



# CGA White Paper

2020

Insights into Improving the Delivery  
of Accurate, On-Time Locates

# WELCOME TO CGA'S LOCATOR WHITE PAPER:

## Engaging a Critical Stakeholder Group

October 22, 2020

Dear CGA Members:

Last year, CGA announced it would be publishing a series of White Papers that would provide data-driven recommendations for improving outreach to key damage prevention stakeholder groups. The inaugural White Paper, released in April 2019, analyzed a range of new and existing CGA resources to provide data-driven recommendations for improving outreach to a crucial stakeholder group: excavators. By combining data from DIRT Reports and public awareness studies with fresh research into excavators' perspectives, awareness and adherence to damage prevention Best Practices, we helped fulfill all three pillars of CGA's strategic mission: Information & Analysis, Education and Stakeholder Engagement.

Today, CGA is excited to announce the release of the next White Paper, which features insights from new research into an equally critical stakeholder group: **locators, including technicians and managers**. Marking the location of buried utilities is a cornerstone of the damage prevention process, and it's clear from a survey of more than 400 locate technicians, and in-depth interviews with 20 locating industry decision-makers, that this stakeholder group is deeply committed to improving the safety of worksites through accurate and on-time locates.

It's also evident from our research that locating stakeholders are struggling to manage the volume of requests. We've heard directly from technicians and those who manage locators - both at contract locating companies and utility operators that directly employ locators - that there are ways that all stakeholders can better share the responsibility to improve the speed and accuracy of locates, and ultimately result in better safety outcomes.

According to the most recent [DIRT Report](#), damages to buried utilities are on the rise across the U.S., and locating issues made up 28% of total damages in 2019. What we've heard from locating stakeholders is that finding ways to collaborate across industries, identifying process inefficiencies and advocating for widespread implementation of existing CGA Best Practices could help substantially improve the accuracy and timeliness of locates - and hopefully reduce the significant portion of damages attributed to locating each year.

I encourage you to share the valuable insights from this CGA White Paper with colleagues in your organization, department, working groups, Regional Partnerships, one call board and Damage Prevention Councils as we collectively work toward our goal of zero damages. Please feel free to contact me or any members of the CGA staff with questions you may have about this report.

Finally, I would like to extend a huge thank you to CGA's locating stakeholders for their enthusiastic participation in this research, and their continued commitment to safety.

Sincerely,



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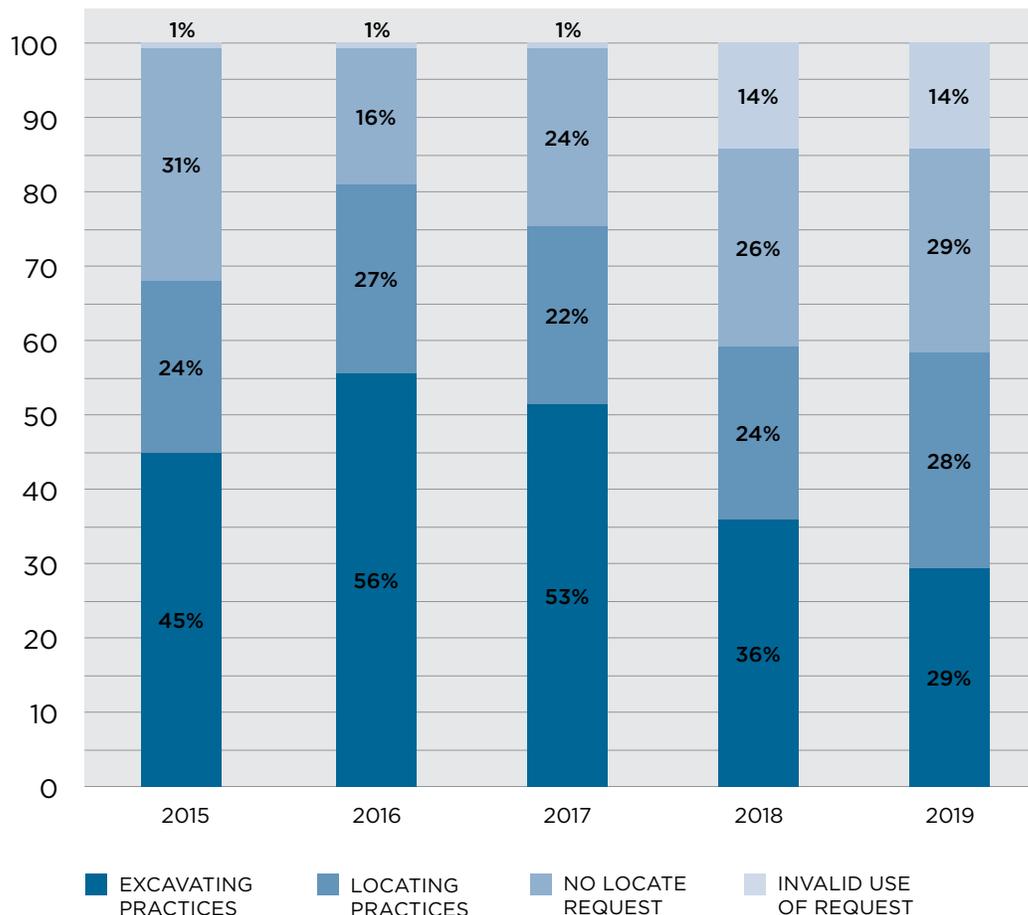
# LOCATORS' PERSPECTIVES ON THE STATE OF THE INDUSTRY

## INTRODUCTION

The damage prevention industry finds itself at a critical crossroads. The Common Ground Alliance (CGA) - through the dedication and hard work of its members - has made significant and lifesaving reductions in the rate of damages to buried utilities over the past two decades. However, as CGA and its mission approach our 20th anniversary next year, it is becoming increasingly clear that as a damage prevention industry, we will need to “dig deep” and find more creative, innovative and systemic solutions to persistent issues.

According to the DIRT Report issued earlier this month, damages to buried infrastructure are on the rise for the fifth consecutive year. In that time frame, the percentage of damages attributed to locating root causes rose to its highest level last year, accounting for 28% of all damages. While it is important to acknowledge that roughly equal percentages of damages were attributed to both excavating practices and no-call root causes (29% each), **locating remains a critical area for improvement as the industry looks to the next generation of damage prevention solutions.**

**FIGURE A: DAMAGE ROOT CAUSE GROUPS, 2015-2019**



SOURCE: 2019 CGA Dirt Report, Page 14

# LOCATORS' PERSPECTIVES ON THE STATE OF THE INDUSTRY

(continued)

It is also important to acknowledge that damage data does not necessarily provide us with a nuanced understanding of what happens in boardrooms or in the field. **To get a more robust perspective, CGA worked with a third-party firm to conduct in-depth research with locating stakeholders,** providing the damage prevention community with locators' views on the state of the industry.

Locating and marking underground facilities are absolutely critical parts of the damage prevention process, and **locating stakeholders are deeply committed to safety** – an attitude that is clear from not only their willingness to participate in this research, but also reflected in what they shared during the process. Through this process, we were able to uncover the candid and thoughtful viewpoints of a range of locating stakeholders.

In this CGA White Paper, our analysis of the locator research provides **valuable insights into the pressures on the locating industry with a particular focus on barriers to accurate, on-time locates.** The goal of the data and key takeaways detailed on the following pages is to help the damage prevention industry better understand not only our fellow locating stakeholders, but also every stakeholder's shared responsibility in achieving timely and accurate locates.

We would like to thank our locating partners for their collaboration on this important research, their unique perspectives on industry pressures and their commitment to damage prevention.

## CGA'S LOCATOR RESEARCH METHODOLOGY

CGA's analysis includes both quantitative (survey) and qualitative (one-on-one interviews) studies with locating stakeholders.

- **Survey:** 402 U.S.-based locate technicians completed an online survey designed to measure their awareness and adherence to safe digging practices, their motivations and influences for providing accurate and timely locates, and challenges facing the industry.
  - **Participants:** Contract locate technicians, utility company locate technicians, private locate technicians and others.
- **One-on-one interviews:** 20 locating industry decision-makers, almost evenly split between contract locating companies and utility companies, participated in one-on-one interviews to identify their priorities, key industry challenges and potential solutions, and perceptions of damages to buried utilities.
  - **Participants:** Supervisors and managers at contract locating companies, as well as those who oversee locating functions either in-house at utility companies or who manage contract locators on behalf of their utility.

Links to the reports on both studies are included at the end of this CGA White Paper.

# KEY TAKEAWAY #1

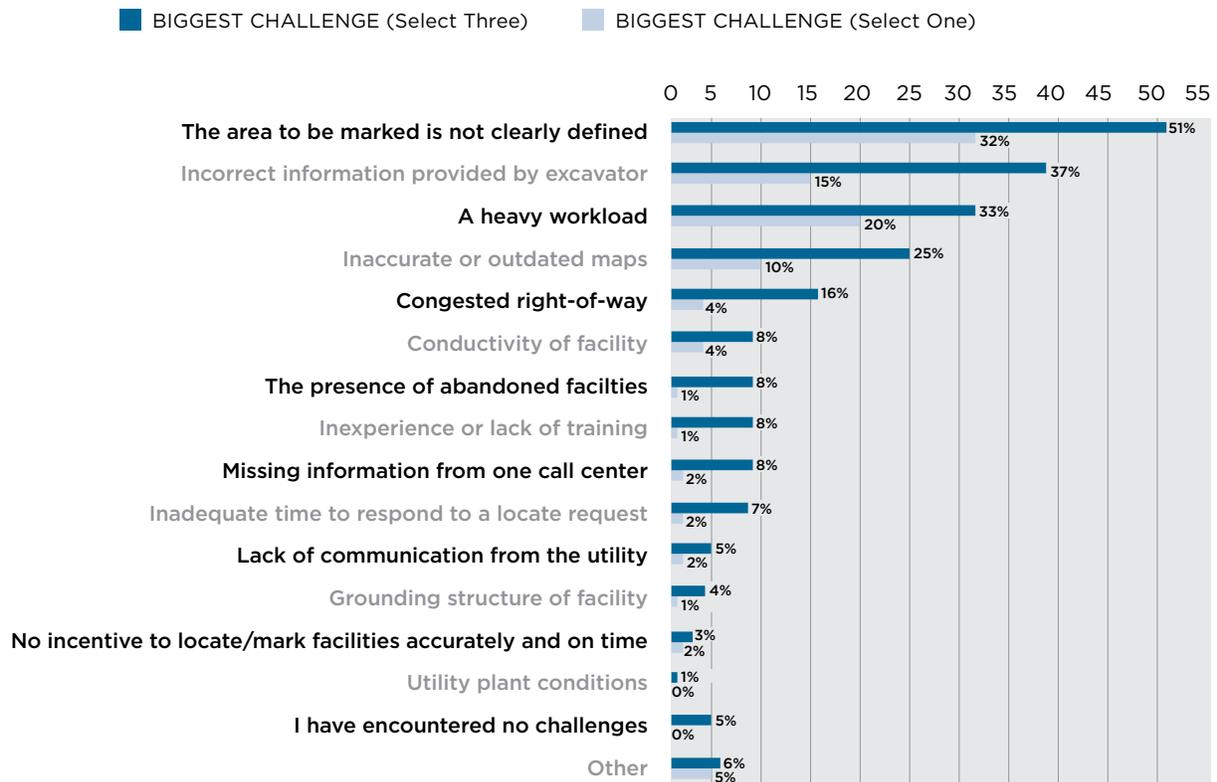
## THE VOLUME AND VARIABILITY OF TICKETS ARE HUGE CHALLENGES FOR THE LOCATING INDUSTRY.

A primary theme that emerged from CGA's locating industry research, which is echoed by the 2019 DIRT Report, is that the damage prevention process envisioned several decades ago must be able to adapt to a rapidly changing industry to effectively reduce damages to buried utilities on a national level.

For starters, **the sheer volume of notifications is putting increasing pressure on locators.** A third of locate technicians point to a heavy workload as one of the biggest challenges to providing timely and accurate locates, with nearly one in five technicians (19%) saying the daily workload is unmanageable (*SOURCE: Survey, slides 13 and 19*).

### FIGURE B: BIGGEST CHALLENGES FACING LOCATE TECHNICIANS

- 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, Slide 13

# KEY TAKEAWAY #1

(continued)

**Notification volume drives a focus on productivity that may not always result in accuracy**, according to the locating decision-makers interviewed. Many locating contracts are priced by volume, creating a productivity incentive that locating supervisors perceive to be a detriment to safety and accuracy. Locating decision-makers cautioned the possibility of “rushing” and “cutting corners” when productivity becomes paramount, as technicians are under pressure to get a high volume of tickets marked (*SOURCE: Interview report, page 11*).

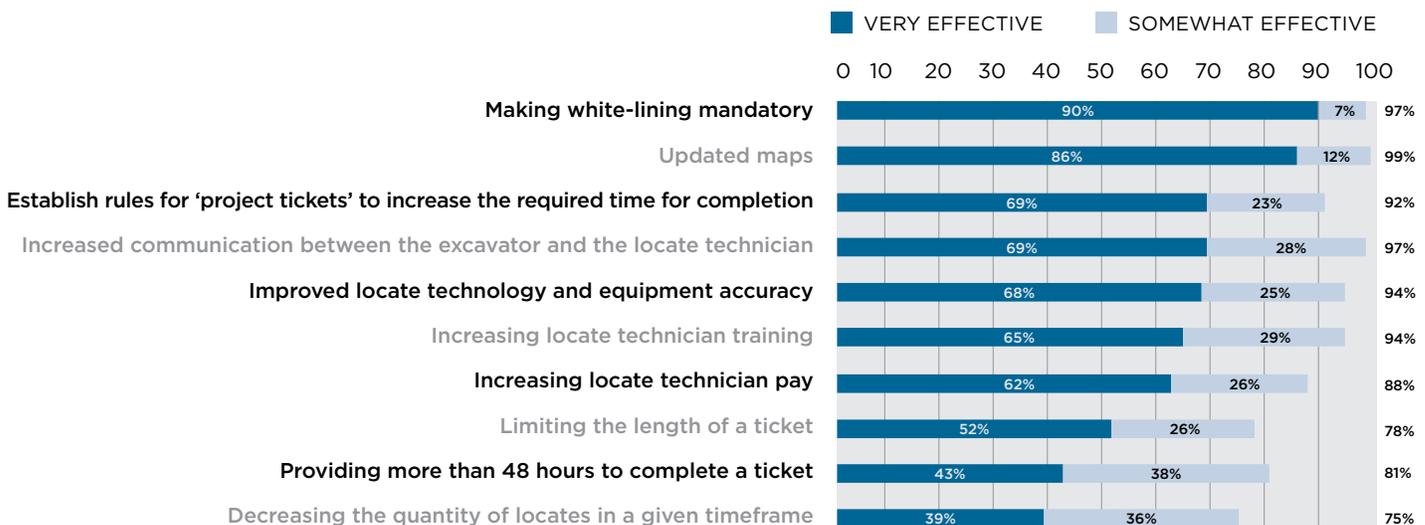
Similarly, those who supervise locators say that **managing ticket volume against staffing is the most significant challenge facing the industry** and point to the **variability and inefficiency of ticketing processes as the primary culprits**. Ticket volume alone is not a sufficient metric to predict staffing needs when, for example, the work required to locate a congested urban intersection is exponentially greater than locating a white-lined 10x10’ section of a suburban lawn. Locate requests that come in well before digging is actually planned, which subsequently require multiple ticket renewals to span the true life of the excavation, are an example of process inefficiencies that contribute to perceived “over-notification” among locating decision-makers (*SOURCE: Interview report, pages 3, 15-16*).

Thus, in order to improve accurate, on-time locates, **technicians point to measures that would allow them to narrow the scope of their locates and move through tickets more efficiently**: white-lining and updated facility maps received nearly unanimous agreement among more than 400 locate technicians as top strategies for improving efficiency (*SOURCE: Survey, slide 20*).

Finding ways to control ticket volume and reduce the variability of tickets could be key to helping the industry more effectively reduce damages related to locating issues.

## FIGURE C: EFFECTIVENESS OF ACTIONS TO IMPROVE LOCATING

**Q:** For each of the following, please indicate how effective each would be in improving likelihood of accurate and on-time locates.



**SOURCE:** 2019 CGA Utility Locators Online Survey, Slide 20

# KEY TAKEAWAY #2

## WHITE-LINING AND UPDATED FACILITY MAPS MAY BE THE DAMAGE PREVENTION INDUSTRY'S MOST EFFECTIVE PATHS TO TIMELIER AND MORE ACCURATE LOCATES.

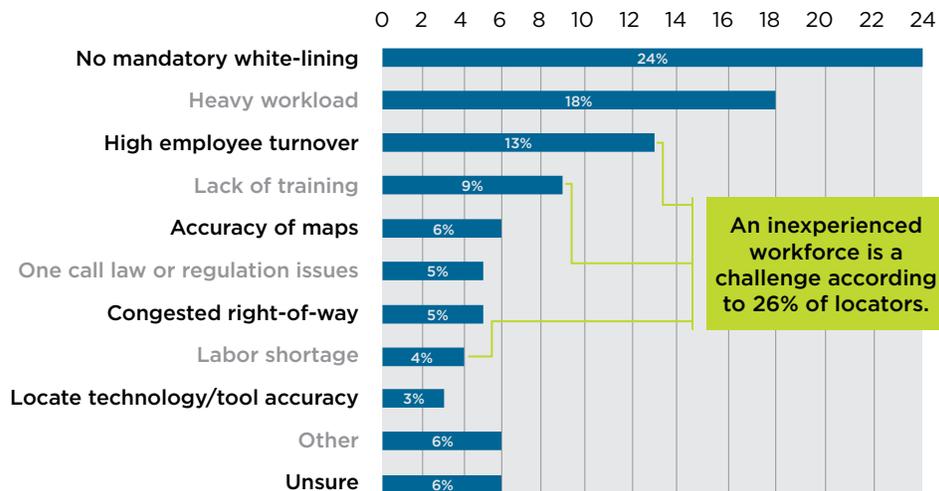
While findings from Key Takeaway #1 point to the need for the industry to rethink the efficiency of the damage prevention process, CGA's locator research also heavily reinforces how **widespread adoption of existing CGA Best Practices could make an immediate impact.**

There is overwhelming agreement among all locating stakeholders that **white-lining and updated facility maps will improve the accuracy and timeliness of locates**, and that a lack of clarity with respect to the area that needs to be located is a contributing factor to late, inaccurate locates.

Among technicians, lack of mandatory **white-lining emerges as the top challenge facing the industry as a whole.** It is identified as the top barrier to accurate and on-time locates and the second-most effective measure for improving locate accuracy and timeliness, only behind updated maps. Technicians also identify inaccurate and outdated maps as the fourth most significant challenge they face, and the fifth biggest challenge for the industry (*SOURCE: Survey, slides 12-13; see Figure B*).

### FIGURE D: BIGGEST CHALLENGES FACING THE LOCATING INDUSTRY AS A WHOLE

**Q:** What do you believe is the biggest challenge facing the locating industry as a whole?



**SOURCE:** 2019 CGA Utility Locators Online Survey, Slide 12

## KEY TAKEAWAY #2

(continued)

The group of locating decision-makers who oversees locate technicians, either within contract locating companies or at utilities, also strongly believes that **white-lining solves ticket issues by narrowing ticket scopes or sizes**, with 19 of 20 saying it would be effective and the vast majority (14) saying it would be very effective. Every locating decision-maker interviewed believes that updated maps would improve locate efficiency, with 15 of 20 believing it would be very effective (*SOURCE: Interview report, page 18*).

**Notably, those tasked with managing locate technicians see these practices as more effective than a range of other solutions.** More interview participants agreed and agreed strongly with updating maps and white-lining than the following strategies: limiting the length of tickets, increasing completion time for complex “project tickets,” providing more than 48 hours to complete tickets, increasing technician training, increasing technician pay, improving the accuracy of technology/equipment and decreasing the amount of locates in a given time frame (*SOURCE: Interview report, pages 19-20*).

The consensus around these processes points to their value as existing CGA Best Practices – and to **the industry’s ability to help locators manage the challenges of increasing ticket volume**. While there is a healthy appetite among the locating industry to make white-lining mandatory via legislation (among ticketing and notification practices codified in state laws), **these practices can also be implemented by excavator and facility owner stakeholders immediately to address the problem in the near-term**. Campaigns reinforcing these Best Practices and directly tying them to the shared responsibility model of damage prevention and the ability to get accurate, on-time locates could be helpful. Exploring the role of notification technologies such as virtual white-lining could also be valuable.

# KEY TAKEAWAY #3

## **RETAINING AN EXPERIENCED WORKFORCE IS LIKELY TO PRODUCE BETTER SAFETY OUTCOMES.**

In addition to process inefficiencies, workforce issues including retention and training emerged as significant barriers within the locating industry according to both supervisors and technicians.

Locating decision-makers describe locating as a “tough” job and see heavy workloads, low wages, and overall lack of awareness of and appreciation for the profession as contributing to difficulties retaining technicians (*SOURCE: Interview report, page 17*).

Technicians agree with this assessment: Both high employee turnover and lack of ongoing training appeared in their reported top five biggest challenges facing the industry. When combining those two concerns with a third factor – labor shortage – **issues related to an inexperienced workforce actually eclipse the lack of mandatory white-lining as the top industry challenge for technicians** (*SOURCE: Survey, slide 12; see Figure B*). Relatively low wages for technicians may contribute to poor retention or affect their perception of locating as a long-term career: 88% of technicians said higher pay would improve the accuracy and timeliness of locates (*SOURCE: Survey, slide 20; see Figure C*).

Why is an inexperienced, underpaid workforce an issue? Our data shows that **younger, less experienced and less “bought-in” technicians may focus on workload pressures more than safety:**

- Locators 18-34 years of age with fewer than five years of experience on the job are more likely to say they have a heavy workload and inadequate time to respond to a locate request. They also place higher priority on the number of locates to complete versus accuracy, safety and other factors (*SOURCE: Survey, slide 4*).
- Similarly, technicians who did not view their current roles as long-term opportunities placed a lower priority on accuracy, safety and timeliness of locates than technicians who are committed to their careers long-term (*SOURCE: Survey, slide 15*).
- Locators who do not view their current position as a long-term career opportunity are also less likely to believe the workload is manageable (*SOURCE: Survey, slide 19*).

One way to give technicians more experience and draw them more deeply into the profession is **improving the frequency of ongoing technician training**, which could also help improve the speed and accuracy of the in-the-field workforce. While 93% of technicians reported receiving training prior to going in the field, 94% said that more training would improve the accuracy and timeliness of locates. Of the technicians surveyed, 19% reported never completing ongoing training and 10% received training less than once a year (*SOURCE: Survey, slides 20 and 23*).

According to interviews with locating supervisors, **highlighting locating as a career could also help improve perceptions of the profession overall and attract a robust workforce.** These decision-makers suggest that community colleges, trade schools and high school tech programs offering locating certifications could help attract and build the workforce (*SOURCE: Interview report, page 27*). While this strategy would likely fall to locating industry players to implement, damage prevention stakeholders can also elevate the role of locators in communications and campaigns.

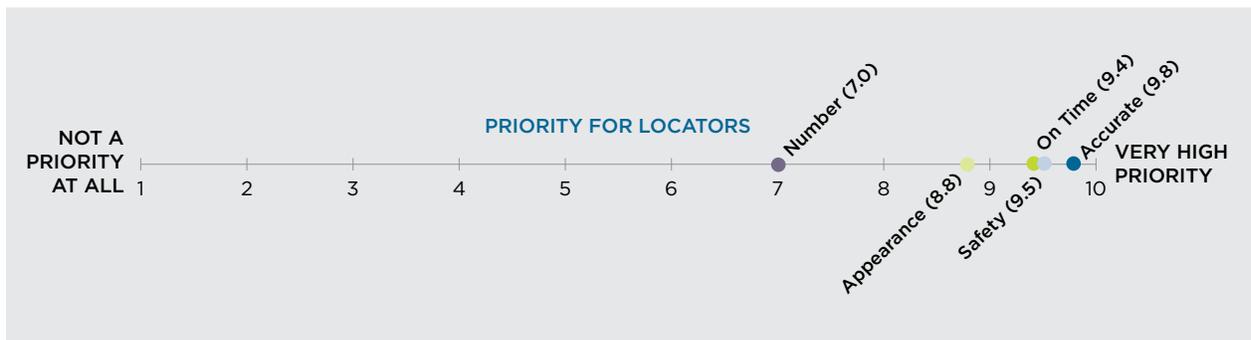
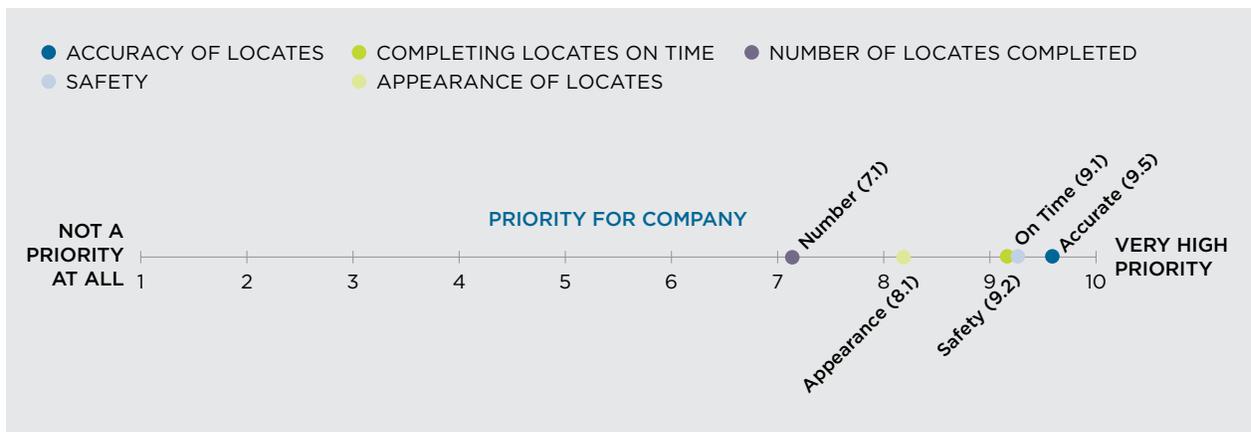
# KEY TAKEAWAY #3

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**FIGURE E: PERCEIVED PRIORITIES FOR LOCATORS AND THEIR PLACES OF EMPLOYMENT**

**Q:** Using the scale below, please indicate the priority you believe is placed on each of the following by your company or organization.

**Q:** Using the scale below, please indicate the priority you place on each of the following in your role as a locate technician.



SOURCE: 2019 CGA Utility Locators Online Survey, Slide 15

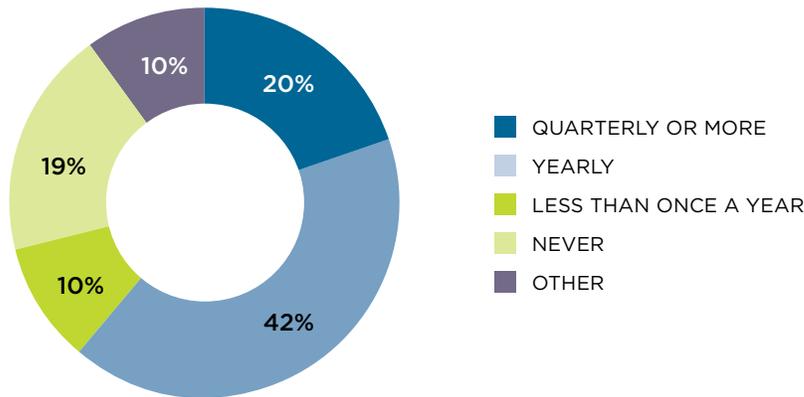
# KEY TAKEAWAY #3

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**FIGURE F: FREQUENCY OF ONGOING LOCATOR TRAINING AND INFORMATION SOURCES**

Q: How often does your company require that you complete continued education training?

## FREQUENCY OF ONGOING TRAINING



Q: What resources do you reference for information on locating and safe digging?

## INFORMATION SOURCES



SOURCE: 2019 CGA Utility Locators Online Survey, Slide 23

# KEY TAKEAWAY #4

## REIMAGINING RELATIONSHIPS BETWEEN KEY STAKEHOLDERS CAN DRAMATICALLY MOVE THE INDUSTRY FORWARD.

CGA is built on the foundational principle that damage prevention is a shared responsibility, and achieving the next significant reduction in damages to buried utilities will require the industry to evaluate opportunities to improve stakeholder interactions.

**For example, providing a path to easier communication between locate technicians and excavators could solve problems both near- and long-term.** Whether via Damage Prevention Council meetings, Regional Partner summits, or even one call ticketing software, the industry should seek ways to enable direct communication between locate technicians and excavators. This was a primary finding from [CGA's 2019 Excavator White Paper](#), and echoed among both locate technicians and managers in our most recent research:

- 97% of technicians identified **increased communication between themselves and excavators as an effective way to improve accurate, on-time locates.** This may be because they view inaccurate information provided by the excavator as the second-most significant challenge they face, and being able to directly ask an excavator questions would enable them to complete their job accurately (*SOURCE: Survey, slides 13 and 20; see Figures B and C*).
- Locating decision-makers' recommendations to increase communication were twofold: at the jobsite level, they agree that open communication between locate technicians and excavators is key to reducing damages; and at the industry level, they are eager to have **high-level collaborative discussions with damage prevention stakeholders to address systemic issues** (*SOURCE: Interview report, page 4*).

**Secondly, rethinking notification requirements and processes could increase the system's overall efficiency and balance the stress of request volume across all stakeholders.** Damage prevention processes seek to ensure the integrity of buried infrastructure and the safety of residents and businesses around that infrastructure – but they also create inefficiencies that may be overburdening locators and excavators. Examples of process inefficiencies include these common scenarios:

- Most states mandate short turnaround times for locates in the interest of getting projects started quickly – but locating an extremely complex and congested ticket is significantly more complicated and labor-intensive than a residential yard and requires more time to complete.
- Many states require that subcontractors obtain their own locate request tickets even if the general contractor on a project has already had a land parcel located, potentially creating confusion about who is truly required to notify, and requiring locators to visit the same jobsite several times for the same project. This is also a CGA Best Practice (Practice 5-6, Separate Locate Requests).

# KEY TAKEAWAY #4

(continued)

- Requirements that tickets are renewed or projects re-marked every 12-15 days could be overly burdensome on both locators and excavators, particularly if active digging has been completed on one section of land and excavators only need re-marks on a smaller portion.
- In anticipation of late locates, excavators may place requests well before they actually intend to dig, creating an artificially accelerated timeline for locate completion and delaying the ability to locate projects that may actually be breaking ground sooner.

**Finally, restructuring locating contracts to encourage accuracy and low damages could produce better safety outcomes.** Conversely, contracts priced by volume incentivize productivity, and locating decision-makers said that they view an over-emphasis on productivity as a detriment to safety and accuracy. Cost is likely a factor: Some of the interview participants feel that contracts structured to incent safety outcomes are more expensive, and therefore struggle to compete financially. In the interviews, utility company participants placed slightly more importance on protecting the facility in the context of safety, while contract locating companies placed slightly higher importance on productivity (*SOURCE: Interview report, pages 3, 11 and 14*). Facility owners should evaluate structuring locating contracts around safety-oriented key performance indicators (KPIs) versus volume metrics, particularly considering the difficulties in correlating ticket volume with workload as discussed in this White Paper.



**If you're going to squeeze productivity too much that means you're going to push your locators harder, and they're going to cut a corner. Something is going to be mis-marked or not marked and that's where damages occur.**

- Locating company interview subject  
(*SOURCE: Interview report, page 11*)



# CONCLUSION

## MOVING THE INDUSTRY FORWARD

Being able to hear directly from locating stakeholders about their challenges and potential solutions provides the industry with invaluable insight into an integral part of the damage prevention process. As locators strive to manage high ticket volumes and navigate increasingly congested buried infrastructure, they have identified specific barriers to increasing efficiency and areas where there is a need to evaluate barriers in the damage prevention process that will help locators do their jobs accurately and on-time.

Locating stakeholders are giving voice to the crossroads where the larger damage prevention industry finds itself: Damages to buried utilities are trending upward, while the slices of the damage root cause pie chart are equalizing. The low-hanging fruit has been harvested, and now we as an industry need to take a deeper, more nuanced look at how the system is structured in order to reverse the damage trend.

This CGA White Paper and the other resources linked below highlight critical damage prevention data and analysis that will help advance the next dramatic reduction in damages to buried utilities. These resources are also informing the work being done via CGA's Next Practices Initiative, which will encourage innovation and new practices to address the most critical damage prevention challenges.

We encourage you to review the reports and resources listed below and share them with your colleagues. If you are not currently a CGA member, consider becoming a member of the Common Ground Alliance, submitting data to the [Damage Information Reporting Tool \(DIRT\)](#), getting involved with a [CGA committee](#) and attending the [2021 CGA Conference & Expo](#) - these are the venues where the damage prevention industry will be charting our collective path forward.

## ACCESSING CGA RESEARCH REPORTS

CGA members can access the two new locator research reports on which this White Paper is based:

- [SURVEY: Utility Locators Online Study](#)  
This deck reviews findings gleaned from 402 U.S.-based locate technicians who completed an online survey designed to measure their awareness and adherence to safe digging practices, their motivations and influences for providing accurate and timely locates, and challenges facing the industry.
- [INTERVIEW REPORT: Utility Locator Management Qualitative Research](#)  
For this report, 20 locating industry decision-makers participated in one-on-one interviews to identify their priorities, key industry challenges and potential solutions, and perceptions of damages to buried utilities. Interviewees included supervisors and managers at contract locating companies, as well as those who oversee locating functions either in-house at utility operators or who oversee contract locators on behalf of their utility.

# CONCLUSION

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Additional CGA data resources and reports available to members and referenced in this report include:

- [2019 DIRT Report and Tools](#)

CGA's annual DIRT Report estimates total U.S. damages and provides granular insight into the circumstances surrounding damages and near-misses to guide industry actions.

- [CGA White Paper: Data-Informed Insights and Recommendations for More Effective Excavator Outreach](#)

CGA's inaugural White Paper, published in 2019, focused on the excavator stakeholder group and offered recommendations to the industry on improving outreach to this group based on deep qualitative and quantitative research.



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