly accessible and affordable.
- Continue to highlight how organizations have invested in GIS and leveraged it for improved damage prevention outcomes to demonstrate synergy of benefits across the damage prevention industry.
- Better quantifying the positive impact of sharing GIS facility location data will enable the industry to invest in GIS more consistently.

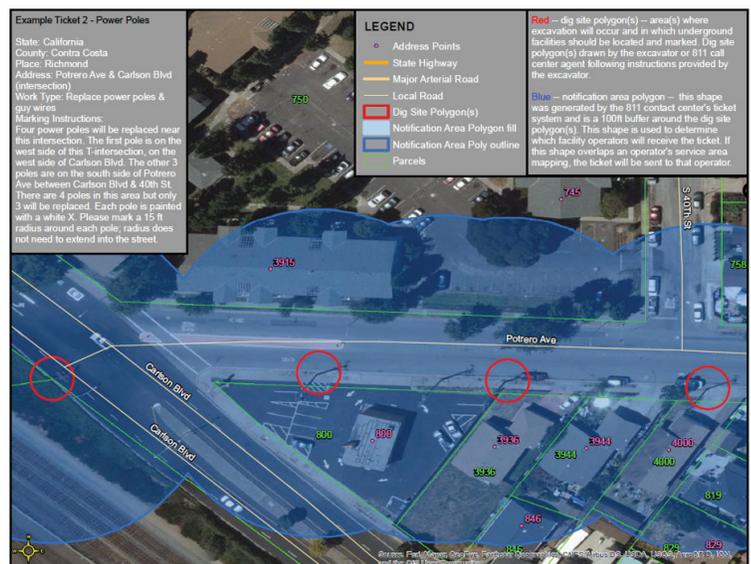
Systemic Improvement

Increase effective implementation of electronic white-lining.

The practice of electronically white-lining a planned excavation site can help prevent damages to buried infrastructure by providing both facility owners and their locators with a highly accurate, internet-accessible visual rendering of the complete area that needs to be located, as well as potentially narrowing the scope or number of tickets delivered to facility owners. The Next Practices Electronic White-Lining Working Group’s discussions have focused on the limited understanding of electronic white-lining (EWL) among some stakeholders; the difference between EWL and virtual white-lining; the benefits of EWL for planning and design, as well as excavation; and the dual goals of narrowing the scope of tickets and/or ensuring the excavation site is accurately defined.

Impacts of Lack of EWL

- Uncertainties in the overall scope of work:** Locate requests that only include a written description of the excavation site leave room for interpretation that can lead to unmarked facilities and ultimately damages.
- Over-notification to facility owners:** A lack of precise EWL can also create uncertainties about affected facilities that can lead to over-notification, overburdening the locating process and creating unnecessary costs for facility owners. For example, in a state that either requires EWL by law or in which the one call center utilizes software enabling EWL, the facility owner and locator would receive a map like the one below, in which the blue area denotes the general notification area based off of the locate request and the red area denotes the precise excavation sites entered by the excavator. In this example, the planned excavation to replace utility poles would occur in very small geographic areas and demonstrates how much time could be saved by incorporating electronic white lining: some facility owners with visibility into the actual excavation scope indicated by the red circles would be able to clear the request without sending out locators, and locators who are required to mark would be able to narrow the scope of their work. In the absence of the full implementation of EWL, facility owners would be responsible for marking the entirety of the blue areas on the map to the right.



Barriers to EWL

- **One call and ticket management software:** One call center and ticket management software have to be engineered to allow excavators to electronically white-line, and for that information to be pulled through to facility owner notifications.
- **Cost of real-time aerial photography:** Accessing high-quality, frequently updated aerial photography is a barrier to moving to an exclusively electronically white-lined damage prevention process that would eliminate the need for excavators to physically white-line dig sites in addition to EWL. In the absence of near-real time aerial maps, physical white-lining is still a Best Practice for ensuring locators understand what facilities need to be marked.

Incentives to EWL

- **Improve excavator confidence in the damage prevention system:** In a CGA survey of excavators fielded in August and September 2021, nearly two in five excavators rated the entire 811 process of getting utilities marked on excavation sites as inefficient (36%), while 70% say EWL can make the 811 process more efficient from ticket submission to the marking of underground utilities. Excavators understand and are excited about the benefits and efficiencies of EWL for the damage prevention process, and increasing implementation of EWL can help improve overall confidence in the system.
- **Reduce system volume:** By more precisely delineating excavation sites, we can reduce the overall number of resulting locate requests and improve the accuracy and timeliness of truly necessary locates.
- **Increase locating efficiency:** Referencing the EWL map on page 13, without the EWL information, a locator could spend a significant amount of time locating an entire city block. But armed with the EWL record, the locator only actually needs to work within extremely precise areas on that block. EWL will save locators, and therefore facility owners, time and money.

Documenting Next Practices

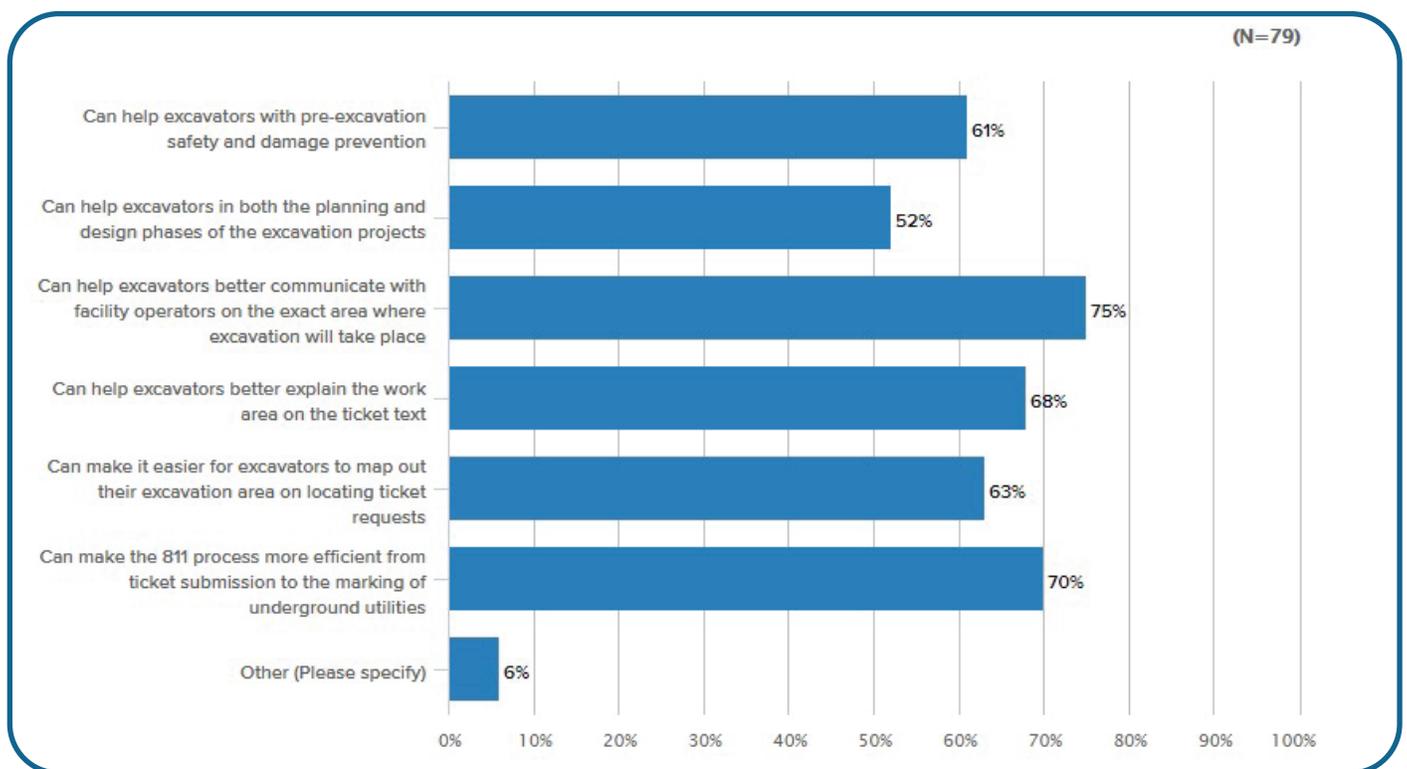
• Gopher State One Call: White-Lining of Excavation Areas by Digital Methods

CGA's 2021 Technology Report documents a case study from Gopher State One Call (GSOC) about its implementation of EWL, noting that incorporating virtual white-lining into the creation of the locate request simplifies the distribution of the information to locate technicians and makes the process of advance identification more cost-effective. In Minnesota, EWL has been helpful to all stakeholders by increasing the accuracy of the excavation area, reducing time per locate, eliminating the need for communication to clarify the excavation site, and producing a record of the white-lined excavation area. The case study notes that EWL is a cost-effective and affordable solution to identify the excavation area.

“White-lining is one of the best communications tools available between the excavator and the locator. Accurately defining the excavation area eliminates wasted effort and overmarking. Electronic or virtual white-lining takes it to the next level and improves efficiency,” notes Terry Fordham, president of UtiliQuest and member of the Next Practices Advisory Committee. [CGA’s Excavator White Paper](#) and [Locator White Paper](#) both note the request for increased communication between excavators and locators in order to reduce damages, reinforcing once again how EWL can not only make the damage prevention system more efficient, but also lead to a reduction in damages. [Read the full case study starting on page 8 of CGA’s 2021 Technology Report.](#)

- **CGA Excavator Survey, August and September 2021: Enthusiasm for EWL**

In the CGA survey of 80 excavators fielded in late summer 2021, most respondents expressed enthusiasm for EWL and its potential for improving their own efficiency, as well as that of the 811 process: 86% are likely to utilize EWL if offered, 87% are interested in learning more about EWL technology, and 70% say EWL can make the 811 process more efficient from ticket submission to the marking of underground utilities.



Excavator Survey Question: When white-lining is required in a state, the 811 process may continue to require locators to physically premark the location of the area before excavation can begin. With this in mind, which of the following do you see being a benefit of electronic white lining? Please check all that apply.

Pathways Forward

Moving forward, the Next Practices Initiative's Electronic White-Lining Working Group has identified several pathways for documenting and sharing additional resources for the industry, including:

- Document USA North 811's EWL implementation as a living case study.
- Identify and document other EWL implementations with meaningful results.
- Document and analyze EWL by state, including measuring and tracking efficiency of EWL over time.

Systemic Improvement

Utilize technology/software to account for variability in demand (for locates and across the damage prevention process).

Unchecked demand on the damage prevention process has created a system that can quickly become overburdened and ineffective when digging activity is high. The Next Practices Report to the Industry noted that leveraging technology to help better manage or predict peak ticket volume could help alleviate pressure on the system as a whole, and on locating and marking in particular. In its discussions, the Next Practices Technology/Software for Demand Variability Working Group has also focused on the impacts of the life of a ticket on remark volume, using notifications to encourage excavators to submit locate requests at optimal times based on predictive analytics, and gathering one call data to look at the largest sources of ticket volume.

While there are existing technologies that can help add flexibility into the locating and marking process, this group's analysis found that there are many legislative and behavioral barriers to leveraging that technology. Despite the rigidity of state damage prevention laws around facility owner notification practices, some damage prevention stakeholders are identifying opportunities to work with excavators to create more elasticity in locating and marking timeframes. In order to adjust the levers of demand on the system, it will be critical for the industry to find additional ways to make the system more flexible and efficient.

Impacts of Unchecked System Demand

- **Lack of demand constraints within the system have led to it being overburdened and unreliable:** There are few other industries that are forced to manage limitless demand for their services within a specified timeframe that cannot be adjusted, regardless of the influx of requests. In U.S. damage prevention, locating issues were

determined to be the root cause of 32% of damages last year, according to the 2020 DIRT Report. With demand on the system continuing to rise, it is critical that we find levers to adjust demand to relieve pressures on locators so that they are able to execute their jobs in an accurate, safe and efficient manner.

- **Influxes of requests make timely locating impossible in some regions:** Again, at peak times of year in certain geographies, there is more locating demand than can possibly be serviced within the constraints of the current system. Hiring and training locators is a time-intensive process, and maintaining a large staff can be a financial challenge during times of year when demand is much lower.
- **Decreases stakeholder confidence in the system overall and may be contributing to persistent damage metrics:** Data in CGA's Locator White Paper indicates that excavators have come to expect late locates, and as a result, either over-notify in an attempt to have at least one job site marked and ready for excavation, or perhaps abandon the damage prevention process entirely. CGA's DIRT Reports note persistent damage root causes that are likely affected by the erosion of confidence in the system, including failure to notify (responsible for 32% of damages in 2020) and insufficient excavation practices (responsible for 30% of damages in 2020), such as a lack of adherence to potholing and maintaining clearance of marked utilities.

Barriers to Leveraging Technology to Manage Demand

• Legislative

- **Inflexible state damage prevention laws allow for unchecked volume into the system and mandate quick turnaround times for member notification and facility marking:** Many one call centers, in cooperation with their facility owner members, have tried to leverage predictive analytics and other technologies to provide excavators with a realistic timeframe for marking or try to normalize demand – but state laws are almost always a barrier to stakeholder efforts to add flexibility into the process.
- **Liability-focused interpretations of state laws by owner-operators encourage over-notification by excavators:** In some instances, where state laws could be interpreted to allow more flexibility for the excavator to not request remarks, facility owners have aggressively pursued damage fines to the point that excavators over-notify and continually request remarks to avoid potential financial penalties.

• Behavioral

- **Facility owners are often primary drivers of system volume:** Data from one call centers reveals that facility owners are primary drivers of system volume. Texas811's data on tickets to-date in 2021 shows that work being performed by or on behalf of gas and electric utilities makes up the vast majority of locate request tickets submit-

ted so far this year. Similarly, data from 2019 through the present from New York 811, which serves New York City and Long Island, indicates that 70% of ticket volume comes from a small handful of entities and is heavily driven by operators. Work performed by or on behalf of facility owners is also a significant driver of re-mark ticket volume.

- **The focus of one call and ticket management software on ease of request submission and ticket updating facilitates over-notification:** Technology may also be enabling over-notification within the damage prevention system, as many software applications for ticket submission and management focus on the ease of entering tickets and the batched requesting of remarks. Many times, with just a few clicks, hundreds of remarks can be requested within these platforms.

Incentives for Addressing System Demand

- **Technology already exists to address many issues:** Predictive analytics and other existing technologies can forecast system volume, allow excavators to voluntarily extend timeframes for locating and marking, flag organizations whose volume increases steeply, and identify the largest drivers of system volume and remarks.
- **Understanding primary drivers of system volume is key to adjusting demand:** In order to leverage existing technologies to influence system demand, it is imperative to understand where that demand is originating. As noted previously, facility owners themselves are primary drivers of ticket volume. Remarks – both from facility owners and excavators – are also often responsible for more than half of all system volume.

Documenting Next Practices

- **Missouri One Call System: Managing Locate Volume via Voluntary Time Extensions**

Missouri One Call System (MOCS) has been utilizing three methods for managing the state's quickly increasing locate request volume: advanced ticketing, extended start time and an extension of the locate request. All three of these methods are designed to allow greater flexibility in the locate request and utility marking processes for all stakeholders involved, and importantly, all three methods are also voluntary, meaning that one or more stakeholders must opt-in or agree to flexible marking timeframes. The impetus for the extension of locate requests in particular was outcry from excavators in Missouri who ultimately passed legislation that created the extension process, which went into effect in 2015.

- **Advanced ticketing:** Excavators and/or facility owners can create a locate request using a future date. When the date draws near, the MOCS online ticketing platform emails the excavator/facility owner asking if they would like to put the ticket into the queue.

- **Extended start time:** When a locate request is generated, either the online ticketing system or the customer service representative asks the excavator when digging will begin, rather than defaulting the ticket timeline to two working days.
- **Extension of the locate request:** Mandated by law, this process requires that facility owners and/or their locators who are not able to locate lines within the correct amount of time use the MOCS ticketing system to request an extension. The extension request contains a new proposed timeframe for the locate and generates an email to the excavator, who can either accept the extension request, reject it or ignore it (ignoring the request defaults to rejecting it). This process allows communication between the excavator and facility owner/locator, and documents the request and response.

Utilizing advanced ticketing, extended start time and an extension of the locate request have helped improve the efficiency of the damage prevention process in Missouri, particularly with regard to timely locates: Approximately 90% of locate requests coming into MOCS provide more than two working days for marking, and approximately 30% of locate extension requests are currently accepted by excavators. Read the full living case study [here](#) for a description of locating and marking flexibility in Missouri.

Pathways Forward

Moving forward, the Next Practices Initiative's Technology/Software for Demand Variability Working Group has identified several pathways for documenting and sharing additional resources for the industry, including:

- Collect data on system volume sources, and on the impact of system volume on locate accuracy.
- Amplify the work of CGA's Educational Programs and Marketing Committee, which is developing a series of videos to demonstrate how the damage prevention process is affected at each step.
- Document additional examples of flexibility within the system, such as MISS DIG 811's plans for "Locate Demand Management" that will notify an excavator of system volume through green, yellow and red notifications.

The Future Of Damage Prevention

CGA's Next Practices Initiative will continue to push the damage prevention industry to find innovative solutions to critical issues and pursue opportunities for improving the system. By documenting novel practices in place around the U.S., as well as looking at damage prevention in other countries and examining other industries that face parallel challenges, **the Next Practices Initiative will highlight successful strategies, technologies, pilot programs and data collection efforts to inspire a collaborative approach to overcoming barriers and making U.S. damage prevention more efficient and effective.**

Be part of the future of damage prevention by sharing your organization's innovative approach to reducing damages. **Submit your information to the Next Practices Initiative via the CGA website** for consideration, and be sure to attend the **2022 CGA Conference & Expo, April 5-8 in Anaheim, Calif.**, to continue the conversation.



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