
California Underground Facilities Safe Excavation Board

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Agenda Item No.27 (Information Item) – Staff Report

Unmarked Lines – Ticket Data

PRESENTER

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SUMMARY

This report examines the data from the current ticket systems used by California’s Regional Notification Centers (RNC), Underground Service Alert of Northern California (USA North) and Underground Service Alert of Southern California (DigAlert), to answer the Board’s questions about best practices for identifying the operators of unmarked lines and preserving and sharing data regarding unclaimed lines for future excavations. Underground Safety Board (Board) staff will work closely with the RNCs and continue stakeholder outreach on these topics.

STRATEGIC PLAN

2020 Strategic Plan Direction: Improve Accessibility of Buried Infrastructure Location Knowledge and Understanding

Strategic Activity: Develop Processes to Assist Excavators in Identifying Unmarked and Abandoned Lines

BACKGROUND

Prior to January 2023, the Board’s work did not draw a clear distinction between the Dig Safe Act’s references to “abandoned subsurface installations” and the reality of unmarked lines that excavators encounter in the field. Much of the work focused on defining “abandoned,” since “abandoned” is not defined in the Dig Safe Act. ¹

¹ [July 2022: Survey Results](#)

In the January 8-9, 2023,² meeting, the Board discussed the importance of distinguishing between “unmarked” and “abandoned” lines. It also heard a presentation from the Office of Energy Infrastructure Safety’s Data Analytics Division regarding possible options for the public to report unmarked lines for future knowledge sharing.

When the Board next discussed unmarked lines at the December 9, 2024,³ meeting, the Board acknowledged that while there is a functional difference between unmarked lines which go unclaimed and unmarked but claimed lines, excavators face the same dangers with both categories. The Board’s options for resolving unmarked lines differ vastly depending on whether an operator is ever identified, or the unmarked line remains unclaimed.

DISCUSSION

Questions Raised by Board

At its last meeting, the Board continued to discuss multiple questions regarding abandoned, unmarked, and unclaimed lines practices. These questions include:

- What should excavators do when they encounter an unmarked line?
- Who should be notified of the unmarked line and what should their response(s) be?
- What steps should excavators take to identify the operators of unmarked lines?
- What actions should operators take to identify their lines?
- What is the efficacy of the actions taken by various parties to identify an unmarked line?

To answer these questions, staff met with USA North to follow up on USA North’s public comments at the December 2024 Board meeting and to better understand USA North’s data and ticket system. Staff looked at the ticket data to determine USA North’s current practices for identifying and sharing information about unmarked and unclaimed lines and to assess how well the information sharing aspect of the current ticket process works.

History and Limitations of Currently Collected Ticket Data

History and Purpose of Ticket Process

An examination of the history and purpose of the ticket process is helpful to understand the data available from the current ticket process. Two important aspects are: 1) the role of geospatial data (geographic information system) and 2) how excavators and operators use the ticket system to communicate, including how mandatory Electronic Positive Response (EPR)⁴ emerged in California.

² [January 8-9, 2023](#)

³ [December 9, 2024](#)

⁴ [Gov Code Section 4126 \(a\)\(1\)\(A\)](#)

Role of Geospatial Data

Today, geospatial data is the cornerstone of the ticket system. As every operator of a subsurface installation is mandated to become a member of an RNC, each RNC member has a geospatial polygon on file with their respective RNC(s) that describes where the member will receive notifications (colloquially called tickets).⁵ DigAlert calls these member files “Notification Areas” and USA North refers to them as “Areas of Interest.” When a ticket is created, either online or from a phone call, the ticket includes a geospatial polygon of the proposed excavation site. The RNCs’ software programs compare the overlap of the geospatial polygon of the ticket with the geospatial polygons of its members and notifies all members whose polygons overlap with the excavation polygon. Those members who are operators of subsurface installations are then required to timely respond to the notification within the specified time period and fulfill their statutory obligations under California Government Code section 4216.3(a)(1)(A).

Geospatial data is the lynchpin of how the RNCs identify and notify the correct operators of when and where they need to locate and mark their subsurface infrastructure for excavators.

How Excavators Communicate to Operators: Ticket Types

Staff has reviewed the ticket processes for the RNCs and generally speaking, when an excavator needs information from operators, the DigSafe Act requires them to notify the RNCs; this information then gets stored and passed along as a ticket type (for example, a new ticket or a remark ticket). When an excavator finds (but does not damage) an unmarked subsurface installation, that information is passed to the RNCs when the excavator creates an “exposed” ticket type for the excavation.⁶ For DigAlert tickets, these exposed tickets are recorded as “EXPD” and are intended for use “[w]hen the excavator states there is an unmarked exposed line and requests the members to respond to be identified.”⁷ Excavators in USA North’s territory use a ticket type called “exposed” which is nearly identical in definition to the DigAlert “EXPD” ticket, except that USA North specifies that the exposed, unmarked utility has not been damaged.⁸

The “exposed” ticket is sent from the RNCs to their members (again, those members are identified through overlapping geospatial data), alerting members that there was an exposed – but not damaged – line in the ticket’s excavation area.

⁵ Although regulations refer to the notifications received by operators as “locate request transmissions” (see [19 CCR 4010\(d\)\(3\)](#)), industry refers to the entire communication system as “tickets,” and, for brevity, this report will also use “tickets” to refer to the notifications sent by and to all participants in the “811” notification system.

⁶ As of January 2025, DigAlert has changed their “exposed” ticket type to “EXPD” – as a result, and for continuity, staff looked only at “exposed” tickets generated in 2024.

⁷ <https://docs.digalert.org/ed/ticket-types-explanations>

⁸ USA North’s “exposed” ticket type is for use when “an excavator who has unintentionally exposed a subsurface installation, or exposed a line that was marked, and has not damaged the line in any way.”

How Operators Communicate to Excavators: Electronic Positive Response

Under the current system, once operators of subsurface installations receive a ticket, they must both fulfill their obligations under California Government Code section 4216.3(a)(1)(A) and input an EPR into the ticket system.⁹ Their EPR response indicates the status of the operator's obligations under 4216.3(a)(1)(A).¹⁰ Currently, California does not have a two-way EPR system which would allow excavators to interact with operators and provide additional information. Instead, all excavator responses are recorded with a newer ticket version. Without two-way EPR, any further information about an exposed ticket is limited to what an operator is able to communicate through EPR responses to the ticket and what excavators are able to communicate through creating a new ticket type.

What is Known and not Known from Exposed Ticket Data

It may not be a surprise that, based on the mechanics and history of the ticket and EPR systems, data from the current ticket system on how excavators identify utility operators is lacking. Staff reviewed exposed ticket data to see what information could be gleaned from the existing ticket notification and communication practices about the extent of, and possible solutions to, the problem of unmarked lines. Staff looked at the types of data available both in the aggregate and in individual tickets. For all of 2024, USA North's exposed ticket types account for only 0.15% of all new tickets, or about 3 of every 2,000 tickets. This does not reflect the anecdotal evidence regarding the high frequency of unmarked lines encountered in the field.

As recently as January 15, 2025, in the Board's Education and Outreach Workshop, multiple stakeholders commented on the frustration that so-called "abandoned" lines present.¹¹ This suggests that the number and proportion of exposed tickets, as compared to the total number of statewide tickets, may not accurately reflect the scope of the issue of unmarked lines. Further outreach and research will be necessary to determine whether the issue is over-represented in workshop encounters, the data is under-reported in the current ticket system, or some combination of the two.

⁹ Gov. Code Section [4216.3](#)

¹⁰ Gov. Code Section [4216](#)

¹¹ [Workshop January 15, 2025](#)

In addition to analyzing the number and proportion of exposed tickets as compared to new tickets, staff found that the 1692 total exposed ticket records from all of USA North’s 2024 ticket data came from only 1418 unique ticket numbers.¹² In order to find out why there was a difference and what it signifies, this would require staff to examine each individual exposed ticket to see specific ticket versions (functionally launching a deep dive into the individual exposed ticket to find out its ultimate resolution). This exposed ticket data does not necessarily reflect all unmarked lines, as any damage to an unmarked line should be reported through the “damage” ticket type and notification. Additionally, some exposed lines, damaged or not, may not be reported in the first place. However, without further investigation into each damage notification, it is not currently feasible to isolate data about damages that resulted from an unmarked line from other damage causes, or from damages in which all lines were properly marked.

How Tickets Could be Leveraged to Aid in Solving Unmarked Lines

Role in Identifying the Operator of Unmarked Lines (Such as Two-Way EPR)

An exposed ticket will usually show up as a subsequent revision of an existing ticket. The original ticket and the revision will indicate which RNC members have geospatial polygons that overlap with the proposed excavation site. An overlapping geospatial polygon does not necessarily mean that the RNC member has subsurface infrastructure that conflicts with the proposed excavation. It merely means that the RNC member has indicated that it needs to receive notifications in a geospatial region that overlaps with some or all of the area of proposed excavation.¹³

Ticket data currently collected and available to staff does not include information about which operators of subsurface installations have claimed lines in the area of a proposed excavation. EPR codes are not available for an operator to use to indicate that its subsurface installations were previously unidentified but have now been marked, nor does the current ticket process capture information, if known, from an excavator about who the operator of the exposed/unmarked line is. The information about unidentified or unmarked subsurface installations exists almost entirely in the comment section of a ticket or ticket version, making

¹² For USA North, the exposed ticket revisions per unique ticket number are as follows:

Exposed Revisions Per Unique Ticket Number	Count
1	1240
2	124
3	32
4	14
5	3
6	1
7	2
8	1
9	1
Total Unique Tickets with Exposed Revisions	1418

¹³ See, for example, the EPR code 001: clear/no conflict.

the data exceedingly difficult to collect, quantify and aggregate. As a result, very little is known from ticket data about whether operators of unmarked lines were identified, who those operators were, or what steps an excavator may have taken to identify operators of unmarked/exposed lines.

Role in Preserving and Sharing Geospatial Information About Unclaimed Lines

Reviewing the ticket data, staff was unable to identify any examples of a ticket that identified or flagged a previously exposed line (claimed or unclaimed) in the area of proposed excavation. However, the mechanics of the ticket system suggest that this may be possible, depending on the software and user-agreements of the RNCs. If an excavator is able to provide the RNCs with a geospatial point or polygon where the exposed line is located, then the same mechanism used to identify where the proposed excavation overlaps or intersects with members' geospatial polygons can be used for unmarked lines. This is what Energy Safety staff proposed at the Board's January 9-10, 2023, meeting¹⁴ as something that Energy Safety had the capability to support.

This may impose an additional burden on the RNCs regarding data storage and sharing. The Board should not explore this option without input from the RNCs and their support regarding the feasibility and capabilities of their differing ticket software and their willingness to leverage or expand their systems to include unmarked and unclaimed lines.

Remaining questions for Board discussion and further research by staff:

- Do the number and proportion of exposed tickets accurately reflect the number and frequency of encounters with unmarked lines that excavators encounter in the field?
- How capable is the current ticket system for capturing information about unmarked lines and sharing that information with future excavations?
- How effective is the current ticket system in identifying the operators of unmarked lines?
- What steps do excavators take in addition to using the ticket system to identify the operators of unmarked lines and how effective are those methods?
- Can the existing ticket system effectively support Board investigations into whether operator records have been updated in accordance with California Government Code section 4216.3(a)(4)?

RECOMMENDATION

Staff recommends that the Board work with the RNCs to determine the RNCs' willingness to share information with the Board regarding the capabilities of their ticket software systems to receive, store, and share geospatial data regarding unmarked lines. Staff also recommends the Board conduct more stakeholder outreach to better understand current practices for identifying

¹⁴ [January 2023](#). See Also [Board Meeting](#) (beginning at 02:21:21).

the operator of unmarked lines and the extent – or limit – of the role that the current ticket system plays in those practices. Finally, staff recommends that the Board revisit whether two-way EPR should be considered as a potential solution to resolving issues related to unmarked lines.