



OFFICE OF ENERGY INFRASTRUCTURE SAFETY
UNDERGROUND SAFETY BOARD

2022 ANNUAL REPORT TO THE GOVERNOR AND LEGISLATURE

JANUARY 2023

ABOUT THIS REPORT

The Dig Safe Act of 2016, (Gov. Code, § 4216 et seq.) created the Underground Safety Board and section 4216.23 requires the Board to annually report its activities and recommendations to the Governor and Legislature. The Board is charged with coordinating the state’s education and outreach efforts on safe excavation around buried utilities, developing safe excavation standards, investigating accidents and possible violations of the Act, and enforcing the Act within its enforcement jurisdiction.

To receive a hard copy of this report, contact the Underground Safety Board, Office of Energy Infrastructure Safety, (916) 902-6000. This report may also be accessed on the Board’s website: <https://energysafety.ca.gov/who-we-are/underground-safety-board>

LETTER FROM THE CHAIR

Honorable Gavin Newsom, Governor of the State of California, and distinguished members of the California State Legislature:

The Underground Safety Board investigates accidents and complaints and combines those results with information gained through industry engagement (such as through workshops and surveys) to develop solutions to safety problems and inefficiencies in the “call before you dig” system. Through the Board’s powers and those of its partner state agencies, the Board enforces non-compliance with state laws consistent with its enforcement philosophy, which promotes corrective action as a sanction absent aggravating circumstances.

This report highlights lessons learned through investigations and industry outreach, what steps the Board has taken in 2022 to address them, the work that remains in 2023, and where the Governor and Legislature may be able to assist in furthering safe excavation across California.

Sincerely,

Marjorie Del Toro
Chair, Underground Safety Board



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EXECUTIVE SUMMARY

This report highlights actions the Underground Safety Board took in 2022 to address areas for improvement in the State’s “call before you dig” system. The report also forwards the Board’s recommendations to the Governor and Legislature for potential further legislative action.

The Board’s investigations and standards development process revealed several impediments to achieving a goal where all California excavators and utility personnel have the knowledge and tools to perform their work safely and effectively. Subcontractors lack guidance to tell them where to expose buried lines with hand tools to identify their locations (“potholing”) and thus avoid hitting the lines with construction equipment. The general contractors that hire them are not required to consider existing utilities when planning their work. These two factors led to a large natural gas pipeline fire in San Francisco in 2019.

After two years of implementation, the electronic response system that utility operators are required to use to communicate with excavators (pursuant to AB 1166 (Levine, 2019)) has not yet realized its intended benefits due to many utility operators still not using the system. Additionally, the set of stock electronic response options utility operators may provide to excavators needs revision, as many response options do not help the excavator understand if they are clear to excavate, or if not, what next steps they should take.

Finally, many excavators, including classifications of specialty contractors, do not understand that the work they do constitutes excavation, leading them to fail to use the one-call system. This can be addressed in the future through targeted outreach using stakeholder-specific messaging.

The Board stands ready to work with the Governor and the Legislature to improve the safety of underground facilities, and more importantly, to improve the safety of excavators and operators alike, for the benefit of all Californians

THE BOARD



Chair – Marjorie Del Toro



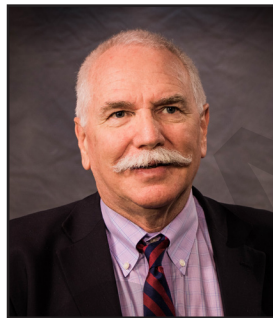
Vice Chair – Amparo Munoz



Ron Bianchini



Randy Charland



Bill Johns



Carl Voss



Marshall Johnson

COMMITTEES

Abandoned Lines

Bill Johns and Amparo Munoz

Potholing

Ron Bianchini and Randy Charland

Planning and Design

Bill Johns and Marshall Johnson

Ticket Process

Ron Bianchini and Randy Charland

Education

Marjorie Del Toro and Marshall Johnson

Agriculture

Carl Voss and Bill Johns

Safety Lessons

Marshall Johnson

BOARD RESPONSIBILITIES

Government Code § 4216.12

- Coordinate education and outreach activities that encourage safe excavation practices
- Develop excavation safety standards
- Investigate possible violations
- Enforce the law

Mission

The Underground Safety Board (Board) improves public and worker safety by facilitating communication and learning among excavators and the operators of subsurface installations, by investigating accidents to determine their causes, and by developing solutions to improve safety outcomes. The Board strives to create a model regulatory and investigatory board for other states to emulate.

Vision

The Board is committed to a California in which the state's excavators and subsurface installation owners know and understand:

- How to identify the locations of subsurface installations,
- How to protect against dangerous contact with those installations, and
- How to resolve unexpected situations that may arise, and

in which the state's excavators and subsurface installation owners exercise that knowledge and understanding to promote a culture of mutual respect and dedication to the cause that everyone goes home safe.

Values

The actions and decisions of the Board members and staff will be guided and informed by their commitments to:

- Have respect for and attentiveness to the expression of differing backgrounds and perspectives of the Board's members, the public, and stakeholders, as well as for the missions of excavators, operators of subsurface installations, and other federal, state, and local agencies.
- A culture of continuous learning based upon the development and free exchange of safety information.
- Inquire into the facts of and context behind accidents, near misses, and latent safety-related conditions in the field.
- Be accessible to the public and stakeholders, within the bounds of the law, constitutional principles of due process, and ethical conduct.
- Integrity in serving in the public interest and devotion to maintaining the public's trust.

Legislative History

SB 661 (Hill, 2016)

Creates the Board within the California Department of Forestry and Fire Protection with the following overarching charges:

- 1.Coordinate education and outreach activities that encourage safe excavation practices;
- 2.Develop standards;
- 3.Investigate possible violations of the one-call law; and
- 4.Enforce the one-call law

AB 1914 (Flora, 2018)

Directs the Board to determine through regulation what types of power tools may be used around buried facilities prior to determining their exact location using hand tools.

AB 1166 (Levine, 2019)

Requires operators to electronically notify the excavator of their locate and mark activities beginning on January 1, 2021, and requires the Board to develop an application process to approve one-year extensions for good cause.

SB 865 (Hill, 2020)

Requires GIS mapping of new underground facilities, requires regional notification centers to share certain information with the Board, and moves the Board to the newly formed Office of Energy Infrastructure Safety (Energy Safety) as of January 1, 2022.

SB 297 (Durazo, 2021)

Increases penalties for knowing and willful violations of the Dig Safe Act to up to \$100,000 for certain violations.



THE PROCESS, IN A NUTSHELL

The “call before you dig” process is based on communication:

- the excavator notifies the one-call center of a planned excavation;
- the one-call center finds the registered utility operators in the area and relays the notification to them;
- and the utility operators respond to the notification by locating and marking any buried facilities they have in the area, and then letting the excavator know what they did.

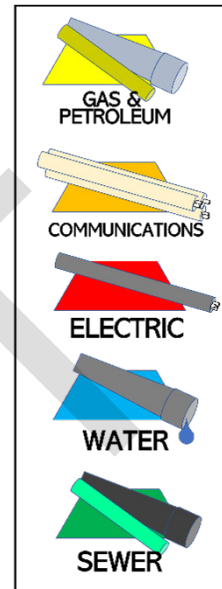
Operators of buried facilities are required to provide digital information to the state’s one-call centers that identify the areas in which they may have buried facilities. These utility operators do not provide utility maps, but instead provide digital shapefiles that outline their service territories.

Anyone who digs is an excavator, and each person (with limited exemptions) needs to call the 811 “call before you dig” line (or go online) to tell the one-call center where they are going to dig and when. The one-call center then passes that notification to each utility operator whose shapefiles indicate that they may have buried facilities at the GPS coordinates of the site. On average, seven to eight utility operators are notified for each excavation.

A utility operator then has a minimum of two days to determine if they have buried lines in the excavation area. If they do, a utility locator will mark the area with paint, flags, or another means, or the utility operator will provide a map to the excavator. The utility operator will then notify the excavator of their actions (or say that it has no buried facilities in the area) through a message to the one-call center’s electronic response portal. The excavator can then go online and check those responses to ensure that all utility operators have completed their work.

Simple in concept, complex in operation, the “call before you dig” process has yet to reach its full potential. This report outlines opportunities for improvement.

BURIED FACILITIES



EXCAVATORS



BOARD ACTIVITIES AND RECOMMENDATIONS

Through the Board’s 2022 activities, including investigations, workshops, and meetings, the Board has identified several areas for improvement in safety excavation practices. These areas for improvement, the Board’s proposed activities, and any recommendations to the Governor and Legislature are described below.

No Guidance Exists on Where to Expose Existing Lines

Area for Improvement: Neither California law nor any other federal or state standard tells excavators where to expose lines to determine their locations. Nor is there a standard for documenting exposures.



Photo: NTSB report, provided by PG&E

On February 6, 2019, a construction crew installing a fiber optic line for a major telecommunications company in the Richmond District of San Francisco struck the coupling connecting two plastic natural gas pipelines, releasing gas. The gas ignited, and the resulting fire destroyed a nearby restaurant and residence. Damages were estimated to exceed \$10 million. Board investigators assisted in the National Transportation Safety Board investigation and released their own report.

The construction crew used shovels to expose both pipelines that were several feet away from their connection to confirm their locations. They did not confirm the location of the intersection. The coupling—a saddle-fused branch connection—protruded 6.5 inches up from the pipe intersection, and that is where the crew struck the pipeline with the excavator bucket of a backhoe.

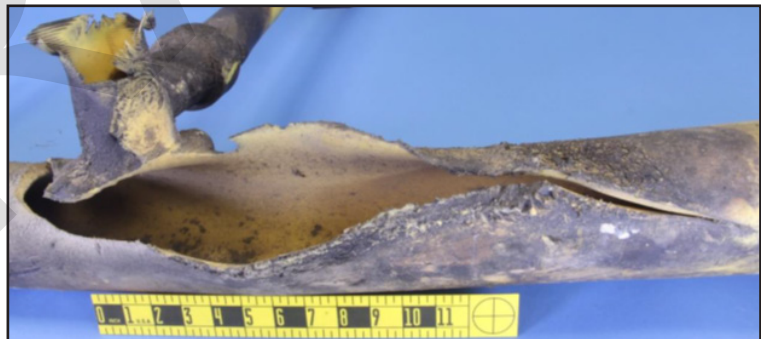


Photo: NTSB Factual Report

Board Activities: In response to this event and others like it, the Board held several workshops, including its most recent one in August 2022, and began developing standards for exposure (potholing). Members Bianchini and Charland of the Potholing Committee expect to present draft standards for discussion in early 2023. The Board does not have any recommendations regarding buried facility exposure at this time.

Poor Planning Leads to Bad Outcomes

Area for Improvement: California does not have a process to promote the planning and design work necessary to support large or complicated construction projects. Contractors are not required to request information from utility operators who have buried facilities in the area of major construction projects. Even when a contractor or engineer makes these requests, utility operators are not required to respond to these requests in a timely manner.

While the excavator in the San Francisco incident did not pothole the gas line in a location that would have allowed them to avoid striking the pipeline with a backhoe, their general contractor did not provide them with a construction plan that would have avoided the pipeline. To determine a path for a new buried line, a utility and their contractor need to determine the locations of existing buried facilities—especially in a highly-congested and developed area like San Francisco. In the San Francisco incident, while engineers provided plans to the subcontractor that included the surface indicators like street signs and manholes, the plans ignored existing buried facilities. Were existing buried facilities considered in developing the engineering plans, engineers might have directed construction away from the gas line or at least alerted the construction crew to locations of potential conflict.

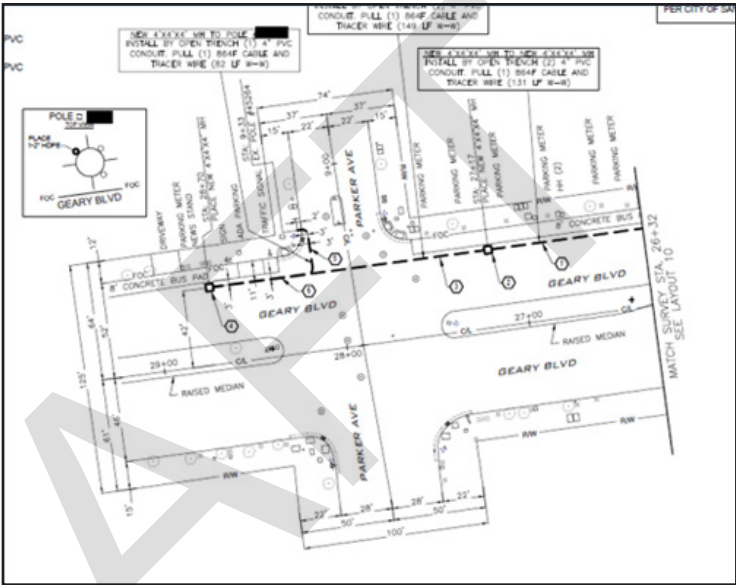
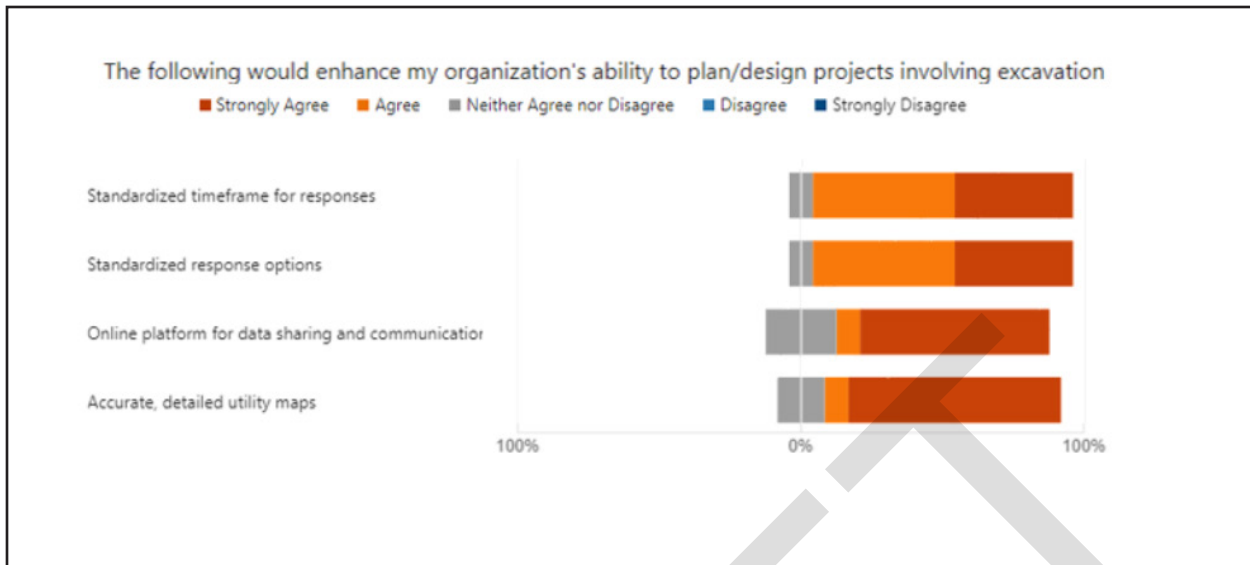


Image from NTSB Docket for Investigation PLD19MR001

Adequate planning and design of buried facility installation projects promotes safe excavation as well as efficient use of locator time. Excavators need access to all relevant information to safely plan an excavation. Better planning helps utility locators as well, as it allows an excavator to more narrowly identify the work area so that utility locators can focus on marking only the lines in the path of excavation.

Board Activities: During the Planning and Design Committee’s February 28, 2022, workshop, project designers identified poor utility operator contact information and insufficient map precision as barriers to developing effective plans. Utility operators identified missing records and a lack of resources as barriers to providing information. Both said they would benefit from a standardized information request process.



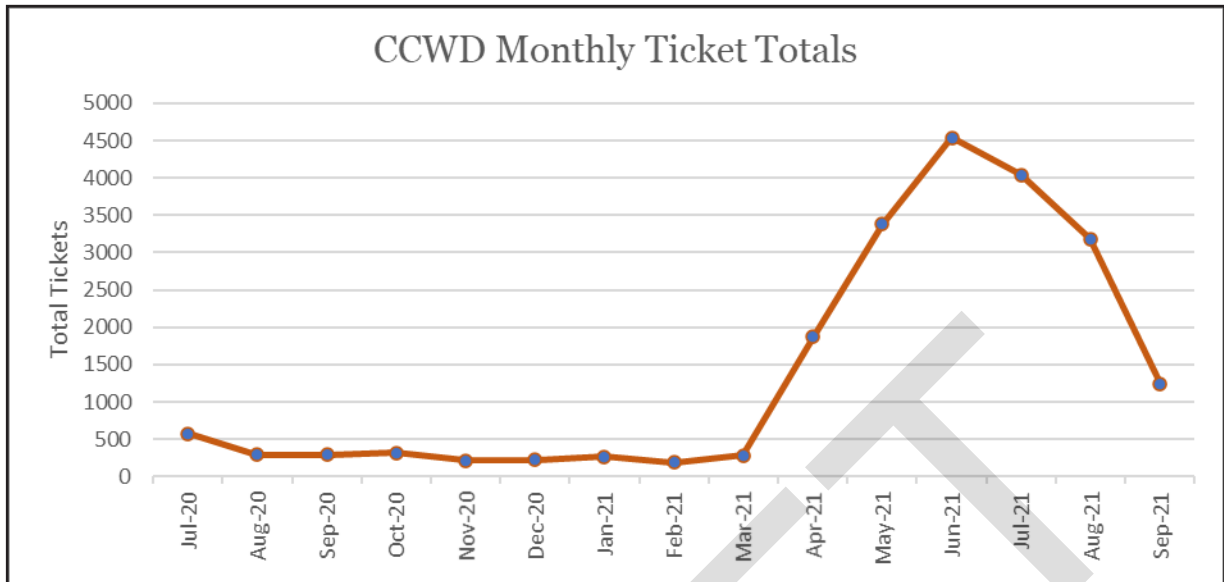
Responses from project designers on what would improve their ability to plan projects. From August 2022 survey.

Inefficient transfer of information between utility operators and project designers slows down infrastructure projects. To address this, the Board is developing a Planning and Design Ticket to standardize information transfer between utility operators and project designers so that designers can get the information they need in a timely manner. For this new ticket to be successful, all utility operators would need to participate, just as they do in the “call before you dig” process.

Recommendation: The Board recommends that utility operators be required to participate in the Planning and Design Ticket.

The One-Call System Was Not Designed for Geographically-Distributed Excavations

Area for Improvement: California’s utility operators are required to respond to every ticket within two working days and have been unable to manage dramatic, unanticipated transitory increases in locate and mark workload. Utility operators use historical ticket volume to determine how many locators to hire or contract. For several years, small water utilities in northern California have identified that one large company has consistently been creating tens of thousands of tickets a year for testing the integrity of power pole foundations, overwhelming those water utilities’ capacities to locate and mark their facilities. As the company shifts work from region to region, different municipalities are affected every year. These water utilities report that they had no advance warning that their ticket volume would increase. They also report that, for each of the thousands of tickets, the excavator required completion of the locate and mark work within the statutory minimum of two working days.



Monthly tickets totals (all types) provided to Calaveras County Water District from July 2020 to September 2021.

Aside: Since 2019, this excavator has consistently issued 20% of all excavation notices in Northern California.

While excavators need to continue making all the notifications necessary, large projects require significant planning, and utility locators should be included in that planning. If utility operators are given sufficient advance warning of projects requiring a large number of tickets, they may be able to allocate resources to locate and mark their facilities on time.

Conversely, the burdens of requesting and monitoring individual tickets for a geographically-distributed project can also create significant burdens on the excavator. Just such a burden nearly ended a reflective address sign project in Calistoga. The Napa Communities Firewise Foundation, a fire protection not-for-profit organization, received a grant from Bank of the West to provide and install reflective address signs with badges. The badges denote water source, pool on-site, turnaround, and Napa County Evacuation Zone information to assist first responders in case of an emergency such as a fire.

Reflective address signs must be mounted on poles. These poles are driven into the ground, so a ticket is required to safely complete the work. The Foundation attempted first to request tickets from the one-call center by submitting a spreadsheet containing the location and excavation information for 400 poles, but it was rejected by the one-call center. When the Foundation asked homeowners to request their own tickets, many cited the process as time-consuming and confusing.

Board Action: In the last months of 2022, the one-call center and Napa Communities Firewise Foundation have worked together to solve the problem of creating tickets for the 400 reflective address sign poles. The Board is concerned, however, that the one-call center had to redirect staff to assist the Foundation in a way that is not sustainable if other communities choose to implement similar programs. and the Board is also concerned with the perception from homeowners that the “call before you dig” process was time-consuming and confusing.

In late 2021, the Board conducted a study using ticket data to determine that volatility in locator workload could be smoothed out if as little as 20% of tickets gave utility operators more than the statutory minimum of two days to locate and mark. The study was limited in that it used ticket submission dates but made assumptions about locate and mark due dates. SB 865 (Hill, 2020) provided the Board with the ticket data necessary for it to determine how specific changes to the notification process and timelines would affect locator workload, and in 2022 the Energy Safety Data Analytics team began using funds provided by the Legislature in the 2021-22 Budget to build the information technology necessary to accept, maintain, and analyze this data. The Board plans to review how ticket process changes would affect locator workload starting mid-2022, when the information technology project is complete.



Reflective address signs in Calistoga with stickers identifying water sources, hydrants, room for fire engine turnaround, and evacuation zone.

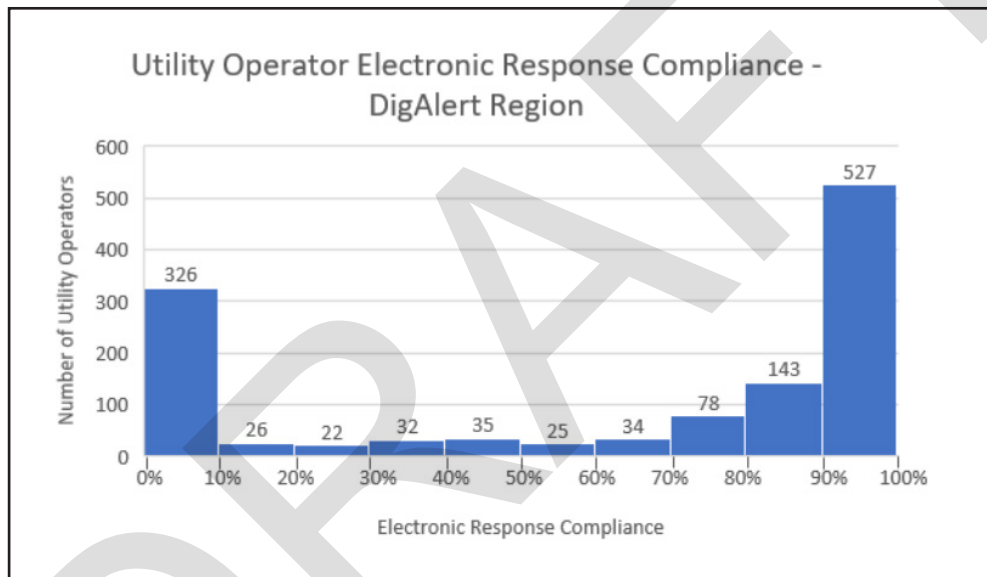
Recommendation: The Board recommends that it be authorized to place reasonable advanced notification and utility coordination requirements on excavators making a significant proportion of overall excavation notifications. The Board does not have recommendations for streamlining reflective address sign pole installation at this time.

Operator Electronic Response Process is Not Yet Achieving Intended Benefits

Area for Improvement: The Board is concerned that not all utility operators use the electronic response system recently required by AB 1166 (Levine, 2019). The set of stock response options utility operators may provide to excavators do not always help the excavator understand if they are clear to excavate, or if not, what next steps they should take. An

excavator’s responsibility does not end with the 811 notification. Excavators must check to ensure that all utility operators have responded before they may begin work. AB 1166 was enacted to assist excavators in doing so by requiring utility operators to respond to excavation notices electronically, allowing the excavator to go online to see the status of all utility operator responses. Although the law has been in place for two years, the Board believes there are opportunities for improvement.

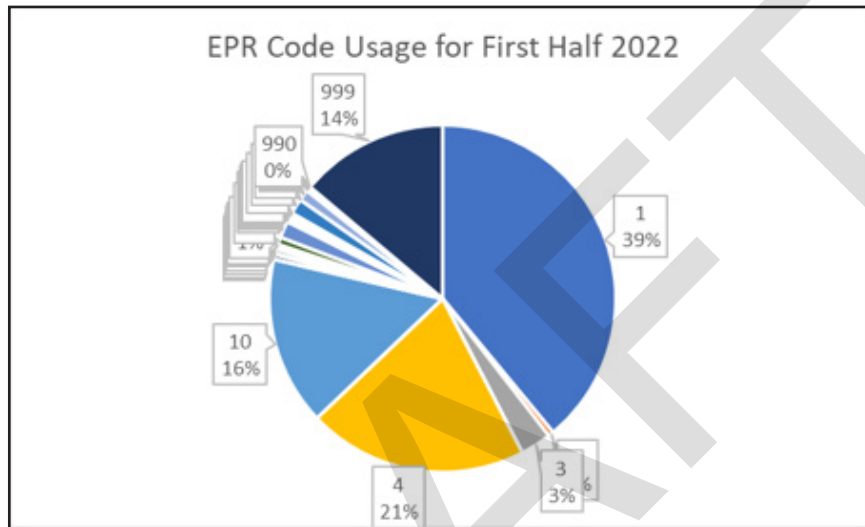
First, a significant proportion of utility operators are not providing electronic responses at all. As reported in the 2021 Annual Report to the Governor and Legislature, investigations staff issued letters to several hundred utility operators who had not provided any electronic responses in the first several months of 2021. In the intervening year, little improvement has been made. In 2023, staff will begin issuing enforcement actions to operators who fail to comply.



Histogram of DigAlert member compliance with electronic positive response in the first six months of 2022. Low percentages (left) indicate low compliance, while high percentages (right) indicate significant compliance.

Even when full compliance is accomplished, however, electronic responses do not provide sufficient clarity to excavators about what they are supposed to do. In advance of the electronic response requirement, California’s two one-call centers developed 32 stock responses that utility operators must use. Some of the responses appear to create obligations on excavators that do not exist in law or regulation, such as a responsibility for a field meet with the utility operator. Another response option states that a locate is not being performed due to extraordinary circumstances, but it is not clear as to when or whether the locate will happen at all. Additionally, only four response types constituted 90% of all responses through Southern California’s one-call center in the first half of 2022.

Board Action: The Board evaluated the electronic response process during the September 2022 Education and Outreach meeting and found that the one-call centers can improve the way in which the utility responses are presented to excavators. In the Board’s November meeting, the Board reviewed the stock responses and anticipates making changes in 2023 to better meet the goals of AB 1166 to enhance communication between excavators and operators. At this time, the Board has no recommendations regarding utility operator compliance with electronic response requirements or improvement to the response options themselves.



Ninety percent of all electronic responses to DigAlert in the first six months of 2022 (3,271,588 total) used one of only four codes: “1: Clear – no conflict” (39%), “4: No markings requested” (21%), “10: Locate Area Marked” (16%), and “999: Member did not respond by required time” (14%).

No-Call Damages Highlight Outreach and Education Opportunity with Specialty Contractors

Area for Improvement: General engineering contractors are professionals who understand that excavation is a part of their business, and investigations rarely find damages by this group to be caused by a failure to contact 811. California, however, has 41 specialty contractor license types and 33 limited specialty contractor license types. Board investigations of damages caused by specialty and limited specialty contractors identified that many did not use the 811 system because they didn’t think their work required it. A landscape contractor (C-27 license) who struck a natural gas line in San Anselmo stated that he was only going 12 inches and therefore didn’t think he needed an 811 ticket. A concrete contractor (C-8 license) in Fair Oaks, stated that he thought one could dig up to six inches without a



Irrigation pipeline damaged by a D-03 Awnings licensed contractor. From Investigation 21LA01483.

ticket. An awnings contractor (D-3 license) who struck a 56-inch irrigation pipeline in Glendora, stated that he thought the general contractor had already gotten the ticket, but nonetheless he dug to install a canopy footing without any information about who may or may not have responded to the ticket. Targeting specialty contractors for enhanced outreach and education could significantly increase their participation in the 811 system and thus, increase excavator and public safety.



Closeup of new driveway excavation performed by C-8 Concrete specialty contractor. From Investigation 21SA01473

The need for enhanced education isn't limited to contractors. In 2020, the Board approved regulations to implement the year-long Area of Continual Excavation (or "ACE") ticket for farmers to use instead of the standard ticket, which requires renewal every 28 days. The Legislature created the ticket type in SB 661 (Hill, Chapter 809, Statutes of 2016) to accommodate farmers, who weren't using the 811 process for the majority of their earth-moving activities. More than two years later after the ticket type has been available, farmers still aren't using the 811 system, presumably because they don't know it applies to them and they don't know that there is a ticket type designed to make compliance easier. Out of the more than half a million agricultural parcels in California, only 278 ACE tickets were requested in 2022, a large portion of which were requested by Board Member Voss's employer.



Repair of leaking concrete pipe outside of Bakersfield. Image provided by pipeline operator. From Investigation 21LA01474.

Board Action: The Board believes that targeted outreach with stakeholder-customized education messages and materials is vital to improving safety with excavator groups such as those who do not consider their work to involve excavation. Educating people and companies in a broad cross section of California industry is often made more difficult by language barriers.

For example, the investigation report of a "no-call" complaint outside of Bakersfield identified that an English-speaking pipeline company representative, alerted of a no-call excavation by

an aerial patrol, had difficulty communicating with a Spanish-speaking excavation crew in trying to convince them to stop working. This interaction demonstrated why utility operators need to provide their representatives with materials and scripts explaining the salient points of the law, and those materials need to be written in the languages that people in California speak.

In June 2023, the Legislature approved the Governor’s proposal to fund four positions for education and outreach and allocate \$100,000 annually for translation of education and outreach materials. Given this support, the Board has no recommendations regarding education and outreach and looks forward to deploying these resources and reporting back on its progress.

Summary of Recommendations

In this report, the Board has made the following recommendations to the Governor and Legislature:

1. The Board recommends that utility operators be required to participate in the Planning and Design Ticket.
2. The Board recommends that it be authorized to place reasonable advanced notification and utility coordination requirements on excavators planning to make significant excavation notifications.

Conclusion

Throughout 2022, the Board identified several areas for improvement that go beyond excavator failure to “call before they dig.” Board investigations and outreach uncovered more details about the links between project design, excavator practice, the one-call system, and how the failure of any of these links can lead to negative safety consequences. As the Board heads into 2023, it will continue to solicit stakeholders to partner in improving public and worker safety around excavations in California.

Investigations Highlighted in this Report

19SA01279: Geary Boulevard (San Francisco) Natural Gas Rupture and Fire

21SA01473: Kewanee Street (Fair Oaks) No-Call Complaint

21LA01474: Ashe Road (Bakersfield) No-Call Complaint

21LA01482: Prospect Avenue (San Anselmo) Natural Gas Rupture

21LA01483: Whitcomb School (Glendora) Irrigation Pipe Strike

22LA01484: Noble Creek Park (Beaumont) Late Mark Complaint

Investigations, enforcement notices, and Board decisions may be found online at <https://efiling.energysafety.ca.gov/Dockets.aspx?caseld=1255>.

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