California Underground Facilities
Safe Excavation Board

Item #4

Agenda Item – Staff Report

DATE: June 21, 2018

TO: Members, Underground Facilities Safe Excavation Board

FROM: Tony Marino, Executive Officer

SUBJECT: Process for Standard Development

SUMMARY:

The Legislature, in the Dig Safe Act of 2016, required the Board to develop standards determine the "evidence necessary for excavators and operators to demonstrate compliance" with delineation, locate and mark, and other requirements of the one-call law, the process an excavator should follow in using hand tools in the tolerance zone, and the process for determining the depth of underground facilities in grading activities. The Legislature did not restrict the Board to only these standards, and the Board may choose other standards to pursue as well, but it must be mindful not to cross into general occupational safety and health standards, which are set by the state's Occupational Safety and Health Standards Board (OSHSB).

The Board should discuss and seek public feedback on the following on the following questions:

1) How should the standards balance between the needs to be understandable, auditable, and easily communicated with the need for each actor to customize standard implementation to their particular circumstances?
2) Should standards developed by the Board be regulatory, and hence enforceable by the Board, or should they be non-regulatory?
3) What is the process by which these standards should be developed?
4) What is the process by which the Board would entertain the development of standards in addition to those enumerated in statute?

The Board should also discuss and seek public feedback on staff recommendations at the end of this report.

BACKGROUND:

The Legislature, in enacting the Dig Safe Act of 2016 placed standard development among the central functions of the Board.[1]

[1] Gov't Code § 4216.12(b), § 4216.18.

The Legislature's purpose for requiring the Board to develop these standards was discussed during legislative hearings on the bill. In speaking in support of the bill, Todd Bloomstine, representing the Southern California Contractors' Association, told the Assembly Utilities and Commerce Committee on June 22, 2016 that:

> *"What SCCA members have been asking for consistently throughout this process are a set of standards for them to follow in order to discover the underground utilities. Specifically, how often should we pothole? what should the frequency be for potholing? what the distance should be; is there a difference if you're in a rural area or urban area? We trust that this new governing board will come up with a set of standards that we can live with."*[2]

The bill author's fact sheet supported this intent, stating:

> *"The national Common Ground Alliance has developed best practices for the one-call process, but no standards exist for protecting underground pipes and conduits in road grading, in agriculture, in dig-in accident investigation, or in protecting worker safety around pipes in trench work."*[3]

The Legislature provided guidance to the Board in developing these standards, stating that the standards should not replace existing standards and that the Board should refrain from using data not publicly available in its standard development process (Gov't Code 4216.18 (a)). Aside from this guidance, the Legislature gave the Board broad authority to determine the form of these standards and the process in which to develop them. The Legislature did

Before embarking on standard development, the Board should provide direction to staff on the purpose for the standards and how they relate to regulations, the form the standards are to take, the process for developing them, and a process to entertain the development of standards not enumerated by the Legislature.

DISCUSSION:

Standard What?

Standards, apart from a regulatory context, exist in large part to govern the interaction between technologies and processes. The North American electric power system uses alternating current, oscillating at a standard 60 cycles per second to so that the same induction motors may be used throughout. Railroad track gauges in the Great Britain, the North America, and most of Europe place rails 4 feet, 8 ½ inches apart so that locomotives and rail cars can carry their loads across company and jurisdictional lines from origin to destination. Left hand signals were designed in a bygone motoring age so

[2] http://calchannel.granicus.com/MediaPlayer.php?view_id=7&clip_id=3845&meta_id=148452
[3] August 12, 2016.

that a North American driver could indicate his or her intention, to be replaced by rear turn signals, mandated to be amber or red in color to differentiate from other vehicle lighting. The TCP/IP standard protocols exist to ensure that computers across the world can communicate with one another.

The term “standard” has, however, taken on a broader meaning to describe a common and comprehensible process or approach that a spectrum of different actors can use to fulfill a regulatory requirement or demonstrate adequacy in processes whose outcomes are not easily measurable. For instance, the International Standards Organization (ISO) 9000 series of standards describes elements of quality management systems meant to be applicable across a host of industries. ISO 9000 is very broad, however, and has been adapted for more specific applications such as environmental management systems (ISO 14000 series), occupational health and safety management systems (the British Standards Institution’s OHSAS 18000 series), civil aviation safety management systems (International Civil Aviation Organization’s Doc 9859), and pipeline safety management systems (American Petroleum Institute’s Recommended Practice 1173).

Unlike technical standards pertaining to railroad gauge or internet communication protocols, these standards do not directly govern the interaction between different systems or organizations but focus on a standard way in which an organization may approach a task or requirement. When effectively used, these types of standard can help an organization’s management to communicate goals internally and to communicate compliance with external stakeholders.

Implicit in the value of a standard is its application to different entities faced with the same task or problem; therefore successful standards tend to be developed with broad participation by entities with an interest in using it. In contrast, creation of a “best practice” has no such implication and may be hatched out of a consultant’s broad experiences or created in-house by an individual firm and marketed as a “best practice.” The more a “best practice” is developed using broad participation, the less distinguishable it is from this broader definition of a standard.

The Legislature did not specify the nature of the standards the Board is to develop, but those enumerated in Gov’t Code § 4216.18 have elements of standards in both the narrow and the broader sense. Subdivision (a) of § 4216.18 requires the Board to determine “evidence necessary for excavators and operators to demonstrate compliance” with delineation, locate and mark, and other requirements of the one-call law, which clearly has value in assisting communication to the Board and to others. Subdivisions (b) and (c), on the other hand, focus on the process an excavator should follow in using hand tools in the tolerance zone and in determining the depth of underground facilities in grading activities, respectively.

Standards: Means-Ends/Micro-Macro

Standards, in the broader sense of a common and comprehensible process or approach to manage quality, may take many forms depending on how comprehensive or precise they may need to be. *Prescriptive standards*, like track gauge and internet communication protocols are simple to understand, communicate, and test, but they have the characteristic that they limit the method by which a particular goal may be accomplished. This is desirable when the goal is compatibility of diverse products. This type of standard is typically contrasted with *performance-based standards*, which are meant to provide more flexibility in reaching an end goal. State policymakers have encouraged through statute the use of performance-based regulations, requiring agencies to consider using performance standards and do so when performance standards would be reasonably expected to be as effective and less burdensome than a prescriptive standard counterpart.[4]

One challenge in using performance standards is that the term is not always well-defined and used inconsistently. As the authors of the National Academy of Sciences report *Designing Safety Regulations for High Hazard Industries*[5] explain, the term "performance-based"

> *"is sometimes used in reference to regulations that require firms to achieve certain ends but without specifying the means of compliance. At other times it is used in reference to regulations that do not specify ends but require firms to apply management means while giving them flexibility in customizing those means to circumstances."*

The authors instead categorized standards along two axes:

1) Does the standard apply to the means or the process, or does it focus one the ends or outcome?
2) Does the standard outline specific steps or measures, or does it describe management-level activities?

The authors redefine "prescriptive" and "performance-based" within this matrix, as seen in **Table 1**.

	Means	**Ends**
Micro	*Micro-means*	*Micro-ends*
	"Prescriptive"	"Performance-based"
Macro	*Macro-means*	*Macro-ends*
	"Management-based"	"General duty/liability"

Table 1: Four basic standard design types, as defined in [5].

[4] Government Code § 11340.1.
[5] National Academies Transportation Research Board Special Report 324; "Designing Safety Regulations for High-Hazard Industries"; 2017; DOI 10.17226/24907; http://nap.edu/24907

Any individual standard document may have elements of multiple types of standards, but often one dominates. Under this terminology, rail gauges, turn signals, and internet protocols would all be considered predominantly *micro-means* or "prescriptive" standards, while the quality and safety management systems would largely be considered *macro-means* or "management-based" standards. The federal Occupational Safety and Health Administration's (OSHA) permit-required confined spaces standard[6] has both *micro-means* ("prescriptive") and *macro-means* ("management-based") elements, as it was drafted to provide employers with broadly defined requirements but leave the implementation details of developing programs and procedures to individual employers, as an employer is more familiar with the conditions of the confined spaces under his or her control than anyone else.[7] The under these definitions, standard would not be considered "performance-based", though it is often colloquially referred to as such.

Standards and Regulations

Different industries have different relationships with standards. Most standards come and go without the touch of regulation, based instead on an industry's changing consensus (such as with American National Standards Institute (ANSI) standards for computer languages) or competition in the marketplace (as JVC's VHS format would outcompete Sony's Betamax, and Sony's Blu-Ray would win out over Toshiba's HD DVD), both of which are often driven by technological innovation.

Standards pertaining to safety, however, often have an explicit relationship with government regulation. The Williams-Steiger Occupational Safety and Health Act of 1970 explicitly directed OSHA to adopt standards as regulations,[8] and California's OSHSB within Cal/OSHA performs the standard/regulation development role for the state.

Pipeline safety standards, on the other hand, are formally separate from federal pipeline safety regulations, but the Office of Pipeline Safety within the federal Pipeline and Hazardous Materials Safety Administration (PHMSA) incorporates a many third-party safety standards by reference.[9] The Dig Safe Act of 2016 did not specify whether standards developed by the Board should be regulatory or non-regulatory.

Whether the Board chooses to create regulatory or non-regulatory standards has consequences for what the final standards might be. The authors of *Designing Safety Regulations for High Hazard Industries* focused on the development of safety regulations, and identified three factors in selecting a regulatory design:

[6] Title 29, Part 1910, Section 146, Code of Federal Regulations
[7] Letter from Thomas H. Seymour to Jon P. Moldsted, June 21, 1995. https://www.osha.gov/laws-regs/standardinterpretations/1995-06-21-0
[8] 29 CFR 1910.1(a).
[9] 49 CFR 192.7, 49 CFR 195.3.

- The nature of the problem to be solved,
- The characteristics of the regulated industry, and
- The regulator's resources and capacities.[10]

Specifically, the more management-based the standard, the more difficult the oversight of compliance. This challenge posed by the third bullet above is not solely the regulator's, however, as discussed above. The more abstract the standard, the more difficult for partners, insurance companies, and firm employees to evaluate adherence, and the more difficult for management to determine whether the standard meets its needs.

RECOMMENDATION:

Staff recommends that the standard development process should be a different process from the regulatory process, being more stakeholder-led and less staff-led, and much of what follows is predicated on this recommendation.

The desire by some parties in advocating for or in accepting as reasonable the idea that the Board develop standards appears to have stemmed not from a vacuum of regulatory authority but from the lack of a recognized and effective forum to test ideas and resolve the various industry positions into common, agreed-upon procedures for protecting safety in excavations around buried facilities. The national Common Ground Alliance's Best Practices process has some standards related to excavation process, but its focus has been primarily on the one-call process. The California Regional Common Ground Alliance (CARCGA), which is the state's only non-profit entity devoted to damage prevention and open to participation by operators and excavators alike, appeared to have limited participation and no clearly-outlined process by which consensus in the meeting room could manifest itself in changes in the field.

Staff believes that, should the Board provide a role to CARCGA in the standard development process, it would promote participation in CARCGA by both excavators and operators.

Staff recommends that the Board not, however, cede its statutory authority as the state's body responsible for the standard development process. The Board should provide guidelines for what it expects out of a standard. These guidelines may be both process-based, such as requiring CARCGA demonstrate broad participation by the entities affected, and outcome-based, such as flexibility sufficient so that actors of various sizes may be able to comply. The Board should also expect CARCGA to come back to the Board for approval of the standard, at which point the Board may choose to accept, modify, or reject the standard.

[10] pp. 90-100.

Tasking CARCGA with these responsibilities may deem CARCGA to be an advisory committee of the Board under the Bagley-Keene Open Meeting Act, with all of the Act's associated protections and restrictions. Most of these requirements may be fulfilled without significant effect on the way that CARCGA currently runs meetings (participation by public, notice and agenda, etc.), but some requirements—particularly regarding teleconferences, might pose challenges. If CARCGA chooses to take on this role, it should, with the assistance of staff, develop a clear understanding of Bagley-Keene Open Meeting Act requirements and propose to the Board how it would fulfill those requirements.

As this activity is proposed to be stakeholder-led and not staff-led, the resulting standards should not be regulatory. If the Board believes that a standard should be added to regulation—or if CARCGA recommends it—staff can begin the regulatory process. The downside of a non-regulatory standard is that no one needs to follow it, and without an enforcement entity monitoring, its effectiveness is not always easy to determine. The benefit of a non-regulatory standard, however, is that it can be easily adjusted if it isn't working as imagined without the results being distorted by a fear of regulatory enforcement. The Board should expect that it might want to place some of its standards into regulation, but this approach will provide a flexible test period for determining effectiveness before doing so.

The Board should determine outcome-based expectations for each standard on a case-by-case basis. Some standards may be well-suited to *micro-means* ("prescriptive") approaches while others may make more sense at the *macro-means* ("management-based") level. In setting its expectations, the Board should consider its strategic goals and objectives. Currently, *standard development* falls under the strategic objective of continual improvement, so a monitoring component might be a reasonable expectation to set.

ATTACHMENT:

SB 661 Fact Sheet, August 12, 2016.

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Senator Jerry Hill, 13th Senate District

SB 661 – Dig Safe Act of 2016

IN BRIEF

California has the two most recent excavation-related gas pipeline fatalities in the country. On Friday April 17, 2015 a front loader in Fresno came into contact with a 12-inch high pressure natural gas transmission pipe, causing an explosion that injured eleven people. One person died as a result, and—eight weeks after the blast—one remained hospitalized. Late last year, on November 13, an agricultural contractor died when he hit a backbone gas transmission pipeline while ripping a field outside Bakersfield. Accidents such as this are the result of unsafe practices that Californians undertake all the time. Roughly 5,000 of California's natural gas pipelines are hit every year, and it is estimated that roughly half of them occur because the excavator failed to use the free 8-1-1 service so that pipes can be located and marked before digging. The safety hazard associated with digging into natural gas pipelines has hung over the Legislature for a long time—at least since 2004, when five laborers were killed in Walnut Creek when a petroleum pipeline exploded after it was struck with a backhoe.

THE APPROACH

The strategy that SB 661 takes to finally tackle this problem is to:

1) **Improve enforcement.** Right now, the law that requires excavators to call 811 and have utility lines marked is only enforceable by the AG, a district attorney, or in a limited fashion by other agencies. What this means is that the law is only enforced when something terrible happens—in which case other laws come into play anyway—so unsafe behavior is not prevented before injuries and fatalities occur.

2) **Clarify the law.** Widespread disregard of the one-call law exists partially because of the lack of enforcement but also because the law is so unclear. In some cases, such as in normal agricultural operations, the law applies but is not followed because it is unrealistic. Different, more applicable procedures are needed to better safeguard those operations.

3) **Develop a venue for discussions to improve excavation safety.** In the many discussions since December 2014 (which include 8 large, 25+ participant meetings), the stakeholders have discovered that many complicated aspects to safe excavation have not been widely discussed. Some of these are: What should be done to mitigate the problem of "mismarks"? How should the law apply to deep digs where trenching safety also becomes an issue? What evidence does an underground facility owner or an excavator need to demonstrate compliance with the law?

THE SOLUTION

Following an extensive stakeholder process, SB 661 addresses the safety problems by making clarifications to the one-call law and by creating the **Safe Excavation Board**, an appointed board of excavation stakeholders, funded through fees on utilities, that would perform three tasks:

1) *Investigate accidents and other "one-call" violations*. Currently the greatest barrier to enforcement is that no one is investigating accidents. Those few cases that are investigated are done separately at Cal/OSHA, the PUC, and CSLB, and therefore no broad conclusions may be drawn from them. The board investigations and recommendations would be forwarded to existing regulatory authorities for enforcement, or, for those entities over whom there is no existing appropriate authority, enforcement is performed by the board itself.
2) *Develop standards for safe excavation.* The national Common Ground Alliance has developed best practices for the one-call process, but no standards exist for protecting underground pipes and conduits in road grading, in agriculture, in dig-in accident investigation, or in protecting worker safety around pipes in trench work.
3) *Coordinate education and outreach efforts.* Many utility operators have outreach requirements, but these efforts are not monitored or coordinated. Also, the board would fund grants to non-utility organizations to perform targeted outreach.