California Wildfire Safety Advisory Board

Wildfire Safety Advisory Board Quarterly Meeting

December 04, 2023, 9:00 a.m.

Sonoma Clean Power
Advanced Energy Center
741 4th Street,

Participation Information

Using more than one participation option may create feedback.

Please begin your comment by stating your name and organization

- **In-Person: Sonoma Clean Power Advanced Energy Center –** 741 4th Street, Santa Rosa, CA 95404. Sign-in sheet at entry.
- **Zoom:** https://us06web.zoom.us/j/88909234004?pwd=eTlMcFJWTFVGQ1ZZbGg5U2k4WjFuUT09, **Webinar ID:** 889 0923 4004 **Passcode:** 106040
- **Phone:** 404-433-6397 US Toll | 877-336-1831 US Toll-free | Conference code: 167251
- Participants are placed in "listen/watch only" mode until the public comment portion of the meeting. During the public comment portions, participants may use the raise hand function on the Zoom videoconference or may dial #2 (pound/hashtag two) to be placed in a queue when they wish to speak. The hosting team will unmute callers in order of request.
- **Email:** Written comments may be emailed to WSAB@energysafety.ca.gov.
- **Tech Issues:** For technical issues, please e-mail WSAB@energysafety.ca.gov or call Mary Ann Aguayo at 279-336-1731.

California Wildfire Safety Advisory Board

Locating Meeting Materials

Meeting Materials Available at:

https://energysafety.ca.gov/what-we-do/wildfire-safety-advisory-board/wsab-events-and-meetings/

Public Comments Available at:

https://energysafety.ca.gov/what-we-do/wildfire-safety-advisory-board/public-comments-received-by-the-wildfire-safety-advisory-board/

1 - Call to Order and Roll Call

- Jessica Block, Chair
- Chris Porter, Vice Chair
- Ralph M. Armstrong Jr., Board Member
- Diane Fellman, Board Member
- Tim Haines, Board Member
- John Mader, Board Member
- Alexandra Syphard, Board Member

Pledge of Allegiance

Safety Briefing

Agenda

1) Call to Order and Roll Call

2) Public Comments

3) Discussion/Vote on October 3rd, 2023 Meeting Minutes

4) Administrative Update

5) Energy Safety Update

6) Advisory Opinion for 2024 Wildfire Mitigation Plans of California's Electric Publicly Owned Utilities and Rural Electric Cooperatives

7) Presentations and Discussion on Above-Grade Distribution Systems

Agenda (Continued)

8) Utility Vegetation Management (UVM) Recommendations and Policy Paper

9) Updating Utility Regulations in light of Climate Change and Wildfire Risks Policy Paper

10) Subcommittee Assignment Recap and Activity Updates

11) Agenda Items for Consideration at Future Meetings

12) Adjournment

2 - Public Comments

Please begin your comments by stating your name and organization (if applicable).

a. In-person
b. On Zoom
c. On the Phone
d. Via Email

3 - Minutes from October 3, 2023 Meeting

Discussion
&
Vote

California Wildfire Safety Advisory Board

4 – Administrative Update

5 - Energy Safety Update

Office of Energy Infrastructure Safety

California Natural Resources Agency

6 – Advisory Opinion for 2024 Wildfire Mitigation Plans of California's Electric Publicly Owned Utilities and Rural Electric Cooperatives

Board Discussion and Adoption

California Wildfire Safety Advisory Board

Recommendation for 2024 Wildfire Mitigation Plans of California's Electric Publicly Owned Utilities and Rural Electric Cooperatives

1. POU progress and achievements;
2. Performance metrics;
3. QA/QC program;
4. Independent Evaluator (IE) reports;
5. Executive summaries;
6. Late WMP submissions;
7. Revision log;
8. Digital accessibility; and
9. Other items that come up during discussions.

Presentations and Discussion – Above-Grade Distribution Systems

7- Presentations and Discussion on Above-Grade Distribution Systems

Objectives:

- Describe the technique of above-grade distribution systems (AGDS) in multiple design variations and associated technologies
- Discuss the PG&E pilot that is underway
- Discuss the current regulatory framework relating to new and innovative designs and construction of the electric system
- Discuss the challenges and opportunities for AGDS
- Determine what issues require further investigation
- Discuss potential next steps

Brad Koelling, PG&E

10,000-Mile Undergrounding Program

GLDS PILOT OVERVIEW

November 2023

GLDS Pilot Project

GLDS stands for "Ground Line Distribution System". PG&E has piloted this new technology as a potential alternative to traditional undergrounding to determine benefits and ideal use cases.

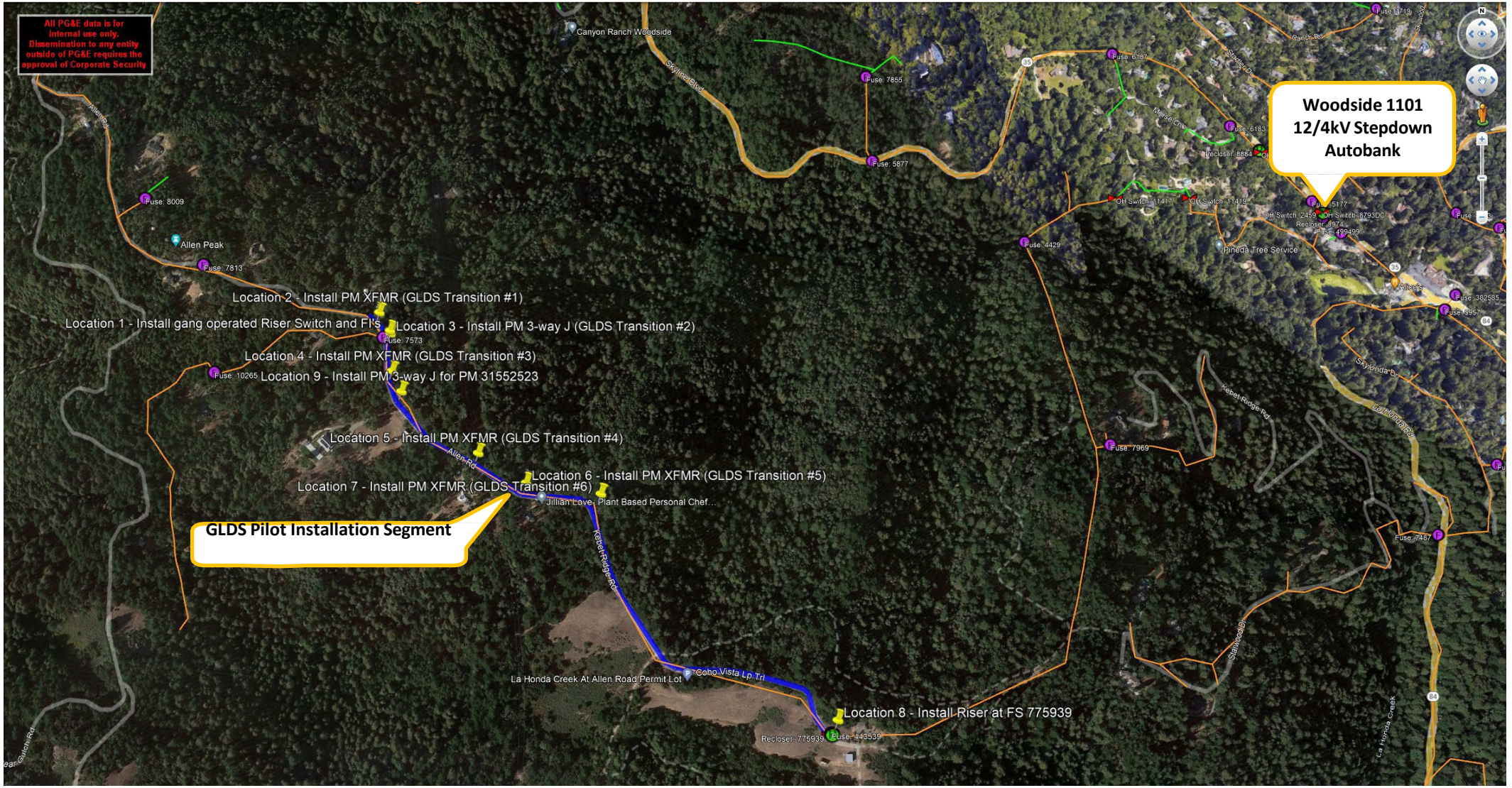
Potential GLDS Benefits

When compared to traditional undergrounding:

- ✓ **Results in cost savings (trenching, spoil disposal, restoration, etc.)**
- ✓ **Quicker to install/deploy**
- ✓ **Can be used in rugged/rough terrains or culturally sensitive areas**
- ✓ **Minimal construction impacts to the surrounding area**
- ✓ **Geopolymer concrete is fire-proof**

Some of the measures included in this presentation are contemplated as additional precautionary measures intended to further reduce the risk of wildfires.

GLDS Pilot Project - Location



Some of the measures included in this presentation are contemplated as additional precautionary measures intended to further reduce the risk of wildfires.

GLDS Pilot Project (Before)

Some of the measures included in this presentation are contemplated as additional precautionary measures intended to further reduce the risk of wildfires.

GLDS Pilot Project (After)

Some of the measures included in this presentation are contemplated as additional precautionary measures intended to further reduce the risk of wildfires.

GLDS Pilot Project

PG&E's GLDS pilot in Woodside (San Mateo County) includes installing fire-retardant geopolymer concrete encasing CIC (Cable in Conduit) distribution lines at grade or slightly below grade levels. Lines and trays installed in this fashion are far less prone to vegetation-related risks and also offer protection from pedestrians and vehicles.

Project Quick Facts

LENGTH: 0.89 Miles (0.49 Miles Energized)

CONSTRUCTION START: October 2023

CONSTRUCTION END: November 2023 (0.49 Miles); May 2024 for remainder (0.45 Miles)

Cable tray system with CIC/ basalt rebar awaiting geopolymer concrete pour

Geopolymer concrete pouring into tray system

Cover installed over cable tray system

Some of the measures included in this presentation are contemplated as additional precautionary measures intended to further reduce the risk of wildfires.

GLDS Pilot Project - Additional GLDS Photos

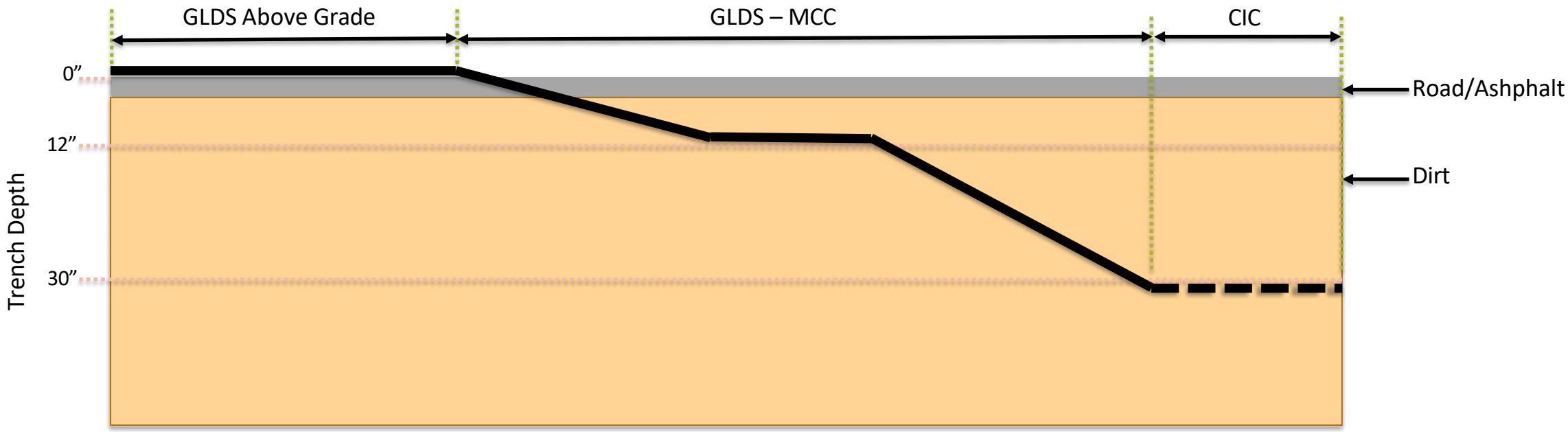
Geopolymer concrete formed into cable tray system

MCC (Minimum Cover Cable) Preparation – Driveway Crossing

MCC to traditional CIC (Cable in Conduit) Transition application

Some of the measures included in this presentation are contemplated as additional precautionary measures intended to further reduce the risk of wildfires.

GLDS Pilot Project – Cable Tray Layout



Some of the measures included in this presentation are contemplated as additional precautionary measures intended to further reduce the risk of wildfires.

Rudy Movafagh, Rudd Engineering

MINIMUM COVER CABLE(MCC) DISTRIBUTION SYSTEM

Meeting California Electric Distribution System Needs:

Meets rural, environmental, climate as well as ignition challenges

Safety:

- Eliminates overhead ignition risk
- Removes overhead vegetation removal and working risks for crews
- Removes standard underground trenching hazards and spoilage removal
- Multilayers of arc protection: outer Thermoplastic Polyolefin (TPO, which is (Resin blends of polypropylene (PP) and un-crosslinked EPDM rubber and polyethylene) tray, Fireproof Or Super concrete (proprietary blend), inner HDPE conduit, and standard HPE cable

Reliability:

- Eliminates PSPS shutdowns
- Removes animal, tree fall, and vegetation caused outages entirely

Affordability:

- Less than half the cost of standard trenching
- Anticipated cost of < $2.5M/mile

Ground Level Distribution System (GLDS)

Above ground cable tray system comprised of standard EPR underground primary cable inserted into HDPE conduit, then encapsulated in epoxy resin concrete shrouded with the polymeric plastic cable tray.

Minimum Cover Cable System (MCC)

Incorporates the same GLDS technology but utilizes a pavement/soil excavating machine to cut a minimum depth trench into which to lay the GDLS.

Developed by former Utility Engineer, and construction team in partnership with Rudd Engineering, EnergyLink, and Southwire

Product Innovations

- GLDS low profile, contoured design to permit vehicle drive over
- Rapid deployment where trenching is not possible due to:
  - excessive ground hardness, rocky soil
  - inaccessibility for trenching equipment,
  - inability to dig in sacred land.
- Super high strength flexibility balanced, epoxy resin concrete:
  - Graphite grid reinforced with fiberglass to minimize cracking
  - Light weight mix to pump and deploy in remote locations
  - Water-free mix impervious to fire spalling and cracking
  - Maximum heat-dissipation capability to maintain cool temperature within HDPE conduit
  - Standard add-mix components with no special tools or techniques required to pour

Product innovations (continued)

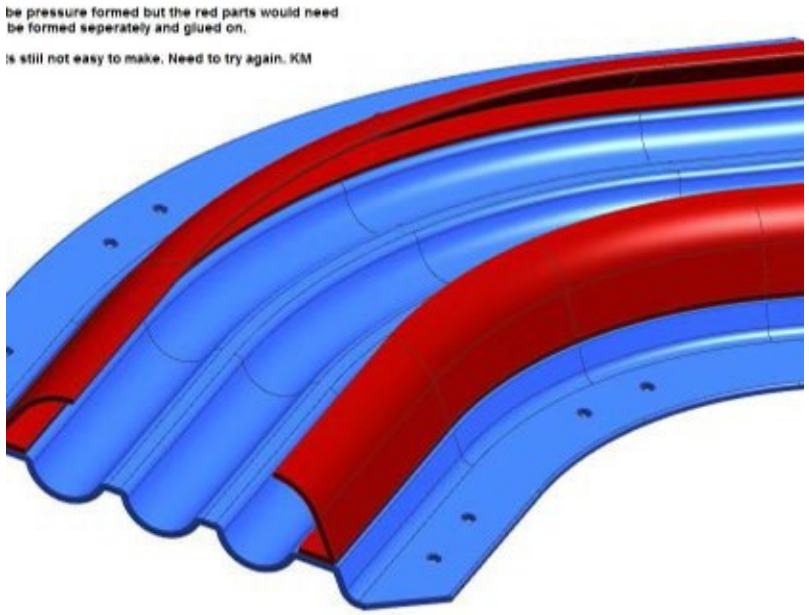
- **Thermoplastic Polyolefin** cable tray characteristics:
  - Impervious to UV and high flame temperature resilient (UL94, V-0)
  - RoHS Compliant and specifically designed for flame retardancy
  - Ability to embed line marking and safety warnings
  - Configurable to meet multiple bend and riser layouts
  - Snap together rapid installation feasibility
  - Configurable to meet 1/0 to 1,100 kcml single and three phase designs
  - Configurable add fiber optic or additional communication cable options
- **HDPE conduit**
  - Standard design already utilized at PG&E
  - Smooth wall provides less pulling resistance
  - Less joints and fit up

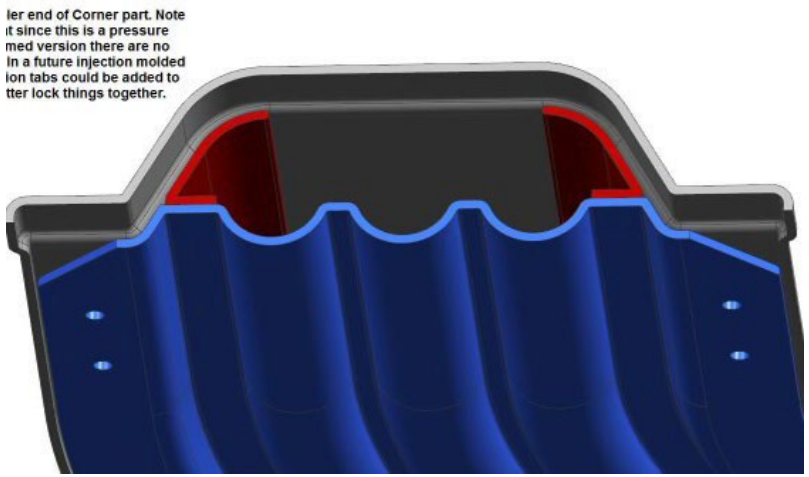
ADVANTAGES OF THIS SYSTEM

- Reliability and availability of power as it relates to external implications such as **high winds or storms.**
- **Maintenance Free system**, This system like UG conduit does not require any specific maintenance. However cyclic visual inspection could potentially be the same as our ground mounted equipment (GO 165 – 3 Year inspection cycle)to ensure the integrity of the cable system is not compromised in any way.
- Eliminate or reduce cost in **vegetation management**.
- Eliminate the risk of tree/**root growth** into facilities (as experienced in underground systems)
- Eliminate the risk of **dig-ins** as well as clear indication of high-power line.
- Environmental Hazard management to support **Leach field challenges and methane gases** below ground (challenge in Paradise electric system rebuild)
- Minimal elevation from the ground will allow **vehicle access** (e.g., Emergency response, Fire trucks, etc..).
- Potential Application and solution for **Utility Easements** (PUE) challenges (e.g., Limited space
- Special Application and solution for agricultural customers (e.g., organic farms, and addressing fire risk in wineries without disturbing)
- Emergency management with cable runs above ground (SF Network System events)

INVENTION OF GROUND LEVEL DISTRIBUTION SYSTEM –CABLE SYSTEM

Two-piece cable rail system with the base to be used to lay down the CIC, then filled with fire **resilient concrete fill** and secured with top cover, indicating high voltage sign.

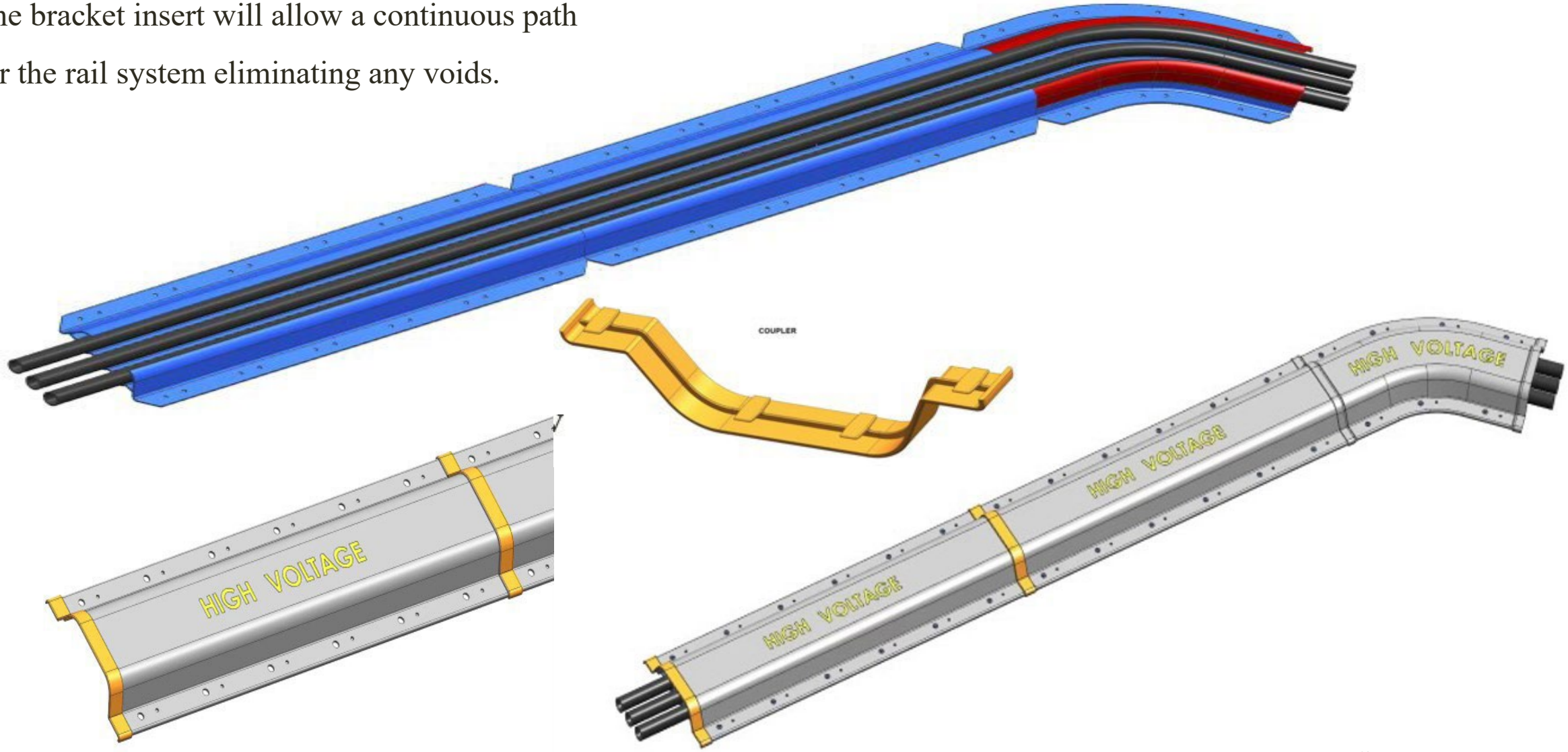




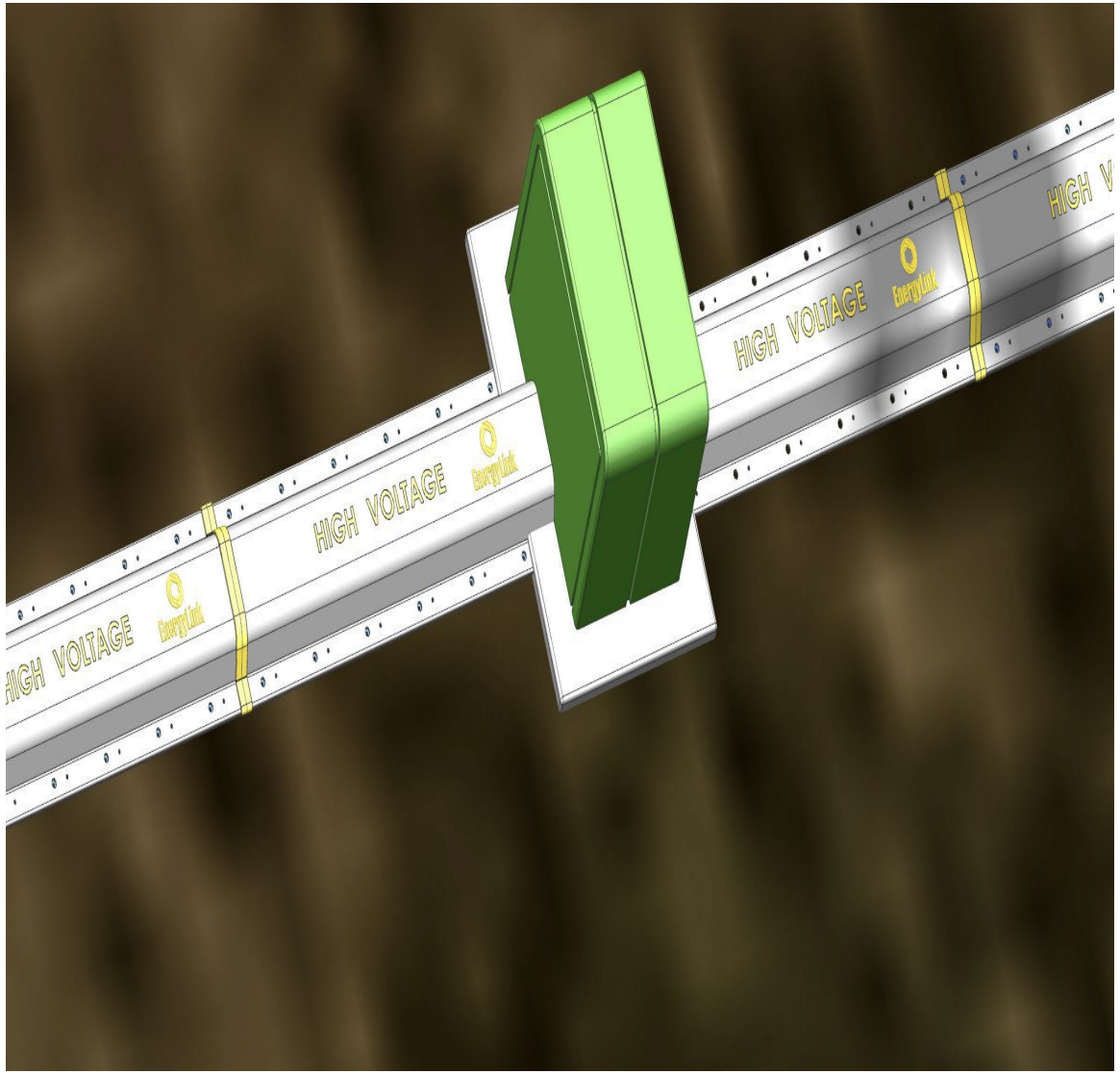
INVENTION OF GROUND DISTRIBUTION SYSTEM –CABLE SYSTEM

The bracket insert will allow a continuous path

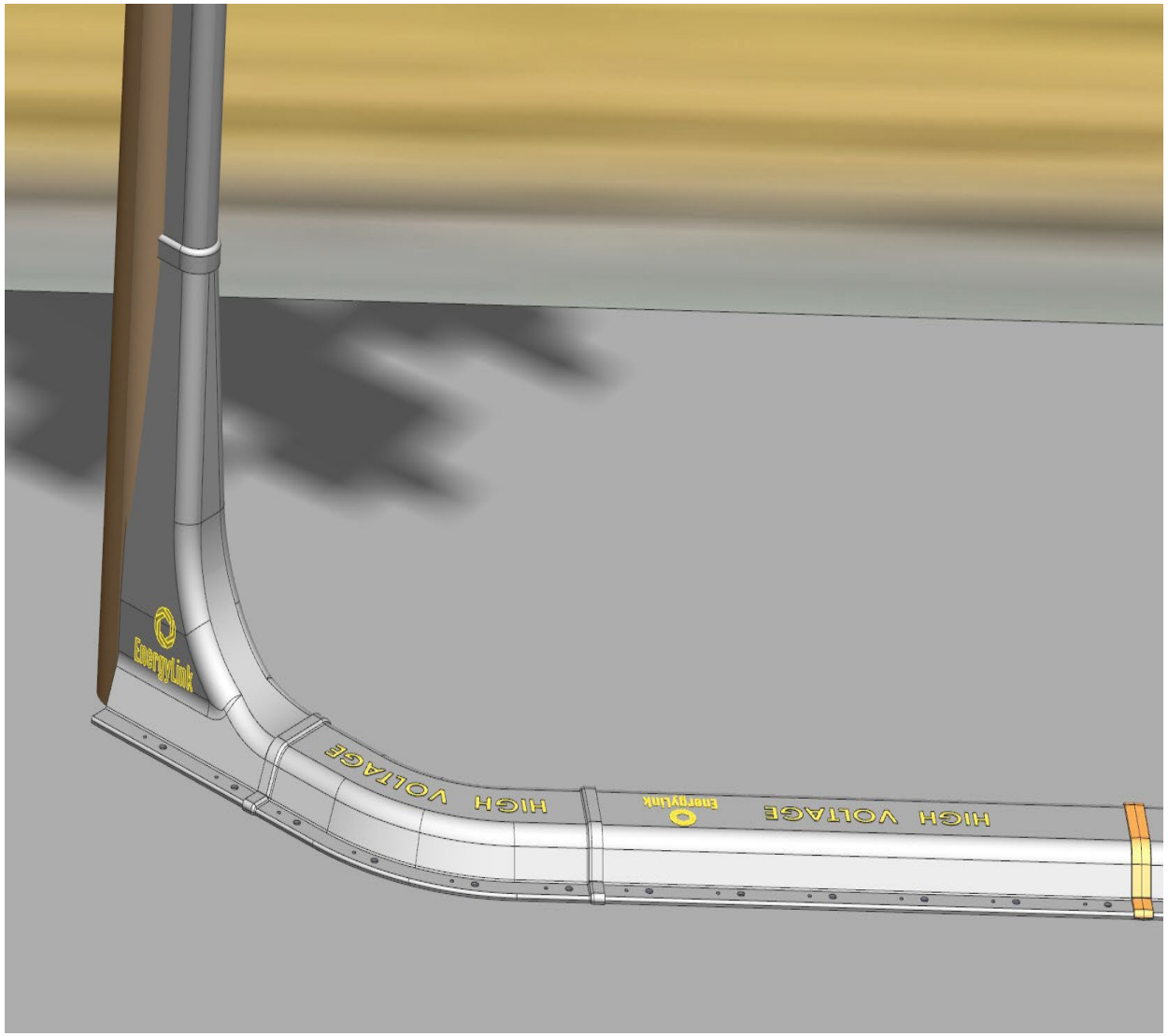
for the rail system eliminating any voids.

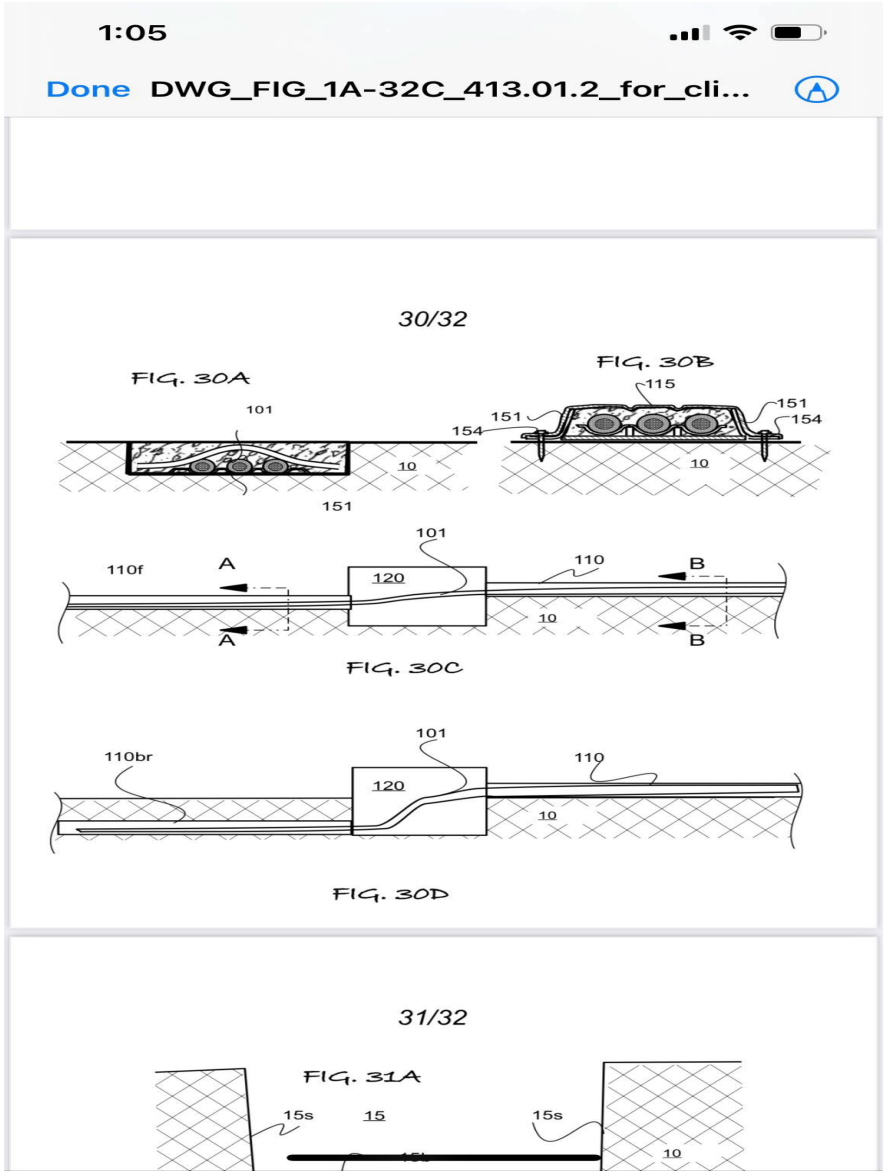


HIGH LEVEL CONCEPT/APPLICATION
GROUND LINE/PAD-MOUNT SYSTEM



HIGH LEVEL CONCEPT/APPLICATION
HYBRID OH/GL SYSTEM





APPENDIX

GLDS/MCC First Demonstration Workshop

LIVERMORE TRAINING FACILITY; MARCH 17, 2022

Purpose:

- Demonstrate product feasibility
- Solicit feedback from a utility
- Determine next steps to initiate a pilot

Results:

- Broad acceptance of product concept
- Agreement that a pilot should be executed at PG&E with certain product modifications
- Strong recommendation to implement the MiCCa solution with pavement cutter machine
- Consider utilizing MiCCa solution for current cable replacement needs
- Reconstruction Post Fire events ground Level (Site specific: Temp and/or Permanent)


CONFIDENTIA


PG&E

GLDS/MCC PILOT WOODSIDE 1101CIRCUIT

ALLAN RD. REDWOOD CITY, CA ; SEPTEMBER 2023




ROAD PREPARATION AND COMPACTION

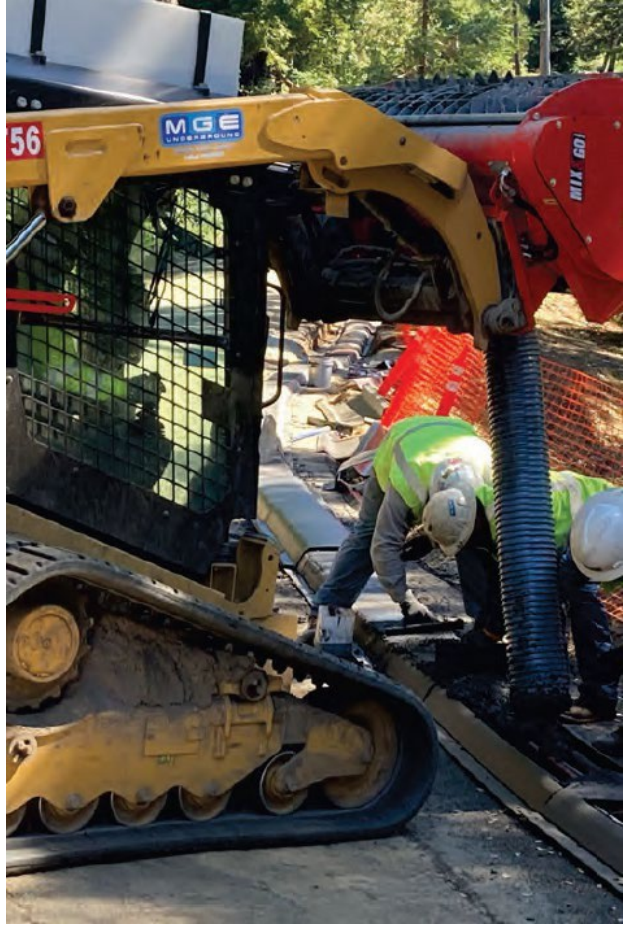
ROAD PREPARATION AND COMPACTION

CABLE RAIL SYSTEM AND CIC INSTALLATION

CABLE RAIL SYSTEM AND CIC INSTALLATION

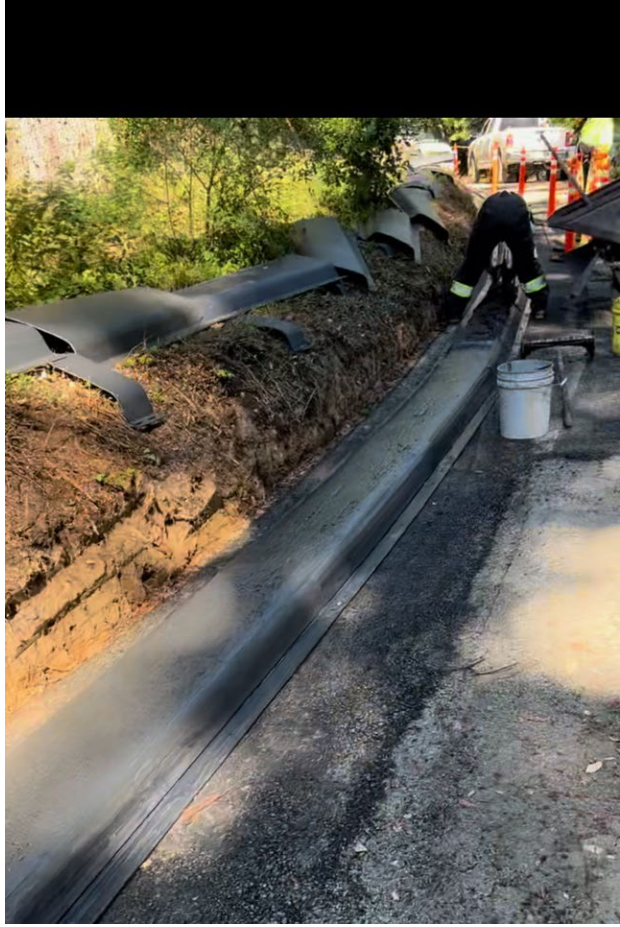


GEOPOLYMER FILL MATERIAL



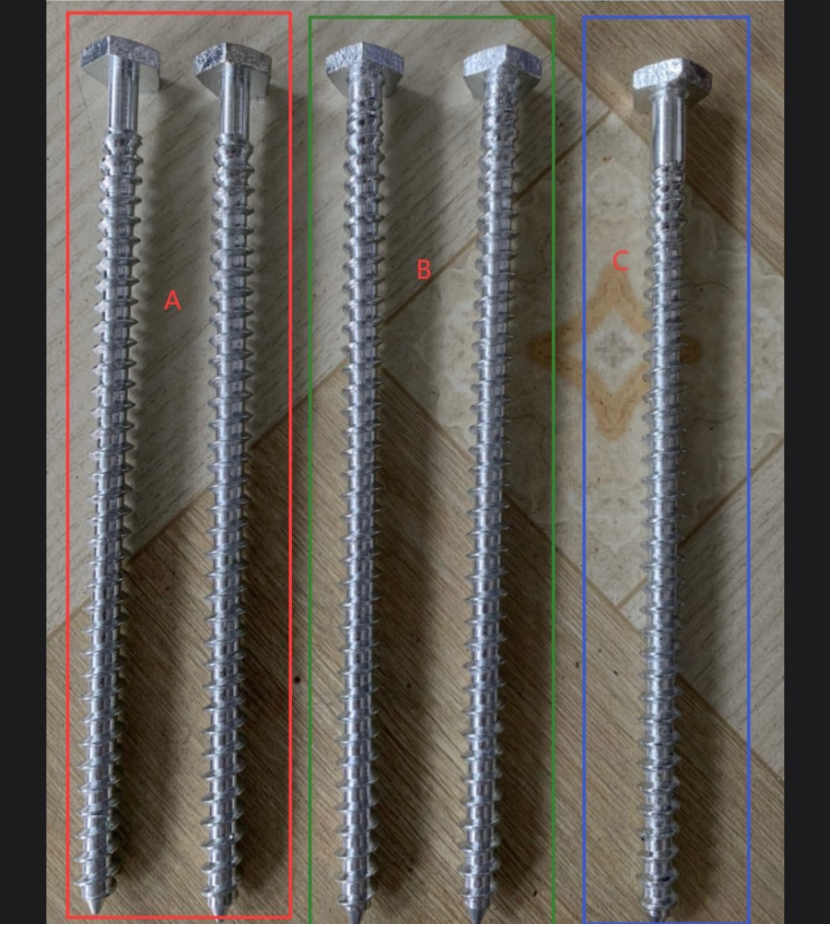
GEOPOLYMER FILL MATERIAL

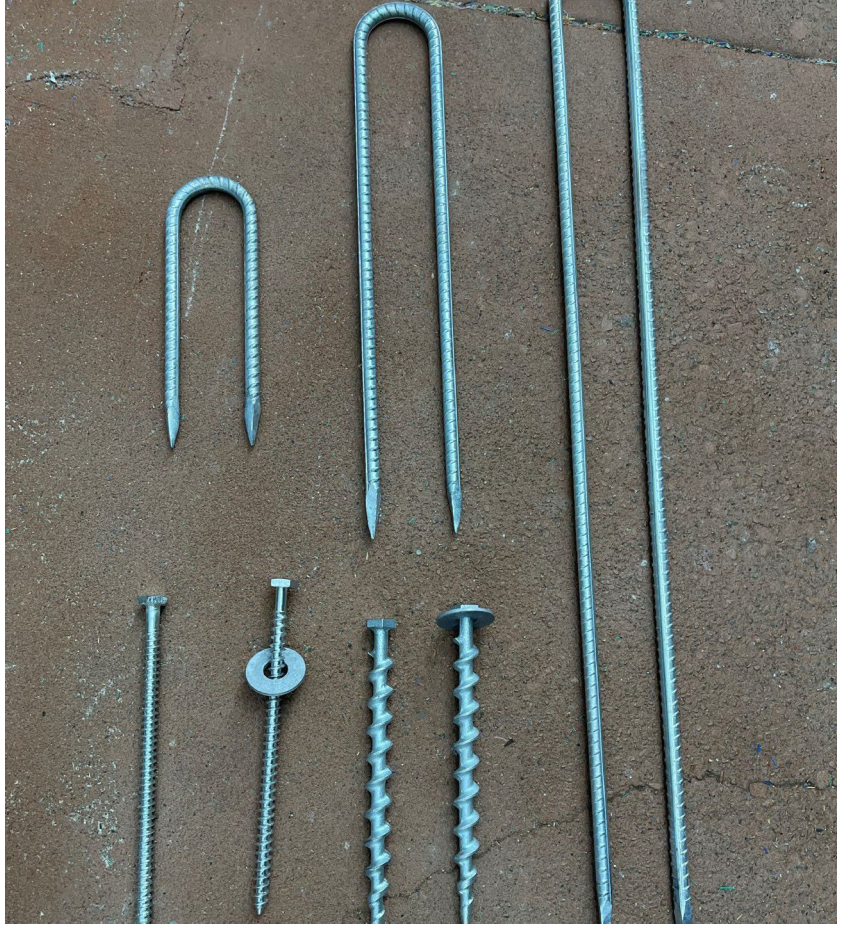


GEOPOLYMER FILL MATERIAL

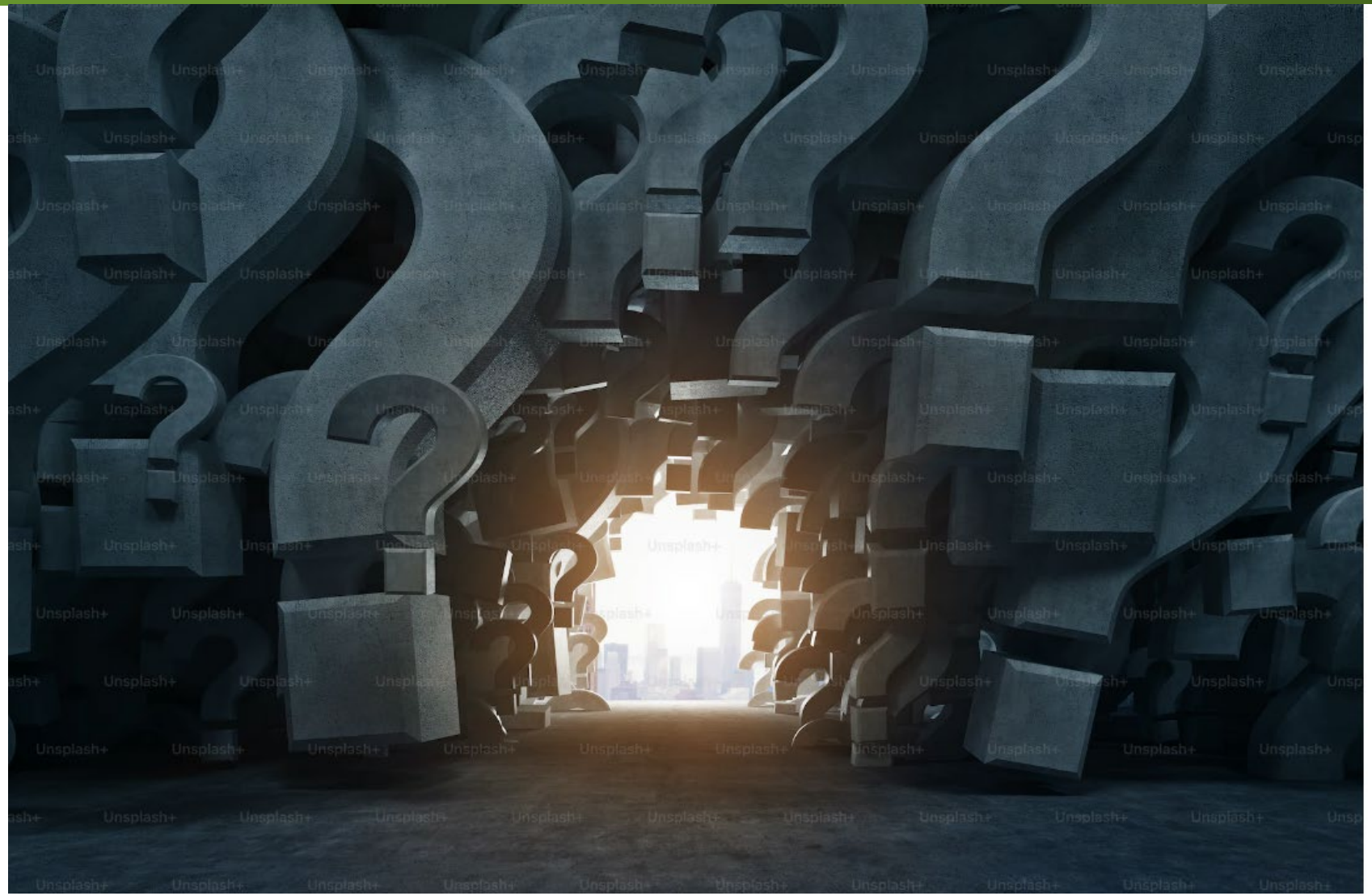
TOP CAP AND ANCHORING





ANCHORING

Discussion and Q&A – Above-Grade Distribution Systems



BREAK

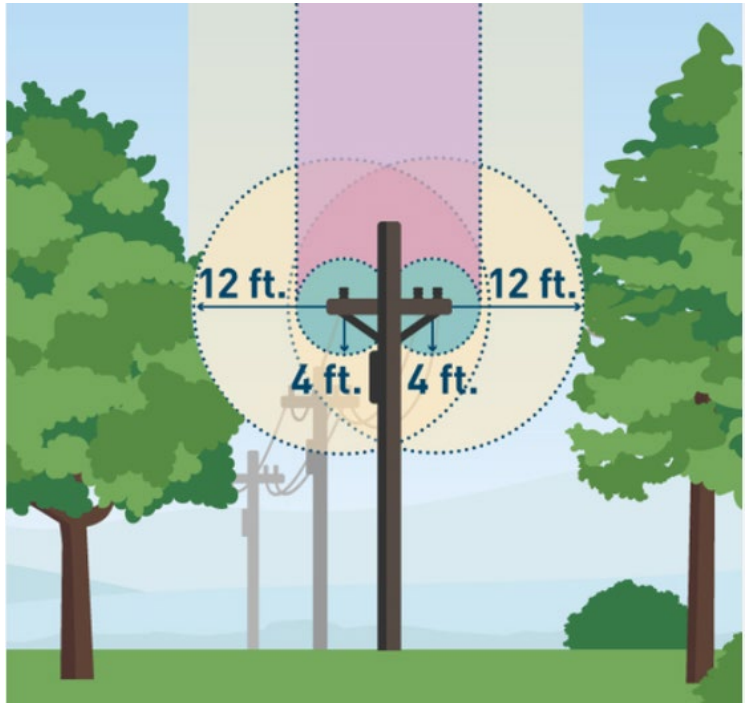
California Wildfire Safety Advisory Board

California Wildfire Safety Advisory Board

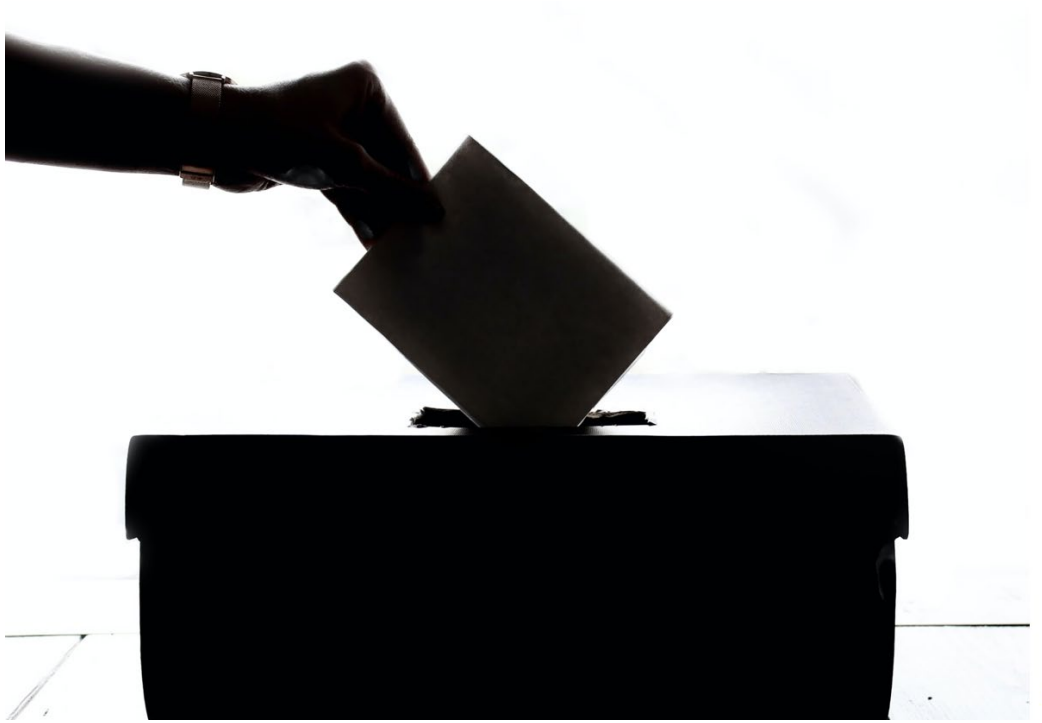
WE ARE BACK!

8 - Utility Vegetation Management (UVM) Recommendations and Policy Paper

- Presentation on UVM policy
- Board Discussion and Adoption



PG&E's Enhanced Vegetation Management
(Graphic: Business Wire)



Representation on UVM policy recommendations

Larry Kahn,
Tulane University Law School
&
Steve Cieslewicz,
UVM Podcast Host

UVM Policy Recommendations for Improved Wildfire Safety

Tulane UVMI Briefing
California WSAB Public Meeting
Santa Rosa, CA
4 December 2023

Tulane Law School
Utility Vegetation Management Institute

The UVMI was created in 2020 with the mission to serve as the world's preeminent center for the understanding, development, and improvement of law, policy, and practice of utility vegetation management in order to promote the creation of safe and environmentally sound co-existence among people, infrastructure, and the natural environment while also ensuring safe and reliable delivery of energy and other utility services.

Since that time, the UVMI has been active in training attorneys, providing guidance to federal, state and municipal government, industry, charitable organizations, public advocates, and individuals throughout North America and across the globe.

From its New Orleans headquarters, the UVMI has also served as a center for cutting edge research on technology, law, policy and practice.

Background

Utility Companies

- Heavily regulated
- Take actions to meet compliance standards set by regulation

→ Well-crafted regulations are the linchpin of effective UVM if they
  - Ensure requirements and practices are comprehensive AND
  - Deliver tangible results

→ Effective regulations must be:
  - Clear
  - Precise
  - Adaptable

→ Utilities must have
  - Clear instructions on what to do
  - Legal authority to carry out the instructions
  - Sufficient funding to accomplish the work

Guiding Principles

- **Holistic approach**
- **Any considerations for regulatory change must balance the following:**
  - **The rights of private (and public) tree owners**
  - **The needs of the environment**
  - **The ability of utilities to both perform the required work and recover the cost of their UVM activities**
- **Public and worker safety must stand as an equal concern and objective alongside mitigation efforts**
- **A balanced approach to UVM not only removes incompatible trees but also expands canopy cover by planting and maintaining compatible trees**

Recommendations for Enhancing UVM Regulations, Practices and Objectives

Tulane Center for Environmental Law

1. Equitable Participation by Communications Companies

Discussion

- Nearly all UVM work is performed by energy utility companies
- Wildfires have occurred due to conflicts between trees and telecommunications equipment
- GO 95 Rule 35 applies to both energy companies and communications companies
- Energy companies are concerned that they may not get compensated for performing UVM work that only impacts communications equipment
    - Some energy companies may refuse to perform UVM work needed to protect communications equipment
    - If energy companies do perform this UVM work, it spreads the cost among energy customers, not communications customers

Recommendations for Enhancing UVM Regulations, Practices and Objectives

Tulane Center for Environmental Law

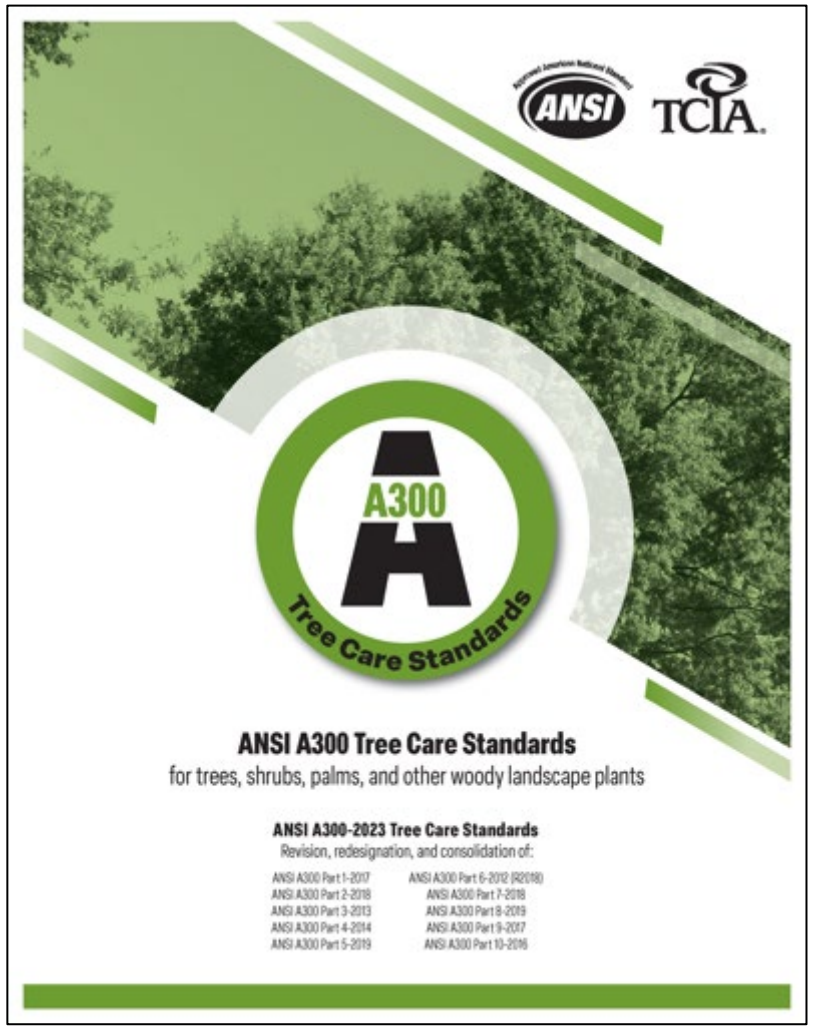
1. Equitable Participation by Communications Companies

<u>Consideration</u>

- Recognize the imbalance
  - Acknowledge significant financial burden and risk burden on energy companies
- Establish a fair compensation mechanism to incentivize shared responsibility and an overall aim of protection from risk
  - Consider most cost-efficient and effective impact on the ratepayers

Recommendations for Enhancing UVM Regulations, Practices and Objectives

2. Standardize Terminology



<u>Discussion & Consideration</u>

Clear and uniform language ensures that everyone – from regulators to utilities to contractors to the public – interprets and executes practices consistently

- Replace non-standard terms like “trim” or “trimming” with precise and recognized terms such as “clearing” and “pruning”
- Align GO 95 Rule 35 with PRC using standardized terms found in Best Management Practices (BMPs) like American National Standards Institute (ANSI) A300
- Enhances communication and comprehension
- Reduces errors due to misunderstanding

Recommendations for Enhancing UVM Regulations, Practices and Objectives

Tulane Center for Environmental Law

3. Clear Demarcation of Responsibilities

Discussion

Transparent delineation of responsibilities:

- Ensures accountability
- Provides effective management of vegetation near utility lines

Considerations

Using tree height and distance from utility lines to define responsibility:

- Enhances clarity
- Promotes consideration of worker safety
    - Persons without sufficient training will not work in proximity to energized conductors

Should utilities be charged with responsibility for removing all trees with potential to contact utility lines?

- If yes, then financial responsibility must accompany this charge, which will impact rates.
- If no, then release of liability for negative consequences must follow.

Recommendations for Enhancing UVM Regulations, Practices and Objectives

4. Harmonize Regulations

Discussion

Carefully compare GO 95 Rule 35 and PRC 4293

- Consider potential overlap and underlap issues
- Determine a unified and comprehensive standard

Considerations

- Reduce regulatory complexity
- Enhance wildfire protection
- Improve public safety
- Provide clear compliance guidance to utilities
- Facilitates consistent implementation state-wide

Recommendations for Enhancing UVM Regulations, Practices and Objectives

5. Enhance Hazard Tree Provisions

<u>Discussion</u>

Regulatory language needs to be both:

- Updated to reflect contemporary understanding and practices in hazard tree evaluation and identification
- More precise

<u>Considerations</u>

- Eliminate ambiguities and vagueness
- Provide solid foundation for effective hazard tree management
- Reduce associated risks

Recommendations for Enhancing UVM Regulations, Practices and Objectives

6. Define Service Drop Responsibility

Discussion

Current lack of consistent interpretation as to which party is responsible for pruning and/or removing trees that interfere with service drops as defined by GO 95 Rule 35

Different utilities have adopted different stances, but:

- Utilities disclaiming responsibility often perform the work anyway
- Utilities adopting responsibility don't always perform the work

Considerations

Clear guidelines would:

- Enhance accountability
- Enable utilities to perform maintenance and clearance activities more efficiently
- Reduces potential for disputes between utilities (and their contractors) and the public

Recommendations for Enhancing UVM Regulations, Practices and Objectives

7. Align Regulatory Intent

Discussion

GO 95 Rule 35 does not explicitly state its intent is to prevent outages and fires and to ensure worker and public safety.

Considerations

- Touchstone purpose statements help to ensure that interpretations and policies don't drift too far from original intent.
- Proper alignment underscores importance of regulatory compliance.
- Clarity helps utilities craft and schedule UVM work in accordance with regulatorily desired outcomes, leading to:
  - Enhanced safety
  - Improved reliability

Recommendations for Enhancing UVM Regulations, Practices and Objectives

8. Pre-Established Inspection and Work Frequencies

Discussion

Pre-established inspection and work frequency standards, similar to NERC FAC-003, provide:

- Consistency in expectations from the public
- Uniformity in performance by utilities and their contractors
- Promote predictability
- Ensure critical activities occur at appropriate intervals

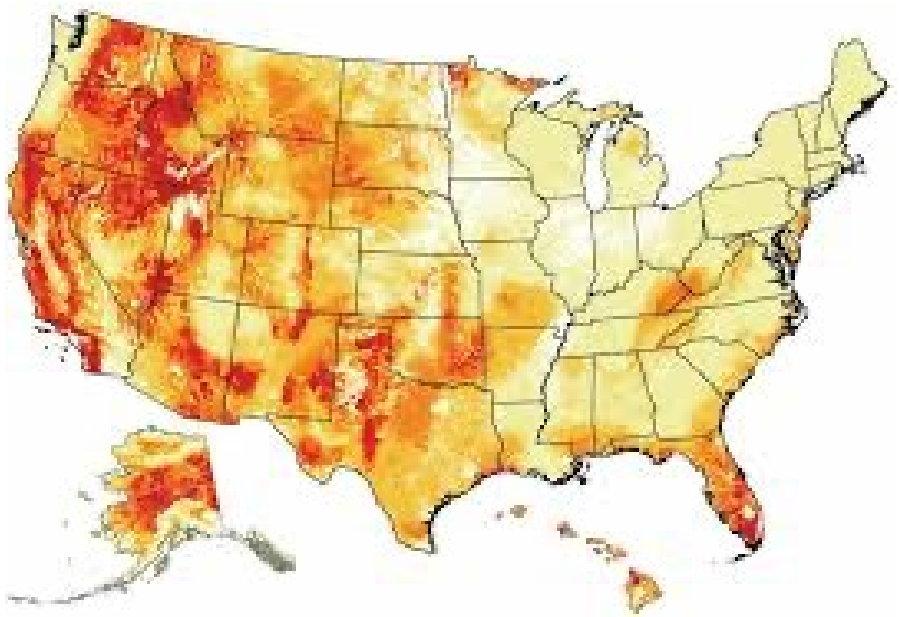
Considerations

Uniformity:

- Enhances system reliability
- Reduces the risk of vegetation-related outages and fires
- Ensures UVM efforts are proactive instead of reactive
- Improves public safety
- Improves grid performance

Recommendations for Enhancing UVM Regulations, Practices and Objectives

9. Best Management Practices



Discussion

GO 95 Rule 35 does not – but should – mandate adherence to established UVM-related BMPs, such as ANSI A300.

California should also consider developing updated standards that can benefit not only California, but neighboring fire-prone states too.

Considerations

California's jurisdiction ends at its borders, but wildfires neither recognize nor respect jurisdictional borders.

By collaborating with neighboring states and their respective stakeholders, California can promote standardization, efficiency, and mutual protection.

Such collaboration could also guide the notion that UVM practices throughout the region are based on best-in-class methods and standards.

Recommendations for Enhancing UVM Regulations, Practices and Objectives

10. Refusal Practices and Shut-Down Protocols

Discussion

GO 95 Rule 35 addresses refusals and authorizes measures to be taken by utilities to achieve UVM.

- However, these measures are viewed as aggressive;
- Protocols and guidance are lacking;
- Attempts at improving public relations provide a disincentive to power shut off to compel UVM work.

Clear and comprehensive refusal guidelines:

- Contribute to effective risk management;
- Protect workers and the public;
- Ensure a swift and coordinated response when hazards are identified.

Considerations

The urgency of performing UVM to prevent wildfires necessitates strong measures be taken.

- Rule 35 should be enhanced to provide updated and clarified refusal practices
- Protocols for power shut-down of individual customers should be better defined

Recommendations for Enhancing UVM Regulations, Practices and Objectives

11. Definition of Tree Removal

Discussion

A) Tree removal decisions are often site-specific, leaving the public confused as to why some trees require removal while others do not.
B) When trees are removed, there is little formal guidance to utilities as to their obligations to remove woody debris.

Considerations

A) GO 95 Rule 35 should be amended to include a definition of when trees are removal candidates, providing greater clarity to both utilities and to the public.
B) Removal of woody debris is important to achieve defensible space objectives and public safety generally. Moreover, such woody debris often has beneficial use.

Recommendations for Enhancing UVM Regulations, Practices and Objectives

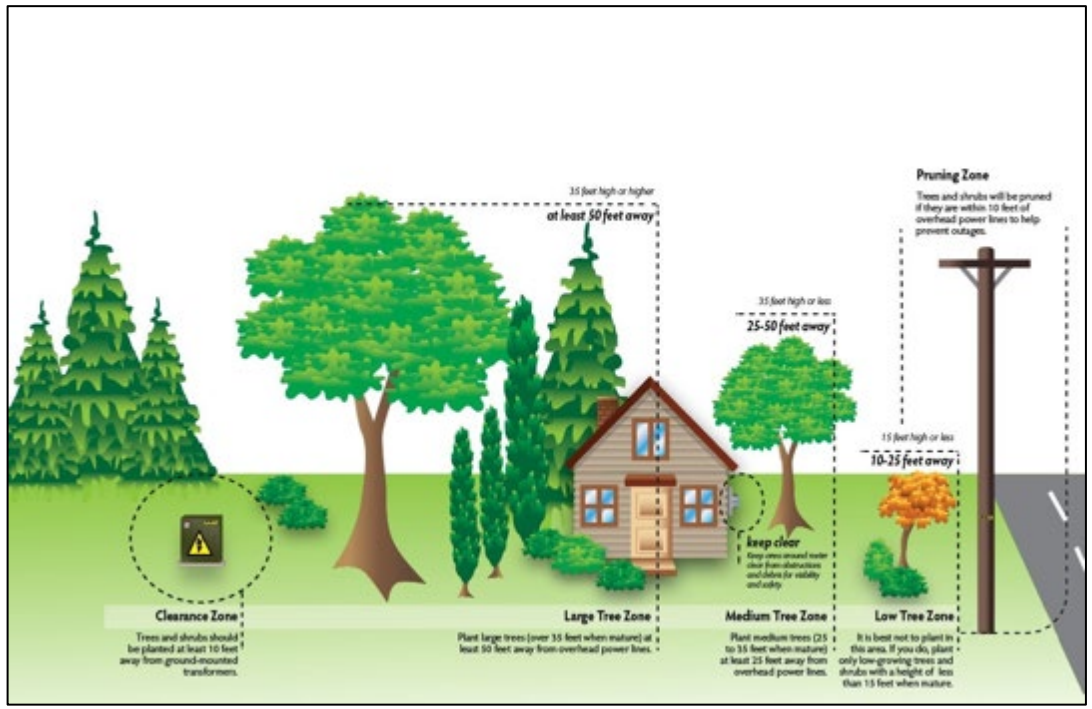
12. Mitigation and Carbon Sequestration Tracking

Discussion & Considerations

- The environmental impact of wide-scale UVM activities throughout California has not been measured and is currently unknown.
- Some utilities voluntarily replace at least some of the trees they remove, but there is no regular practice of this sort in California.
- Guidelines for offsetting activities to offset the impact of this activity need to be developed and implemented.
- Failure to offset UVM tree removal with UVM planting will lead to worsening environmental conditions and greater susceptibility to wildfires and other related environmental degradation.
- Properly offset UVM tree removal with UVM planting aimed at increasing canopy cover can reduce California's overall exposure to climatological change.

Recommendations for Enhancing UVM Regulations, Practices and Objectives

13. Right Tree / Right Place (RT/RP) Programs



Discussion & Considerations

Defining and promoting "Right Tree / Right Place" programs could be accomplished through codification

- Encourage good strategic choices for tree planting near utility lines by utilities and property owners alike
  - Minimize future maintenance
  - Prevent hazards
  - Improve environmental conditions
  - Contribute to long-term grid stability
  - Reduce long-term cost of UVM programs by utilities
- Create harmonious balance between vegetation management and environmental conservation

Recommendations for Enhancing UVM Regulations, Practices and Objectives

Tulane Center for Environmental Law

14. Trees for Energy Conservation (T4EC) Programs

<u>Discussion & Considerations</u>

Incorporating T4EC programs into good UVM programming could be accomplished through codification. T4EC programs:

- Reduce energy demand
- Improve carbon sequestration
- Reduce long-term threats from tree and utility line conflicts when combined with RT/RP programs
- Align UVM with energy efficiency and environmental sustainability goals
- Reduce California's overall susceptibility to climatological change

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15. Construction Alternatives

Discussion & Considerations

Alternative construction methodologies that minimize impact on vegetation while maintaining safety and reliability can be a valuable option to an overall strategy of enhanced infrastructure safety.

Innovative solutions strike a balance between infrastructure needs and environmental considerations

Evaluating these options, either through a new BMP or through amendment to GO 95 Rule 35, provides:

- Additional tools to utilities to reduce the impact of UVM
- Upholds both system performance and the environment

Recommendations for Enhancing UVM Regulations, Practices and Objectives

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16. Defensible Space Requirements

Discussion

- Recent data suggests that compliance with PRC 4291 could potentially have saved many homes (as much as 50%) during recent California wildfires.
- PRC 4291 enforcement is limited – CalFire compliance inspections occur on average once every 5-6 years
- Utilities inspect much of this same territory much more frequently (1-3 times per year)

Considerations

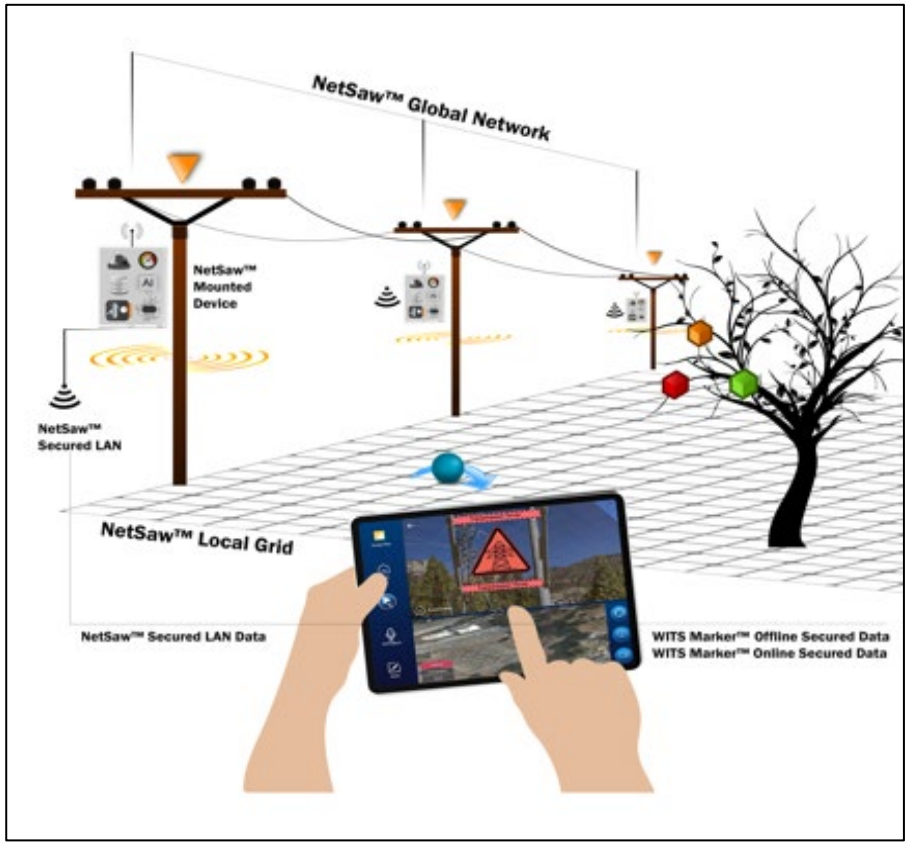
Utilities could play a role in identifying PRC 4291 required defensible space work:

- Provide customers with information on defensible space requirements
- Notify relevant authorities of hazardous conditions

Collaborative efforts between utilities and fire agencies can enhance community safety and wildfire prevention.

Recommendations for Enhancing UVM Regulations, Practices and Objectives

17. Environmental Impact and Tracking



<u>Discussion & Considerations</u>

Utilities could and should be required to establish comprehensive tracking mechanisms to monitor the impact of UVM programs.

- Assess benefits of tree planting initiatives
- Assess consequences of tree removals
- Technology to make such efforts successful currently exists but is not being utilized wide-scale

Information generated can be used to:

- Improve informed decision-making
- Enhance environmental responsibility
- Increase accountability within UVM practices
- Align UVM efforts with broader sustainability goals
- Provide regulators with measurable performance indicators and an ability to monitor progress

Q & A

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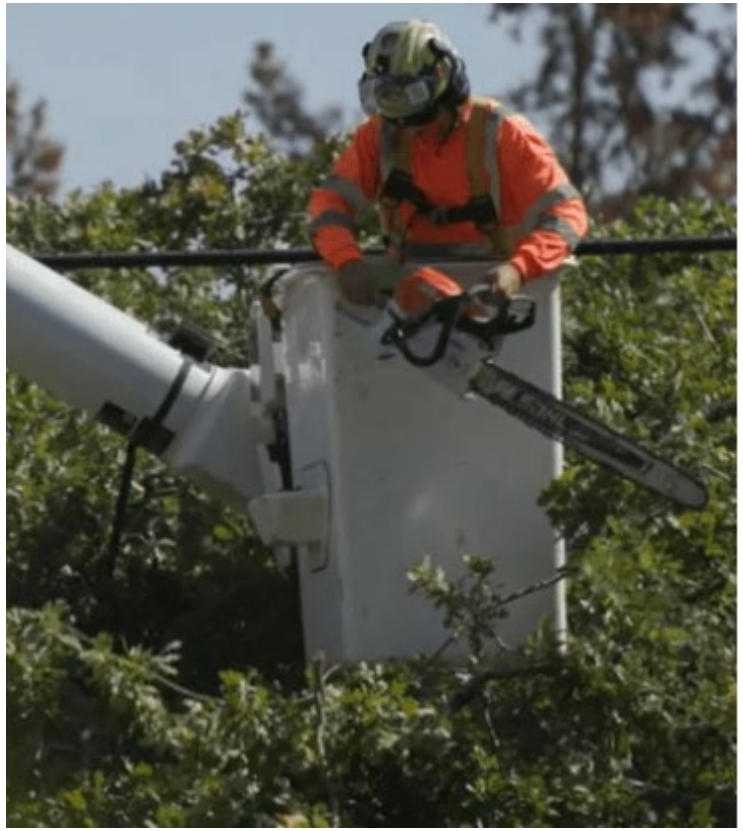
Utility Vegetation Management Policy Paper

Board Discussion

Recommendations on Management Practices:

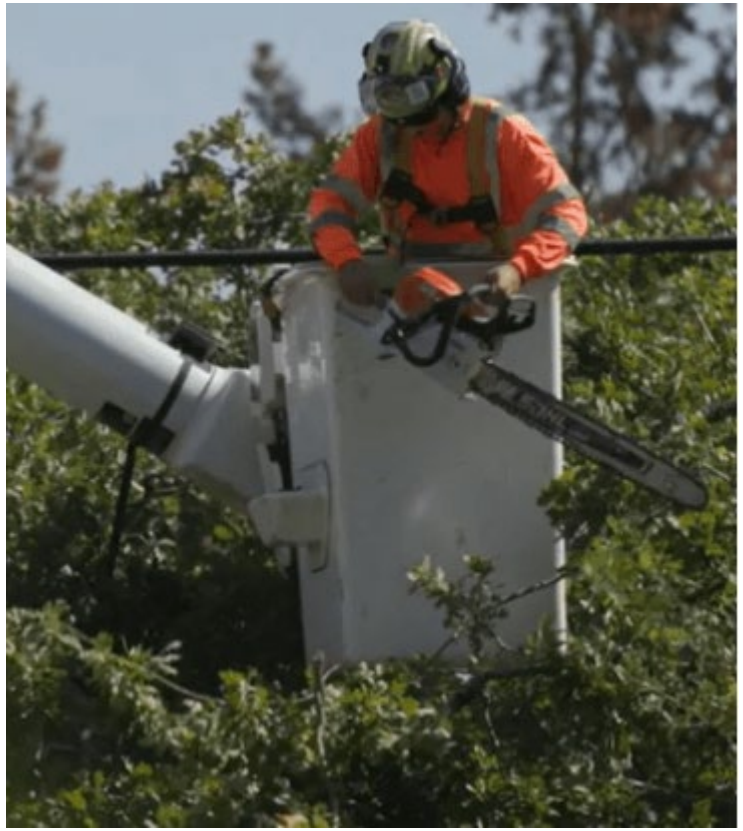
- **Shaded Fuel Breaks, Greenbelts –** Electrical corporations should maintain shaded fuel breaks or greenbelts of irrigated, native vegetation, depending on the local conditions, in the HFTD.
- **"Right Tree Right Place" programs –** Need to be better defined and promoted to encourage strategic tree planting near powerlines by electrical corporations and property owners alike.
- **Monitoring Invasive Species –** Electrical corporations should develop programs for monitoring and managing the spread of flammable invasive species in and adjacent to their ROWs and on their property in the HFTD.
- **Alternative Circuit Configurations –** Electrical corporations should pursue alternative circuit configurations or construction methods that account for existing/changing vegetation in each area.



Powerline Tree Work
(Image courtesy of PG&E)

Regulatory Recommendations:

- **Vegetation Inspections** – A separate vegetation inspection process should be included in an updated version of GO 95 Rule 35 or GO 165. Consideration should be given to the frequency and timing of such inspections in the HFTD.
- **Minimum Approach Distances (MAD)** – GO 95 Rule 35 MADs should be updated to at least align with the US Federal Government's Occupational Safety and Health Administration (OSHA) MADs for energized lines for each voltage level.
- **Pruning Limits** – GO 95 Rule 35 should provide guidance on the appropriate maximum limit for pruning of healthy branches for trees and when it is prudent instead to remove the tree.
- **Pole Brushing** – GO 95 Rule 35 should include pole brushing requirements for all responsibility areas within the State's HFTD aligned with PRC 4292.



Powerline Tree Work
(Image courtesy of PG&E)

Procedural Recommendations:

Energy Safety

- Host a follow-up scoping meeting in 2024 to discuss these recommendations, and industry best practices.
- Consider additional stakeholder input on their proposed process for alignment of best practices and develop a timeline for the implementation into the next WMPs.
- Energy Safety should commission a study to measure and quantify the benefits of UVM work in both ROW and off-ROW contexts.

Utilities

- Test or pilot the use of native, woody herbaceous shrubs and other less-flammable native plants at the base of poles
- Maintain databases of trees and other tall plant species in their HFTD.
- The electrical corporations should collaborate with stakeholders to determine the appropriate protocols to mitigate customers refusals when vegetation work is needed to comply with UVM regulations.
- Develop partnerships with external parties for:
  - Transportation and use of woody biomass (e.g. composting, electricity generation, wood pellet production, etc.)
  - Amending local tree ordinances to prevent the planting of incompatible species near powerlines
  - Research into bark beetle mitigation measures and breeding of compatible tree species

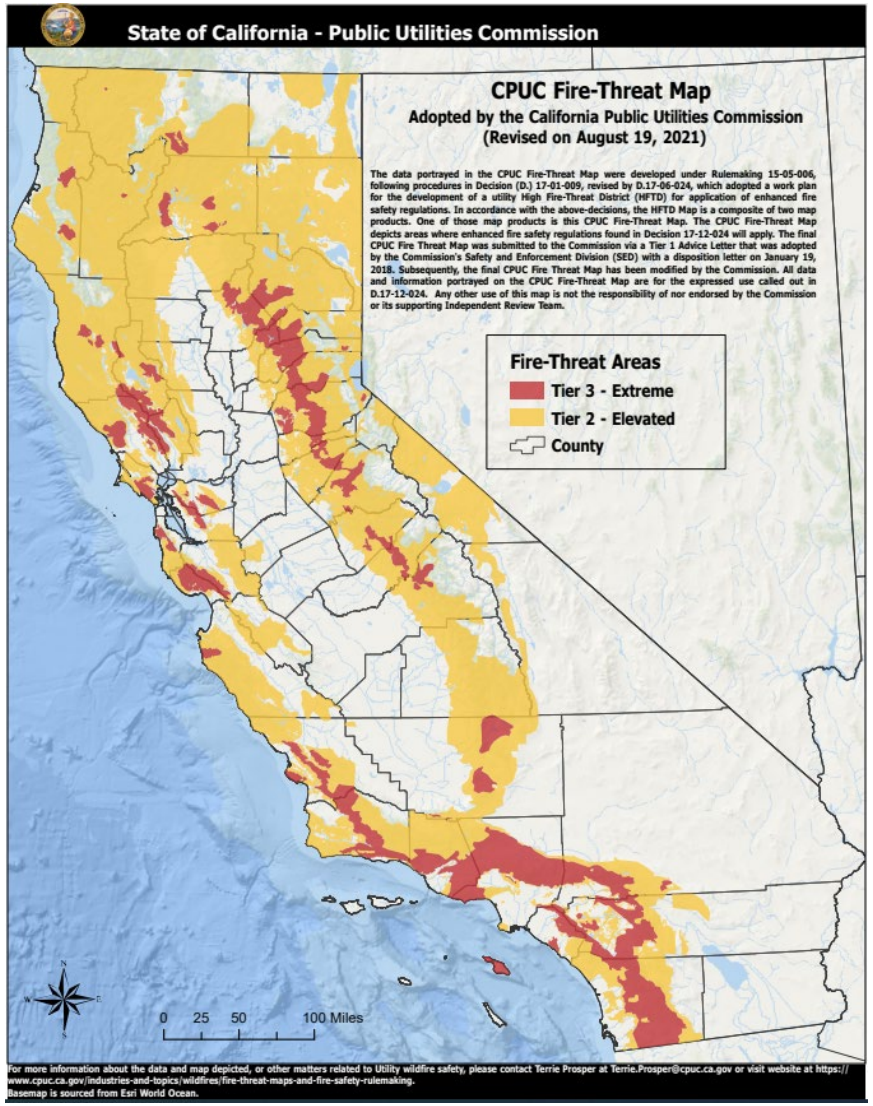
9 - Updating Utility Regulations in light of Climate Change and Wildfire Risks Policy Paper

Board Discussion

Procedural Recommendations:

- 5-10 Year Review Process of GOs
- Continual Engagement as Part of PUC 326.a.7
- HFTD Map Updates
- Engineering Studies on Pre-GO 95 Equipment, PRC 4292 Non-Exempt Equipment

CPUC Fire Threat Map



Regulatory Recommendations – Grid Design and Construction:

- Experimental Design Rules in GO 95 and revised for GO 128
- System Hardening for Pad Mounted Equipment
- Fire, Wind-Resistant Poles
- Cross Arm Construction
- GO 95 Exempt Equipment
- Equipment Rated Capacities

Fiberglass composite pole installation

Image courtesy of SCE

Regulatory Recommendations – Inspections, Operations and Maintenance:

- More frequent Patrol, Detailed and Intrusive inspections in HFTD
- Hardware Database
- De-Energization
- Fast-Curve Settings
- Operation of Switches
- Pole/Tower "Walking"

Pole-loading Inspection (Image courtesy of SCE)

Regulatory Recommendations – Remote Sensing and Situational Awareness:

- Cameras
- Lidar
- Sensors
- Weather Stations
- Communication Networks

Weather station installation (Photo: Business Wire)

10 - Subcommittee Assignment Recap and Activity Updates

	Diane Fellman	Jessica Block	Alexandra Syphard	John Mader	Chris Porter	Ralph Armstrong	Tim Haines
Executive Committee		Lead					
Publicly Owned Utility Issues							Lead
Policy and Utility Safety Culture Committee	Lead						
Grid Hardware and Technology				Lead			
Vegetation Management & Inspections						Lead	
Scientific Committee			Lead				

11 - Agenda Items for Consideration at Future Meetings

12 - Adjourn Board Meeting

- For more information:
  - Website: www.energysafety.ca.gov/wsab
  - Email: WSAB@energysafety.ca.gov