CGA℠

NEXT

PRACTICES INITIATIVE

Report to the Industry

Next Practices Initiative
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Introduction

In 2020, CGA launched the Next Practices Initiative to encourage innovation and new practices to address the most critical challenges facing the damage prevention industry. The initiative, guided by damage prevention leaders who serve on the Next Practices Advisory Committee, uses industry data, quantitative surveys and stakeholder input to **clearly identify and focus the industry on the advancement of the most effective solutions to address critical damage prevention challenges.**

This **Next Practices Report to the Industry** is the culmination of collaborative discussion, information gathering and analysis. On the following pages, the report identifies three critical issues facing damage prevention that contribute to an increase in facility damages, as well as an erosion of confidence in the damage prevention system. In addition to summarizing CGA research on each critical issue, it analyzes the factors impacting these issues and the resulting inefficiencies of the current system. Most importantly, **this Next Practices Report identifies the strategic opportunities likely to produce the greatest return on investment for the industry**, with the ultimate goal of making damage prevention in the U.S. more effective in keeping people safe during excavation and reducing dangerous and costly damages to buried infrastructure.

Key Findings

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

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

Next Practices Initiative
Background

State of the Damage Prevention Industry

The damage prevention industry finds itself at an inflection point: Stresses on the system have caused inefficiencies, resulting in a process that is not protecting critical underground infrastructure as well as it could or should. According to the 2019 DIRT Report, the estimate of total damages to buried utilities in the U.S. increased 4.5% year-over-year to 532,000. The most recent DIRT Report also noted that **estimated damages are trending upward for a fifth consecutive year despite construction spending remaining flat.** The impacts to damage prevention stakeholders and the public at large are staggering – the societal costs of damages (including direct and indirect costs) in the U.S. are currently estimated at $30 billion annually.

While CGA's Best Practices have helped dramatically reduce damages, much of the "low-hanging fruit" has been harvested and more entrenched problems persist. Industry efforts have focused heavily on building upon or increasing implementation of the best damage prevention practices currently in place – also a condition of inclusion in CGA's Best Practices Guide. The Next Practices Initiative, however, seeks to **encourage the industry to develop and adopt a new generation of innovative solutions to issues that the industry has struggled to address since the original Common Ground Study in 1998.**

We can infer from DIRT data that the damage prevention system is strained: Damages continue to rise despite increasing numbers of transmissions from one call centers to affected facilities, and despite flat construction spending. As underground infrastructure becomes increasingly congested – particularly in urban areas and with the large-scale installation of fiber and migration of legacy overhead utilities to subterranean environments – **stakeholder confidence in system reliability has decreased.** For example, excavators anticipating locating delays may flood the one call system with requests in order to ensure their ability to stay on schedule and be paid in full, which has the unfortunate side effect of overloading locators and contributing to locating delays. To increase reliability, and ultimately efficiency in the system, **the process must work right the first time for all stakeholders**. And as the previous over-notifying excavator and overloaded locator example simplistically illustrates, **to truly improve the effectiveness of the system, it must be evaluated holistically – not in industry silos.**

Vision & Strategy

After evaluating the in-depth analyses of systemic issues and collaborative, cross-industry discussions, the Next Practices Advisory Committee envisions a damage prevention system that:

- **Works for all stakeholders every time.**
- **Ensures effective, efficient and safe excavation around buried facilities.**
- **Results in zero damages.**

This Next Practices Report to the Industry proposes a three-pronged strategy for achieving this vision:

1. **Double down on proven practices.** A key recommendation from the 2019 DIRT Report focused on the importance of strengthening and increasing adherence to Best Practices, and data from CGA's Excavator and Locator White Papers also suggest greater adoption of Best Practices would help reduce damages.

2. **Advance innovative solutions.** The urgency of rising damages demands that the industry adopt and adapt new solutions to our entrenched problems, beyond the types of practices or technologies currently in place.

3. **Eliminate inefficiencies in the system (no bandaid solutions).** There are any number of incremental, piecemeal short-term strategies that temporarily solve specific stakeholders' issues with the damage prevention process, but in order to make the system work for all stakeholders every time, bandaid solutions aren't sufficient – the industry needs to truly eliminate inefficiencies and streamline the process.

Facilities Not Marked Accurately and On Time

Research Summary

A comprehensive analysis of CGA data sources identified accurate and timely marking of facilities as a critical issue impacting rising damage rates. In CGA's 2020 survey of damage prevention stakeholders, **more than 50% selected "facilities not being marked" and "inaccurate line locates" as the most critical damage prevention challenges facing the industry.**

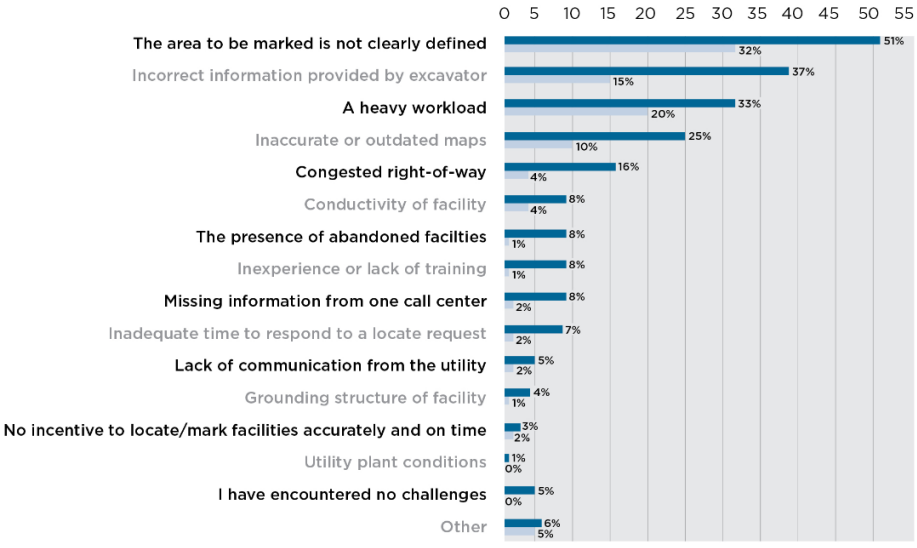
The 2019 DIRT Report added additional credence to the sentiments expressed by surveyed damage prevention stakeholders, particularly when examining damage root causes. "Facility marked inaccurately due to locator error" came in as the third most frequent root cause identified in 2019 DIRT submissions at 10.57% of all damages, and "facility marked inaccurately due to abandoned facility" was the fifth most frequent root cause at 7.29% of all damages. Inaccurate markings due to incorrect facility record/map was identified as the root cause of 2.16% of all damages, coming in at ninth place. **Added together, these locating root causes contribute to over 20% of 2019 damages submitted into DIRT.**

Data from locating stakeholders helps provide important insights into why these issues are occurring, and how non-locating stakeholders impact these issues. CGA fielded research among locate technicians and locating industry decision-makers to inform its 2020 Locator White Paper, and the data is quite instructive on this topic. Locate technicians said the top three issues facing them were that "the area to be marked is not clearly defined" (51%), "incorrect information is provided by the excavator" (37%) and "a heavy workload" (33%). Locating supervisors identified the variability and inefficiency of ticketing processes as primary challenges to managing the volume of tickets against staffing needs. **In short, the pressures on locators are impacting safety** – from rising one call transmissions, to the variation in length of time it takes to locate congested urban areas versus a suburban or rural lawn, to the lack of white-lining and accurate facility maps that would help locators complete markings more accurately and quickly.

LOCATE TECHNICIANS' BIGGEST CHALLENGES

Q: What are the biggest challenges for you and other locate technicians in locating and marking utility lines accurately and on time? (Please select up to three.)

Q: Of the challenges you just mentioned, what is the biggest challenge for you and other locate technicians in locating and marking utility lines accurately and on time? (Note: Respondents were shown their three answer choices from previous question.)



Source: 2019 CGA Utility Locators Online Survey

Critical Issue 1 *(Continued)*

Factors Impacting the Challenge

As referenced in CGA's locating research, there are a variety of factors impacting the challenge of delivering timely and accurate locates – and a variety of stakeholders who have roles to play. The Next Practices Initiative has identified four key factors impacting this challenge:

1. **Increased volume of locates.** Simply put, one call data shows that transmissions from one call centers to member facilities are increasing, thus increasing the volume of locates to be completed. This factor is interrelated with factors #2 and #3 below.
2. **Rate of transmission per dollar of construction spending increasing.** One call transmissions are rising despite construction spending staying flat, seemingly indicating that notification is happening at a greater rate than ever before, but not resulting in better safety outcomes. The increase in notification may be related to factor #3 below.
3. **Confidence in timeliness of locates reduced.** A majority of damage prevention stakeholders surveyed lacked confidence in the locating process, which was also reflected in CGA's research among locating industry decision-makers who noted that "over-notification" is putting pressure on locating. Excavators who don't believe their tickets will be located on time will notify earlier than necessary to ensure that they can dig according to project schedule, which only increases pressure on locators in terms of volume.
4. **Influence of contract and/or relationship structures.** Locating contracts that are structured around ticket volume rather than safety outcomes put the onus on locate technicians to complete tickets, and accuracy may end up falling to the wayside.

Inefficiencies

The Next Practices Initiative has identified several inefficiencies in the damage prevention process contributing to late, inaccurate locates:

- **Locators are not consistently receiving all available information necessary to efficiently locate/mark facilities.** Updated facility maps, increased use of white-lining and accurate information from excavators on tickets would help locators do their jobs with more speed and accuracy.
- **Excavators are often waiting beyond the required time for a site to be marked, which contributes to eroding confidence in the system.** Excavators who are negatively affected by late locates may then become over-notifiers, believing that the system does not work as it should and has to be manipulated so that they can meet project deadlines. Unfortunately, this lack of confidence only places more pressure on the system.
- **Locators are required to respond to a variable workload with a fixed solution.** The current process does not consistently account for variability of locates such as job size and/or complexity of infrastructure. The use of design and planning tickets for large-scale projects (e.g., fiber installs and large commercial or residential developments) and a more flexible ticketing process could help locating companies better manage staffing needs to accommodate influxes of tickets.
- **Abandoned lines impact accuracy of locating.** Abandoned lines present a serious and persistent problem for locators and excavators. Locators and excavators can "do everything right" and still damage a live utility due to the confusion between abandoned (absent from facility maps) and live lines.

Excavator Errors in the Field

Research Summary

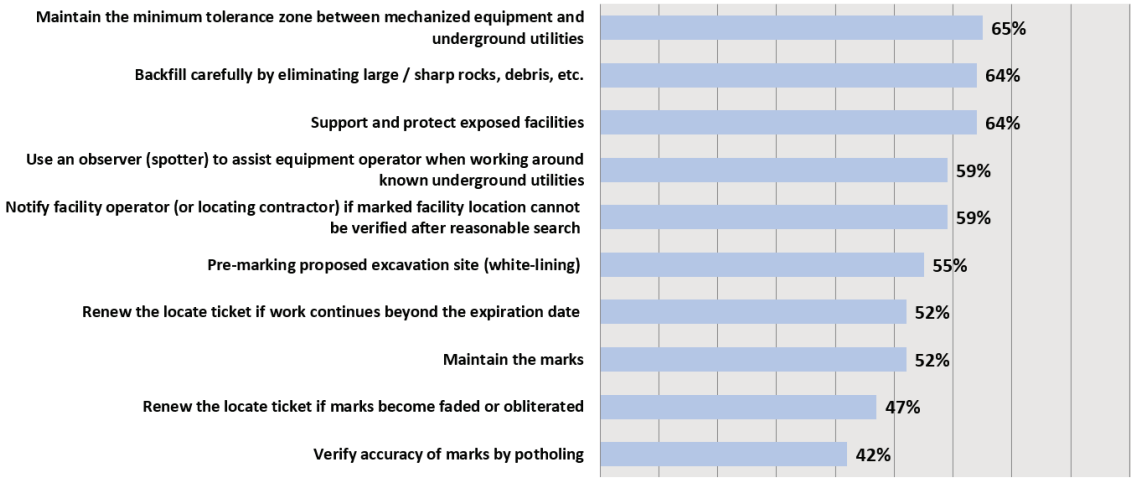
CGA's damage prevention stakeholder survey data, DIRT damage root cause data and excavator research data (reviewed in CGA's Excavator White Paper) identified excavator errors in the field as another critical issue facing the industry. **More than 30% of surveyed damage prevention stakeholders selected "excavator errors in the field" and "lack of potholing by excavator" as the top damage prevention challenges facing the industry.**

Damage root cause data from the 2019 DIRT Report validates damage prevention stakeholders' concerns about excavation practices. **"Excavator failed to maintain clearance after verifying marks" was second only to "failure to notify" as the individual root cause contributing to the most damages** in 2019, with 16.7% of all damages attributed to failure to maintain clearance. The catch-all "improper excavation practices not listed elsewhere" was the sixth most frequent individual root cause of 2019 damages at 4.97%, followed by "excavator failed to shore excavation/support facilities" at number seven (3.9% of all damages). "Excavator dug prior to verifying marks by test-hole (pothole)" was the tenth most frequent root cause of damages at 1.94%. The 2019 DIRT Report recommended strengthening Best Practices associated with some of these excavation issues, particularly potholing.

Finally, the primary research CGA conducted among excavators that informed its 2019 Excavator White Paper confirms that concepts such as potholing/test-pitting, needing to maintain marks or requesting re-marks do not have the same level of awareness and compliance among excavators as notification. Focus groups with excavators revealed that most training occurs informally on the job site, which means poor adherence to critical safe excavation steps is likely to trickle down to new excavators. Of excavators surveyed for the White Paper, only 42% reported always verifying the accuracy of marks – so 58% are not in compliance with that essential Best Practice. **Taken altogether, the available data indicates that excavators are not always taking all the steps necessary to ensure safe excavations.**

EXCAVATOR ADHERENCE TO SAFE DIGGING PRACTICES

Q: For each of the following processes, please indicate if you or someone at your company does this all of the time, most of the time, some of the time, rarely, or never when conducting excavation/digging work. Data shown is all of the time.



Source: CGA's 2018 Excavator Survey

Critical Issue 2 *(Continued)*

Factors Impacting the Challenge

Again, multiple factors and stakeholders impact excavators' adherence to damage prevention laws and Best Practices. The Next Practices Initiative has identified three key factors impacting this challenge:

1. **Excavator confidence in timeliness of locates is reduced.** As reviewed earlier in this report, eroding confidence among excavators in their ability to secure on-time locates may lead to a lack of trust in the system as a whole and a reluctance to adhere to other steps in the safe excavation process.

2. **Employee development and retention continues to be an industry challenge.** Limited formalized training programs may contribute to some excavators lacking awareness of important damage prevention practices. With new excavators constantly joining the workforce, an absence of strong or consistent training and retention programs places inexperienced excavators in risky situations.

3. **Inconsistent communication of requirements and practices for digging within the tolerance zone.** Unspecific or unenforced state laws, and vague Best Practices contribute to the inconsistent messages to excavators about how to properly pothole, maintain clearance and other essential steps to safe excavation.

Inefficiencies

The Next Practices Initiative has identified several inefficiencies in the damage prevention process contributing to excavator errors:

- **Excavators are attempting to increase the likelihood of on-time locates via the current system by calling in multiple requests for job sites, which results in increased inefficiencies in the system.** If excavators had more certainty about timely locates, they would not feel compelled to "over notify" in their attempts to ensure they can dig when needed.

- **Excavators are often waiting for a site to be marked beyond the required wait time, which contributes to eroding confidence in the system.** In response, excavators are overwhelming the system with tickets that may not actually need to be located for weeks in their attempts to be sure they can execute projects on time.

- **Abandoned lines impact excavators' ability to verify marks by potholing**. Again, excavators can attempt to follow each step in the damage prevention process, including potholing, and still cause a damage due to the presence of abandoned facilities that are mistaken for live ones and vice versa.

- **Excavators are not always adhering to the Best Practices.** Failure to maintain clearance and failure to verify facilities via potholing emerge as top damage root causes, as do root causes attributed to the improper use of one call tickets.

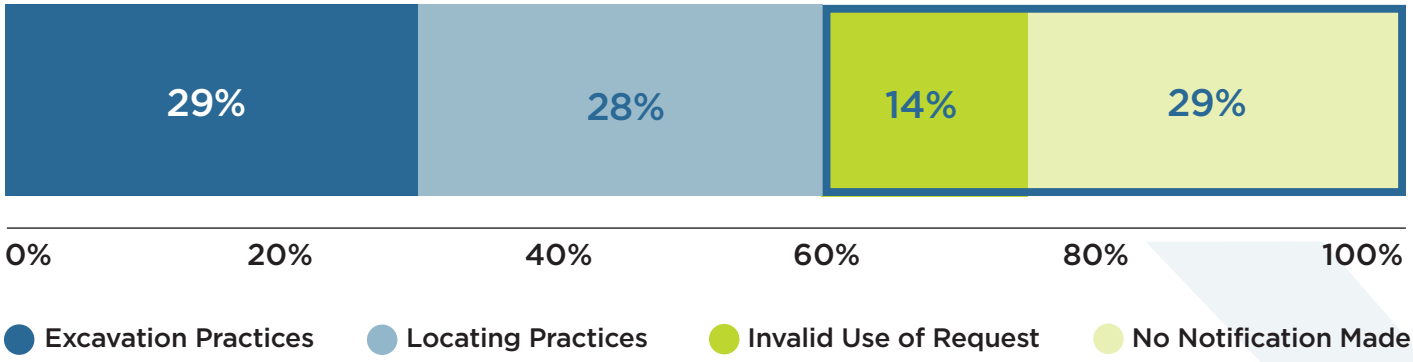
Effective and Consistent Use of 811

Research Summary

DIRT damage root cause data, as well as data from CGA's primary excavator and locator research highlight how the effective and consistent use of 811 is a critical issue facing the industry. **"No notification made" persists as the single largest root cause contributing to damages in the 2019 DIRT Report at 29% of all damages**, and has been the single largest root cause consistently year-over-year. Additionally, a collection of root causes grouped in the "invalid use of request" category accounted for 14% of damages in 2019. Specific practices associated with the "invalid use of request" category include excavators digging before and after tickets' valid dates, excavators digging outside the area described on the ticket, and excavators providing incorrect information in their notification.

DAMAGE ROOT CAUSE GROUPS

% of Total



Source: CGA's 2019 DIRT Report

CGA's locator and excavator research echoes DIRT findings: 37% of locate technicians identify incorrect information provided by the excavator as their biggest challenge, while 25% of excavators say they don't always notify because they already know where buried utilities are. Fewer than half of excavators reported always renewing tickets when marks were no longer present. White-lining the area to be excavated is a CGA Best Practice, but more than half of locate technicians (51%) indicate that their biggest challenge is that the area to be marked is not clearly defined – something that could easily be resolved by electronic white-lining as part of an effective notification process.

Critical Issue 3 *(Continued)*

Factors Impacting the Challenge

The Next Practices Initiative has identified three key factors related to state laws and eroding system confidence that are impacting this challenge:

1. **States have different requirements for tickets.** Excavators who operate across multiple states face a range of inconsistent requirements regarding the length of ticket life, the size/scope of tickets and the time required to locate facilities, as well as differing tolerance zones and other laws governing excavation processes.

2. **Many states require subcontractors to obtain their own locate request tickets even if a general contractor has had the site located.** Despite these kinds of state laws, there is often confusion about which party needs to notify, which can result either in a lack of notification by any party or over-notification by multiple excavators for the same location.

3. **Excavator confidence in the system is eroding.** Late, inaccurate locates and the dangerous complications presented by abandoned facilities are eroding excavator confidence in the system, which may be trickling down to noncompliance with notification requirements.

Inefficiencies

The Next Practices Initiative has identified several inefficiencies in the damage prevention process contributing to ineffective or inconsistent use of 811:

- **Locators are not receiving all available information necessary to efficiently locate/mark facilities.** If excavators provide inaccurate information or do not white-line the area to be excavated, and facility owners do not provide accurate and updated maps, locators are not only facing an overwhelming volume of tickets, but also a dearth of information that could help them operate efficiently.

- **Excavators are often waiting for a site to be marked beyond the required wait time, which contributes to eroding confidence in the system.** This inefficiency is covered in detail throughout this report.

- **Locators are required to respond to a variable workload with a fixed solution.** This inefficiency overlaps with Critical Issue #2.

- **Excavators have no disincentive to request multiple locates in order to begin a project on time.** Despite possibly putting pressure on facility owner, one call center and locating resources, excavators have no reason not to over-notify in their attempts to ensure their ability to dig when desired – particularly as their confidence in timely, accurate locates erodes.

Opportunities for Systemic Improvement with Greatest ROI for Industry

In its pursuit of new and comprehensive damage prevention solutions, the Next Practices Initiative has identified **four opportunities for systemic improvement**. While not an exhaustive list, the Next Practices Advisory Committee believes these opportunities each address multiple critical challenges and will provide the damage prevention industry with the most significant return on its investment in reducing damages in the near term, and provide the most holistic approach to working toward a damage prevention system that works efficiently for all stakeholders.

Stakeholders are constantly working to improve the damage prevention process. However, the opportunities detailed below will most comprehensively address system inefficiencies as a whole, rather than piecemeal or stopgap solutions that may help in the short term, or benefit one stakeholder group while leaving others to fend for themselves.

- **Increase implementation of electronic white-lining.**

  Limiting the scope of areas to be located through precise electronic white-lining can reduce the pressures on locators and increase the delivery of timely locates.

- **Pursue a GIS-based mapping system/database.**

  A comprehensive national GIS map of buried infrastructure would make the locating process drastically more efficient and accurate, and identify abandoned facilities.

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

  Predictive analytics and other technologies can be leveraged to better account for influxes of locate requests, and to identify projects where damages are likely to occur – both of which are likely to reduce damages.

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

  Facility owners can structure contracts with excavators and locate companies to include adherence to Best Practices for better safety outcomes, and more effective enforcement mechanisms will incentivize all stakeholders to operate safely.

Call to Action *(Continued)*

Roadmap to Realizing Systemic Improvements

Following its analysis of stakeholder input, the trend of rising damages to buried utilities and the overall state of the U.S. damage prevention system, **the Next Practices Initiative is now gathering data, case studies and other information to create a concrete roadmap to realizing its proposed systemic improvements**. Supported by CGA and its working committees, the Next Practices Initiative will complete the additional research detailed below over the next six months with the goal of presenting its Pathways to Improving U.S. Damage Prevention report in October 2021 at the **CGA Conference & Expo:**

- **Comprehensive review of CGA Best Practices and applicable common practices.**

  By examining practices that have industry consensus (CGA Best Practices), as well as practices utilized within organizations, states and even internationally, the Next Practices Initiative will use a range of information-gathering techniques to review and analyze the effectiveness of practices pertinent to its proposed systemic solutions to evaluate efficacy, cost and outcomes.

- **Document case studies and implementation examples to provide information on feasibility.**

  The Next Practices Initiative will study cities, regions and/or stakeholders who have already begun to implement proposed systemic solutions to document their impact, provide concrete estimates on costs and benefits, and/or identify ways to improve or tweak implementation as compared to existing efforts. For example, some state laws already require white-lining, and several U.S. cities are attempting to create comprehensive GIS databases of underground infrastructure.

- **Gather and/or source additional data to inform industry implementation.**

  As existing practices, case studies and implementation examples are analyzed, the Next Practices Initiative is likely to identify additional areas for inquiry and new informational needs. The Initiative will source additional data and documentation as needed to help provide the industry with the most concrete direction for holistically improving and restoring confidence in the damage prevention system.

- **Utilize CGA committee expertise to document barriers and identify opportunities.**

  CGA's working committees are well-versed on the impact of systemic inefficiencies and are uniquely suited to support the Next Practices Initiative in gathering information, analyzing research and data, and identifying potential solutions.