



DJRT

Damage Information Reporting Tool

SPECIAL REPORT

UNCOVERING CONTRIBUTING FACTORS TO LOCATING PRACTICE ERRORS

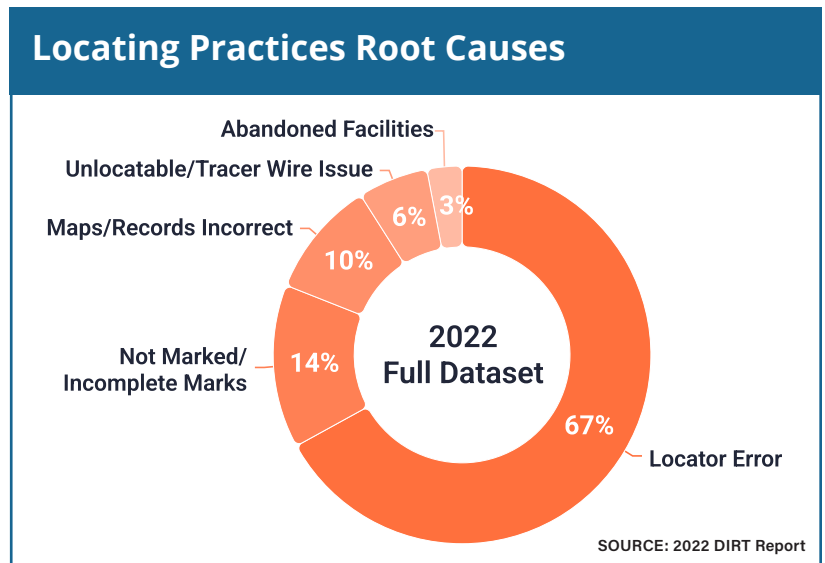
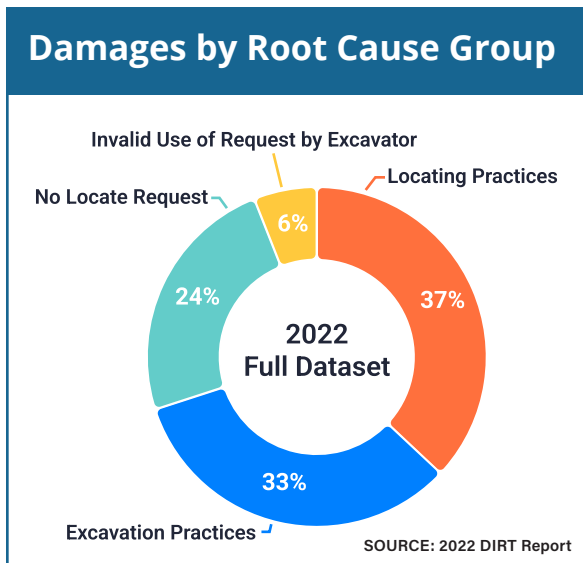


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This DIRT Special Report examines a critical issue – locating practices, identified as the leading known root cause of damages in the **2022 DIRT Report**. The DIRT Report also analyzed data from seven states to reveal that as often as 56% of the time, excavators cannot legally begin work on their planned start date as a result of late or no locates.

The **2022 DIRT Report** revealed that two-thirds of damages attributed to locating practices specify locator error as the root cause – a catch-all option which is often selected when a more specific root cause is not collected. **Locator error could be “masking” underlying deeper root causes such as mapping and abandoned facility issues.**



Although mapping issues account for only 3.7% of root causes in DIRT data (a figure extrapolated from the two graphs above), CGA’s **2020 Locator White Paper** revealed that **survey respondents identified updated maps as a top action to improve accurate and on-time locating.** Mapping issues are likely more widespread than DIRT figures suggest.





This CGA DIRT Special Report includes three case studies that take deeper dives into real-world issues surrounding locating practices. Regular readers of CGA DIRT Reports, Technology Reports, White Papers, and case studies, and attendees at CGA's Committee Summits and annual conferences, will be familiar with these broad topics:

- Late (or never) locates
- Excavators submitting “just-in-case” alternate work site locate requests
- Locator workload fluctuations, staffing and retention levels
- Forecasts for increased construction spending in the coming years
- Spotty enforcement of state regulations
- “Noise” in the system (ticket life extensions for work that is finished, all operators on a ticket getting updates when only one is affected)

As you read these case studies, you will notice these issues surfacing. The contributors and topics covered are:

- **Google Fiber’s efforts to coordinate with 811 centers, locators and fiber-installation sub-contractors on large fiber and network build projects.** This study looks at steps taken in 10 states to reduce over-notification, reduce project delays and improve efficiencies for all involved stakeholders.
- **The Massachusetts Department of Public Utilities’ (MA DPU) proactive enforcement on facility operators that were failing to complete markouts on time.** As an alternative to monetary penalties, the MA DPU had operators develop corrective action programs to address the underlying issues.
- **North Carolina 811’s (NC811) analysis of the effects of ticket screening.** This study examines tickets that were initially “cleared,” but then re-issued because the excavator found evidence of unmarked facilities at the work site, and how many of those tickets were associated with DIRT-reported damages.

While the Google Fiber and Massachusetts cases highlight improvement steps, the North Carolina case study **identifies a potential issue needing further analysis and solutions from operators and locators.**



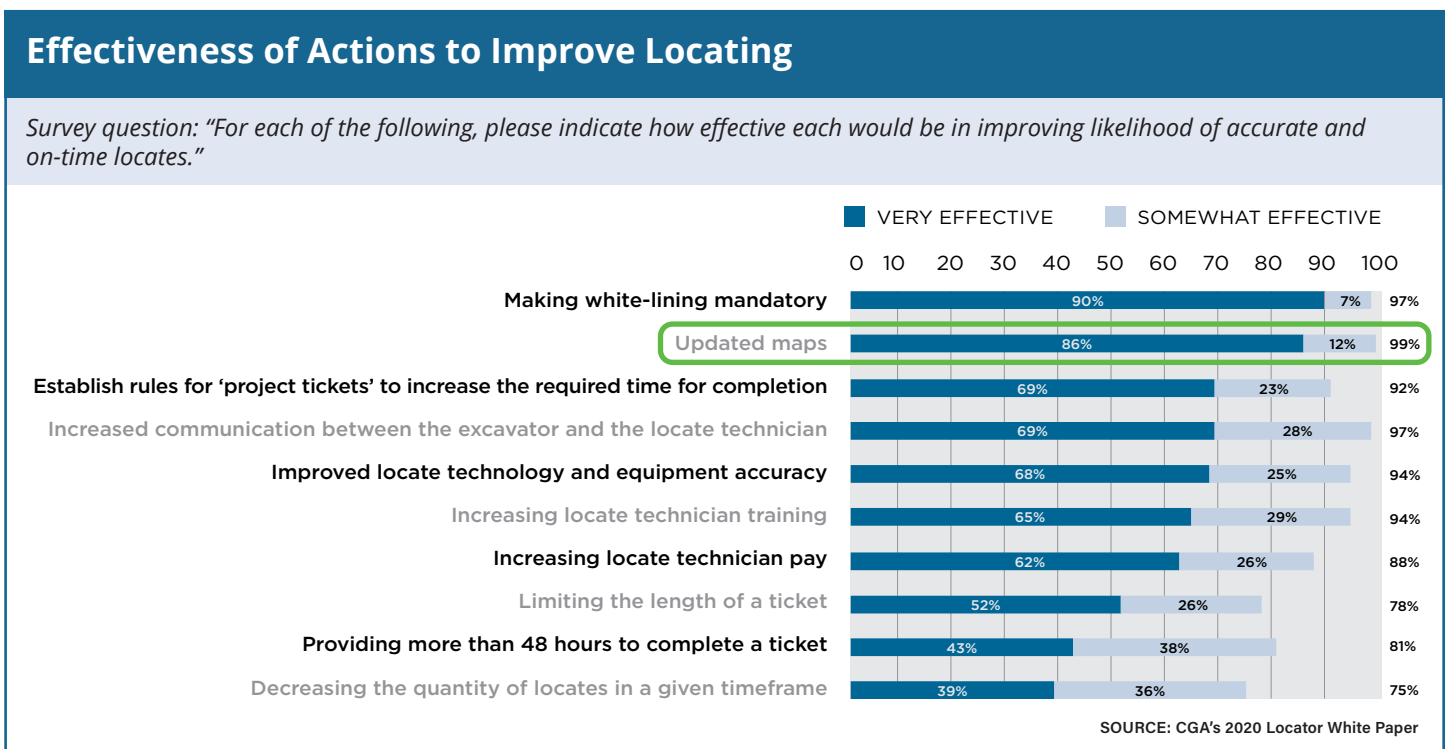
DIRT Root Cause Comments

Common root cause free-text comments from the full 2022 DIRT data set (not exclusive to North Carolina) reveal “ticket screening” as a recurring factor, where tickets are prematurely cleared despite underlying unmarked facilities. Searching on key words **screen**, **clear**, and **no conflict** in the 2022 data reveals that it’s a fairly common occurrence¹:

- Dig ticket **cleared** by One Call Center
- Dig ticket **cleared** by **screeener**
- Dig ticket **cleared**. Cut placing fence by owner at address. No paint visible on telephone facilities
- Locate was **screened** out. This claim will be canceled
- Unsure if it was **screened** by ...or they didn’t get there to locate
- Ticket **screening**
- They had a **clear** locate ticket that was **screened** by utility owner
- Locator **cleared** ticket
- Locator mistakenly **cleared** site of conflict
- Locator responded as **No conflict/cleared** ticket
- Locator responded **no conflict** adjacent facilities
- Mismarked, not at fault. Marked **no conflict** twice by... 3-hour ticket noted unmarked...facilities
- Locator statused ticket as “**clear/no conflict**”
- Ticket had a **no conflict** for the Gas service and no markings were present
- Operator coded **no conflict**

¹ In some cases these phrases are found in multiple reports.

Improper screening may stem from systemic issues like outdated maps, business practices, and/or aggressive screening policies aimed at reducing workloads, despite risks. CGA’s goal in presenting these case studies is that damage prevention professionals can learn from the experience of these three members and identify ways to reduce their own damages.



Google Fiber (GFiber) Proactive Partnership: The Value of Utility Owner Coordination with State 811 Agencies, Excavation Vendors and Locate Companies for Large Projects

SYNOPSIS

- GFiber reviewed how it is impacting locate demand when executing large installation projects concurrently with other operators.
- The company collaborated with 811 Centers, locating companies, other operators and excavation vendors to improve coordination and increase efficiency.
- Updated process and increased coordination resulted in a 39% reduction in GFiber project locate delays.

Internet services providers, cable companies and telecommunications companies continue to upgrade copper plant to fiber and build new broadband networks. The Infrastructure and Jobs Act has authorized \$1.2 trillion for transportation and infrastructure spending. Of that total funding, the Broadband Equity, Access, and Deployment (BEAD) program will make \$42.5 billion dollars available for incumbents and new entrants to expand broadband networks to reduce the digital divide.

As a result, the volume of utility locate requests is forecasted to grow at an



annual rate of 15% to 20% over the next four years, putting additional strain on an already overloaded system. As our industry aggressively works to deliver expanded broadband services, there will be unintended negative impacts. The pressure from increased construction activity is already being felt by 811 centers, network operators and utility locating companies.

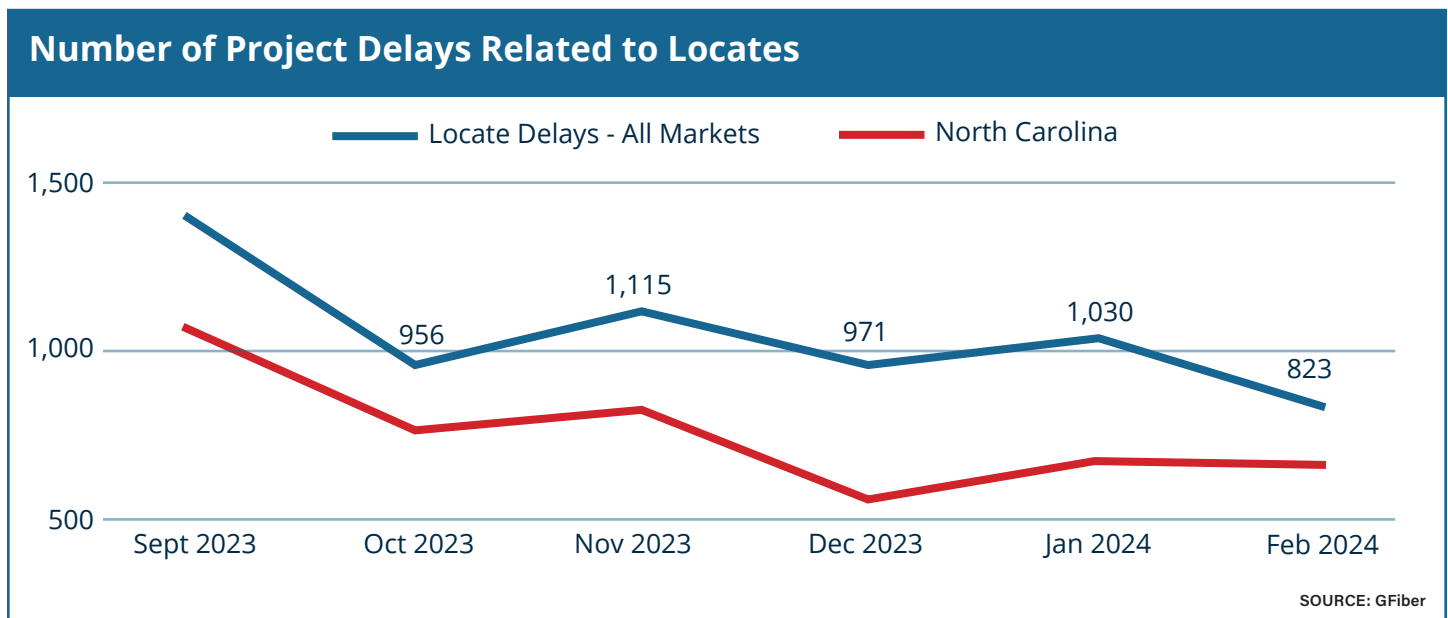
Recently, GFiber has experienced project delays related to locates. The company found several utilities were overloading the locate system with an unexpected number of large projects. The volume of locate notices was overwhelming the capacity of locate companies. In collaboration with involved stakeholders, an end-to-end review of the process was completed for projects in ten states.²

²Alabama, Arizona, California, Georgia, Iowa, Kansas, North Carolina, Tennessee, Texas and Utah.

The greatest opportunity to minimize locate-related delays was improved coordination with locators for peer utilities. The following enhancements were implemented with locate companies:

1. Rolling twelve-month forecasts of construction work were provided to assist locating companies with capacity planning, in particular staffing.
2. Recurring coordination meetings were facilitated between leadership and local teams to plan for future builds.
3. Feedback was gathered from locators and provided to excavators to improve the efficiency of locate requests.
4. Locate companies were included in preconstruction meetings to share project priorities.

To date, a 39% decrease in locate-related project³ delays has been achieved. The greatest improvements were in North Carolina, where several large broadband builds are underway simultaneously.



This improved efficiency was gained by reducing short notice locates and remarks. Stronger collaboration between partner companies fostered increased trust, leading to a more efficient and safer work environment and an ability to predict project risks and mitigate impact.

³ A "project" is any stand-alone build, of any size, that generates locate tickets.

Stakeholders can significantly enhance safety and efficiency by working together to proactively coordinate efforts for large projects. Effective stakeholder coordination requires engagement from multiple parties including network operators, 811 centers, excavation vendors and locate companies. **Network operators are in the best position to foster these crucial relationships.**

State 811 Centers are a recommended first contact for operators undertaking large projects. They may be able to assist with project coordination and minimize potential conflicts with other large projects. They can also assist in identifying potential bottlenecks, and address these in a proactive manner.

Utility locating companies are under pressure not only from the increase in broadband builds, but also substantial expansion by other utilities. Without proactive coordination, locating companies are unable to increase capacity in advance of the demand, resulting in late and

missed locates. Excavators may respond by submitting 811 notices for more footage than needed, in the hopes of allowing at least some work to move forward. This has been a known challenge for the industry and will continue to delay broadband expansion if not addressed.

Early coordination and transparency among all partners in this space will benefit everyone involved, particularly for large projects. Network operators can realize gains in terms of increased efficiency, reduced delays and less damage to existing assets. State 811 centers can be better prepared for large projects. Locate companies will have the confidence to invest in additional capacity to meet growing demand. Most importantly, all partners can contribute to enhanced public safety.

Delivering on the opportunities to better manage large projects through transparency, enhanced and standardized technologies, and data sharing will greatly help to unlock the benefits that are core to closing the digital divide.



Massachusetts Department of Public Utilities (MA DPU)

Collaborative Problem-Solving with Facility Operators to Improve Locating Timeliness

SYNOPSIS

- Two non-gas facility operators were failing to complete locating markouts within the required timeframes.
- Large financial penalties were initially proposed, but agreement was reached on an alternative approach that focused on achieving better compliance.
- The alternative approach led to improved communication between all involved stakeholders, leading to improved performance.
- On-time locating improved by about 10% when comparing Q4 to Q2 of 2023. Further improvement can be expected as the program is fully implemented.



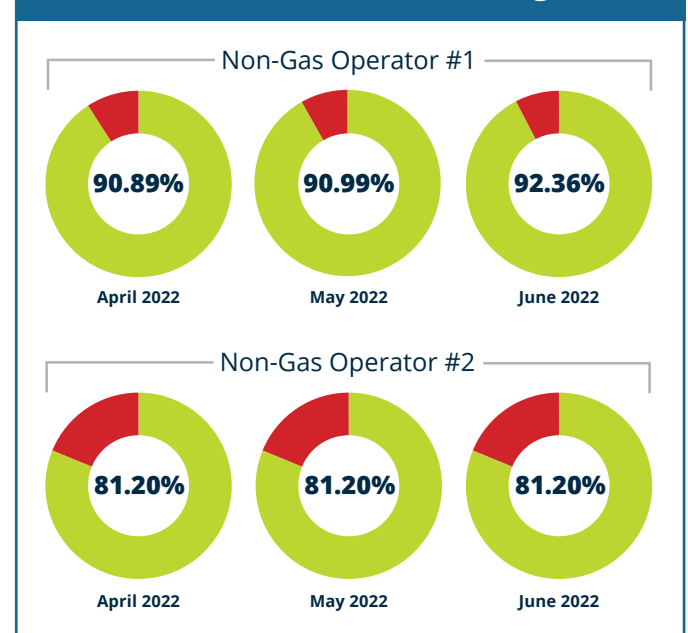
Massachusetts Dig Safe Regulations:

The Massachusetts Department of Public Utilities (MA DPU), Pipeline Safety Division, Damage Prevention Program (Division) oversees the enforcement of Massachusetts' dig safe laws. The Massachusetts dig safe regulations require notifying the 811 Center at least 72 hours⁴ prior to commencement of excavation (220 CMR 99.04(1)). Facility operators are required to complete markouts within 72 hours⁵ of receiving a notice from the 811 Center (220 CMR 99.06(1)).

The non-compliance issue:

The Pipeline Safety Division (Division) collects data focusing on the number of incidents and the reasons they occur. A large component is the Quarterly Locate Reports, which compare the utilities' damages per 1,000 locates, creating a percentage of locates performed timely by quarter. While tracking this information, the Division identified two non-gas operators that missed thousands of mark-outs for Q2 2022.

On-Time Locate Percentages



⁴ Not including weekends and holidays.

⁵ Ibid.

Based on these very concerning percentages, and knowing that both operators used the same third-party locating contractor, the Division investigated. In July of 2022, the Division sent both operators “information requests” to obtain more information for review:

- Provide a list of the all dig safe tickets which were not completed within the 72-hour requirement.
- Identify all damages that occurred due to these locations not being marked on time.
- Provide the reasons for failure to comply with the 72-hour requirement for the listed locations.
- Develop and submit an action plan to ensure compliance with the 72-hour requirement going forward.

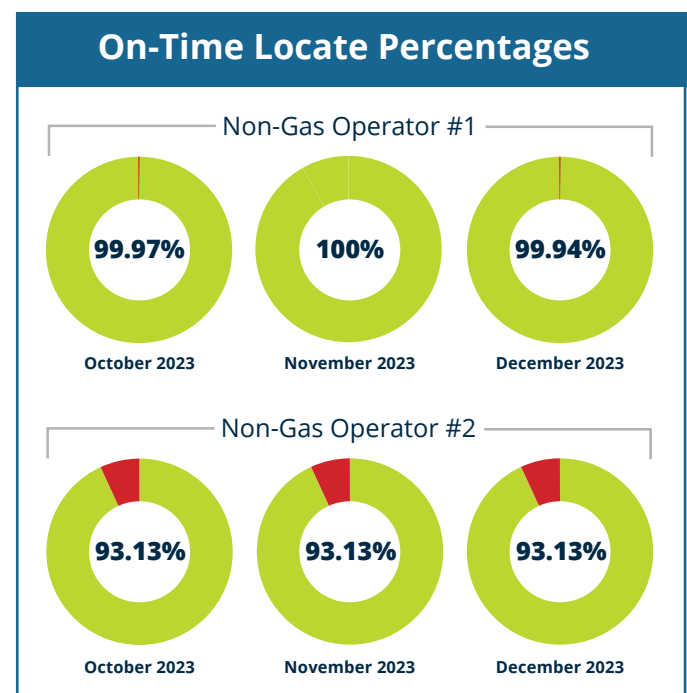
Based on their responses, the Division learned that the locating contractor was having issues retaining staff, therefore struggling to fulfill locate requirements. It also became apparent, based on their self-identified damages resulting from late locates along with Division records showing increased damage percentages, that there were other underlying issues. It seemed the locating staff lacked proper understanding of the locating process and how to properly document it. The Division then issued Notice of Probable Violations (NOPV) to each operator, with penalties of \$4 million and \$5 million respectively.

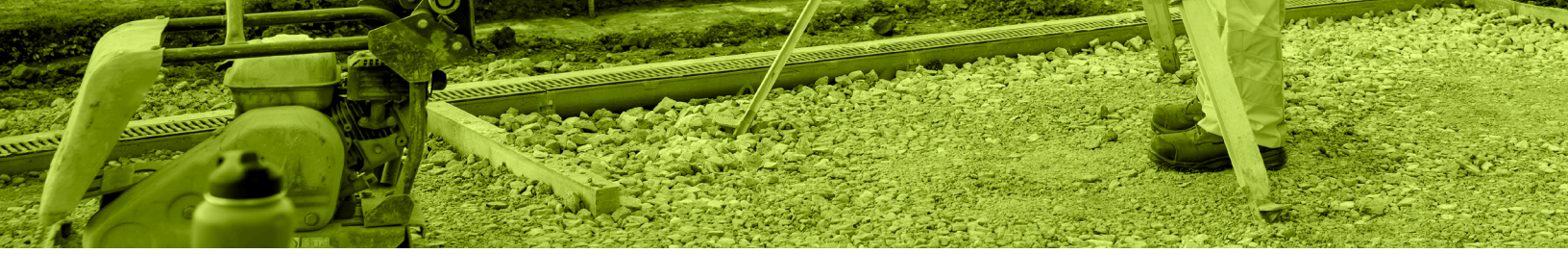
Alternative to Large Financial Penalties

After issuance of these NOPVs and discussions with both operators, the Division decided to be more creative than imposing fines hoping for improvements. The Division offered both operators an opportunity to reduce the penalties to \$500,000 each

(with stipulations) if they could propose and implement improvements to address their late locate issues. If the Division did not approve their proposed improvement plans, the original full penalties would be imposed. If the Division did approve the plans but did not see improvement at quarterly check-in meetings, the original fines would be imposed. The concept is similar to a “suspended sentence.” The intent was to encourage the operators to invest in improving their performance rather than paying fines only to continue with the same ongoing issues. Both operators agreed to this alternative approach.

Since October of 2022 when discussions began, the Division has maintained ongoing conversations with both operators. Each conversation has provided more clarity to the issues while reiterating the Division’s expectations. During that time and awaiting their improvement proposals, the Division has seen **on-time locating improve by about 10% as seen in their Q4 2023 quarterly report.**





As of February 2024, both operators presented their proposed improvements and the Division has approved them:

- Increase daily locate audits to minimum of 200/month evaluating ticket documentation.
- Supervisor's complete minimum of two to three hours of scheduled check-in meetings with staff to review their individual performance from week-to-week.
- Training Program increased from three to 12 weeks.
- New Training Development Leader hired for Massachusetts as of Feb. 5, 2024.
- Improving dispatch to reduce volume of tickets in queue meeting deadlines.
- Increased number of techs available to complete markouts bringing the number of daily pending 811 tickets down from 2.0+ in queue to 0.80 - 1.50 daily.
- Improving communication through documented agreements with excavators as well as noting contact information (names and phone numbers) in logs.
- Field sheets completed and emailed to excavators for long-scope work tickets.
- Software improvements with IT to include Project Management Course (six hours) regarding rescheduling, communication and long-scope ticket tracking.
- Reporting and coordination through weekly performance scorecards, monthly call between utility and subcontracted locating leadership as well as partnership between utility and subcontracted locating company field leadership.

Conclusion

Through ongoing communication with these operators, the Division was able to identify underlying issues such as lack of communication with their locating staff, communication with excavators and lack of proper documentation overall.

As the Division peels back the issues, it has realized that the true underlying issue is lack of communication. The MA PDU will continue to meet quarterly with these operators to facilitate better communication of issues and/or improvements as the Division recognizes them, and believes this line of communication will help better understand and address issues while also recognizing improvements. This approach has also led to better communication between the operators and their third-party locators. It also appears to be trickling down to their third-party locator's internal communication processes with their staff. The most important finding from the Division's work is that communication is key! Without a proper line of communication between all parties, it will be extremely difficult to identify issues as they arise and ultimately accomplish improvement goals.

North Carolina 811 Use of Notification Center Data and DIRT to Understand Impact of Ticket Types on Damages

SYNOPSIS

- An investigation into the effects of three-hour notices on locate performance found that damages occurring after the issuance of a three-hour notice had significantly higher percentages of damage root causes related to locating practices compared to the national representation for all ticket types.
- 45% of the total damages associated with three-hour tickets were instances where the positive response status changed from “clear” to “marked.”
- Damage-per-ticket ratios were significantly higher when three-hour tickets were involved, compared to data for all damages (with and without tickets).
- Thoroughly examining the DIRT data, along with additional information from the 811 Center, can provide insights into the specifics of different ticket types and their correlation with positive responses in relation to damages.

Relevant State Regulations in North Carolina

§ 87-122. Excavator responsibilities.

(a) Before commencing any excavation or demolition operation, the person responsible for the excavation or demolition shall provide or cause to be provided notice to the Notification Center of his or her intent to excavate or demolish. Notice for



any excavation or demolition that does not involve a subaqueous facility must be given within three to 12 full working days before the proposed commencement date of the excavation or demolition.

§ 87-121. Facility Owner responsibilities.

(a) An operator shall provide to the excavator the following:

(1) The horizontal location and description of all of the operator’s facilities in the area where the proposed excavation or demolition is to occur....

(b) Unless otherwise provided in a written agreement between the operator and the excavator, the operator shall provide to the excavator the information required by subsection (a) of this section within the times provided below:

(1) For a facility, within three full working days after the day notice of the proposed excavation or demolition was provided to the Notification Center.

(c) The operator shall provide a positive response to the Notification Center before the expiration of the time provided in subsection (b) of this section...

The positive response codes relevant to this analysis are:

- 10: Clear (no facilities in conflict in the work area)
- 20: Marked
- 999: No response from locator

§ 87-122 (c) An excavator shall comply with the following:

(6) If an operator fails to respond to the positive response system, the excavator may proceed if there are no visible indications of a facility at the proposed excavation or demolition area, such as a pole, marker, pedestal, meter, or valve. However, if the excavator is aware of or observes indications of an unmarked facility at the proposed excavation or demolition area, the excavator shall not begin excavation or demolition until an additional notice is made to the Notification Center detailing the facility and an arrangement is made for the facility to be marked by the operator within three hours from the time the additional notice is received by the Notification Center.

§ 87-126. Notification required when damage is done.

(a) The excavator performing an excavation or demolition that results in any damage to a facility shall immediately upon discovery of the damage notify the Notification Center and the facility operator, if known, of the location and nature of the damage.

Three-Hour Notices:

Due to the time constraints specified in §87-126(c)(6), the additional notice is referred to as a “three-hour notice.” It is also understood by excavators, operators and claims recovery companies that even with a positive response code 10 (clear), if there is visible evidence of unmarked facilities, the three-hour notice is still required.

“Screening” Tickets:

It’s a common practice in the industry for facility operators to reduce costs by intercepting tickets and “clearing” those with no conflict before sending them to the field for locating – a process called “screening.” Tickets may be cleared prior to the three full working days by the facility operator or a third party using existing maps and records. This approach ideally allows locators to concentrate on tickets truly in conflict. However, one drawback arises when an excavator initiates a three-hour notice based on a “code 10” (clear) response when evidence of unmarked facilities is found, which might be the first time the locating contractor sees that ticket.

Ideally, North Carolina 811 (NC811) would issue three-hour notices only to the members that haven’t responded or are potentially in conflict. However, sometimes the excavator is unsure



which member operates the visibly unmarked facility, leading to the three-hour notice being sent to all previously notified members.

To further examine the impact of these three-hour notices and their connection to reported damages in DIRT, NC811 performed an analysis pairing the notification and positive response data with DIRT damage data.

North Carolina State Law (§ 87.126) requires excavators to report any damage to NC811 and the facility operator. Upon receipt of these reports, NC811 creates and sends a damage ticket to operators and enters the data into the DIRT application.

Data used for this analysis is based on calendar year 2023 from:

- 1) DIRT reports based on damages reported to NC811 by excavators per §87.126.⁶
- 2) The three-hour notice date and time, as well as the positive response codes and ticket information, as sourced directly from NC811 Center data.

Upon combining the DIRT damage and positive response data, we focused on the three-hour notice tickets and the positive responses related to the original normal tickets. Subsequently, we determined the count of tickets with an initial positive response **code 10 (clear)**, the number of those that later transitioned to **code 20 (marked)**, and how many of these were linked to damage reports.

Breakdown of Three-Hour Notices and Damages	
TOTAL THREE-HOUR NOTICES: 134,804	
Total three-hour tickets with status change from code 10 (clear) to 20 (marked)	63,033 46% of 134,804
Total number of DIRT damages with an 811 notice	9,927
Total positive response codes 10 (clear) and 999 (no response from locator) three-hour tickets with associated DIRT damages	5,108 51% of 9,927
Total three-hour tickets with a 10 (clear) to 20 (marked) status change associated with DIRT damages	2,287⁷ 45% of 5,108 23% of 9,927

Out of the 2,287 tickets, 224 (10% of all tickets and 16% of Telecom/CATV tickets) received a “clear” response code 10 within the first day of the three-hour notice.

⁶ It does NOT include DIRT Reports entered by other organizations in NC, and therefore will not match CGA’s annual DIRT Reports and online dashboards.

⁷ 1,393 (63%) were to telecommunications or cable TV.

In many instances, the caller reporting the damage is continuing their work. During the same call where they report the damage, they also generate a three-hour notice to make certain everything is marked before proceeding. By comparing the date and time stamps of each damage ticket and its associated three-hour notice, we found that this practice occurred **roughly 2,500 times – close to half of the 5,108 code 10s (clear) and 999s (no response from locator) associated with damages.**

We were most interested in damages occurring *after* the three-hour ticket was issued when evidence of unmarked facilities was present. Excluding the **2,500** post-damage three-hour tickets leaves about **2,600** “original” three-hour tickets with associated damages. Using date and time comparison, **we found that 526 damage reports (representing 21%) occurred within 24 hours of the 3-hour notice and 1,847 (71%) occurred within 15 days.**

Breakdown of Three-Hour Notices and Damages	
Three-hour tickets generated same time as damage report	Approximately 2,500*
Three-hour tickets issued before damage report	Approximately 2,600*
Damages within 24 hours of three-hour notice (with positive response 10/clear to 20/marked)	526 21% of 2,600
Damages within 24 hours of three-hour notice (with positive response 10/clear to 20/marked)	1,847⁸ 71% of 2,600
<i>*These estimates are approximate due to the challenge of precisely determining the exact number. We used recency in date and time to, as closely as possible, identify when a damage and three-hour notice was created on the same call.</i>	

Out of the 1,847 damages occurring within 15 days of the three-hour notice, where the response changed from 10 (clear) to 20 (marked), there were 1,722 damages with a “known” DIRT root cause. Among these, **1,502 (87%) were attributed to the locating practices root cause group, while 216 (approximately 13%) were associated with the excavating practices root cause group.**⁹

The leading individual root causes for the 1,502 in the Locating Practices Group were:

- **1,179 (78%)** locator error (not marked and/or marked inaccurately)
- **179 (12%)** not marked due to no response from locator
- **86 (6%)** site marked, but incomplete at damage location
- **58 (4%)** other locating root causes (including **12 (0.8%)** mapping)

⁸ Including the 526 within 24 hours.

⁹ This analysis is based on damages originating with a locate request, so there are no damages attributed to no locate request. There were negligible amounts from the miscellaneous and invalid use of request root cause groups.

This analysis is based on North Carolina’s 2023 DIRT data. At the time of this special report’s publication, the full North America DIRT dataset for 2023 was not yet available. However, by using 2022 DIRT data to calculate the corresponding percentages (excluding unknown root causes and those attributed to no locate request), we get the table below (with the North Carolina data shown again for convenience):

Root Cause Group	2022 DIRT By All Sources	2022 DIRT By Excavators	2023 NC Data From Above
Locating Practices	47%	75%	87%
Excavating Practices	44%	20%	12.5%
Invalid Use of Request + Misc	9%	5%	0.5%

Individual Locating Root Causes	2022 DIRT By All Sources	2022 DIRT By Excavators	2023 NC Data From Above
Locator Error	66%	71%	78%
No Response From Locator	9%	9%	12%
Site Marked but Incomplete	5%	7%	6%
Mapping Issue	10%	7%	0.8%

The North Carolina DIRT data used here is based exclusively on damage reports from excavators. The top root causes they identify naturally reflect their perspective on the situation. Excavators typically lack access to maps and records, unlike locators and facility operators. Consequently, they rarely cite mapping issues. Nonetheless, it’s conceivable that mapping-related issues represent underlying root causes, even though they remain overshadowed by the top three issues reported. Mapping was negligible in the North Carolina data analysis.



While it is somewhat higher in the full DIRT datasets, it is still very likely to be an underlying cause of locator error, no response and incomplete markings.

A common situation:

- Ticket cleared by facility operator (not sent to locator).
- Excavator reports evidence of unmarked facilities → three-hour notice is issued.
- Ticket sent to locator for first time with response due in three hours.
- Ticket status changes from cleared to marked.
- Damages occur, mostly with locating root causes. Damage/1,000 ticket ratios for damages with 15 days are:
 - 13.70 for all three-hour tickets $[1,847 / (134,804 / 1000)]$
 - 29.30 for cleared to marked three-hour tickets $[1,847 / (63,033 / 1000)]$

For comparison, using 2022 damage and 811 center ticket data from CGA's DIRT and 811 Center dashboards, we get a ratio of 6.51.¹⁰ **This analysis reveals a noticeable increase in damages stemming from improper screening.**¹¹

To achieve CGA's goal of reducing damages by 50% over five years, it will be helpful to identify these damage concentrations so that targeted corrective measures can be taken. Further exploration of this issue may be warranted. If other 811 Centers have positive response systems and access to good quality DIRT data (primarily known root causes), they could perform a similar analysis with corresponding response codes. Facility owners and locators might also consider doing similar internal analyses.

If the 811 Center can avoid sending three-hour tickets to all members when the excavator is unsure who the unmarked facility belongs to, it makes the system more efficient for all. Beyond damages, reducing improper screening could help excavators in avoiding near-misses and downtime, ultimately fostering greater confidence in the entire system.

¹⁰ 16,254 / (2,497,873 / 1000) using incoming tickets not outgoing transmissions.

¹¹ This comparison uses 2022 data for some calculations and 2023 data for others. Exact numbers may be slightly different when the full 2023 data is available. However, the point of this analysis is the large difference in damage ratios between tickets with improper screening versus the total population, which will remain valid.

