Future Implementation of the National Transportation Safety Board's (NTSB) Safety Recommendation P-19-016 Informal Workshop

January 13, 2022, 1-4 p.m.

Hosted by the Safety Policy Division
Safety Culture & Governance Section

California Public
Utilities Commission

Virtual Workshop Logistics and Safety

English Audio

- Phone (English): 1-800-857-1917
- Passcode: 6032788#
- Participants will have audio (in English) and will be able to make comments or ask questions during the public comment period.

Spanish Audio

- Phone (Spanish): 1-800-857-1917
- Passcode: 3799627#
- Participants will have audio (in Spanish) and will be able to make comments or ask questions during the public comment period.

Safety

- Note surrounding and emergency exits
- Ergonomic Check
- COVID-19

This workshop is being recorded and archived for future viewing.

Agenda

1. Virtual Workshop Logistics and Safety (5 minutes)
2. Introductions (5 minutes)
3. Purpose of the Workshop (5 minutes)
4. Background (10 minutes)
5. PG&E Presentation (1/2 hour)
   a. Current Professional Engineer Approval and Stamping Practices for Natural Gas Projects
   b. Benefits of Implementing the NTSB's Safety Recommendation P-19-016
   c. Challenges of Implementing the NTSB's Safety Recommendation P-19-016
   d. Utility Presenter Recommendations
6. 15 Minute Break
7. SoCalGas and SDG&E Presentation (1/2 hour)
   a. Current Professional Engineer Approval and Stamping Practices for Natural Gas Projects
   b. Benefits of Implementing the NTSB's Safety Recommendation P-19-016
   c. Challenges of Implementing the NTSB's Safety Recommendation P-19-016
   d. Utility Presenter Recommendations
8. Southwest Gas Presentation (1/2 hour)
   a. Current Professional Engineer Approval and Stamping Practices for Natural Gas Projects
8. Southwest Gas Presentation (Continued)
   b. Benefits of Implementing the NTSB's Safety Recommendation P-19-016
   c. Challenges of Implementing the NTSB's Safety Recommendation P-19-016
   d. Utility Presenter Recommendations
9. 15 Minute Break
10. CPUC Options for Implementing the NTSB's Safety Recommendation P-19-016 and Next Steps (5 Minutes)
11. Public Comments (20 Minutes)
12. Closing Comments (10 Minutes)

Panelist Introductions

Purpose of the Workshop

- This is an informational workshop not related to a proceeding
- No decisions will be made today.
- Topics to be discussed includes:
  - An overview of the NTSB's Safety Recommendation 19-P-016.
  - Utility Company's current P.E. Approval and Stamping Practices for Natural Gas Projects

Purpose of the Workshop (Continued)

- Benefits of Implementing the NTSB's Safety Recommendation P-19-016
- Challenges of Implementing the NTSB's Safety Recommendation P-19-016
- Utility Presenter Recommendations
- CPUC Options for Implementing the NTSB's Safety Recommendation P-19-016
- Next Steps

Background

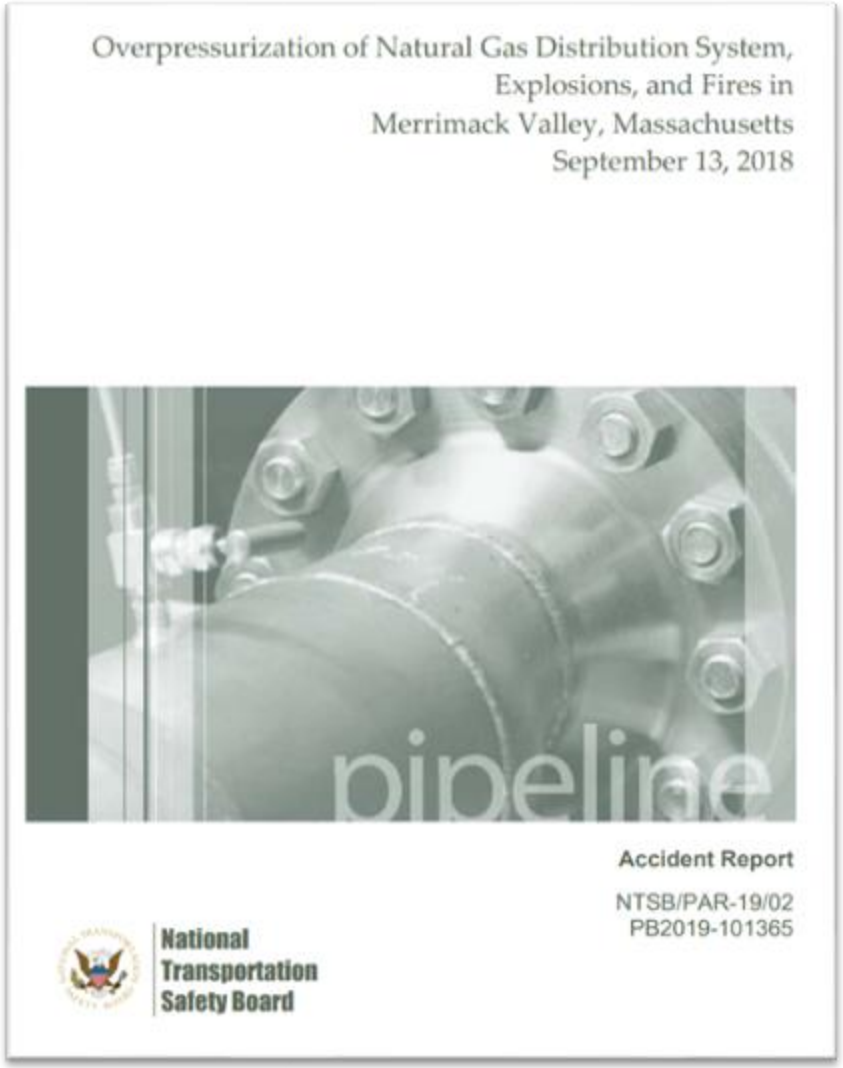
Merrimack Valley, Massachusetts 2018 Natural Gas Fire

"A series of structure fires and explosions occurred after high-pressure natural gas was released into a low-pressure natural gas distribution system in the northeast region of the Merrimack Valley in the Commonwealth of Massachusetts" resulting in:

- Approximately 10,894 customers impacted by natural gas distribution shutdowns
- One Death
- 22 Hospitalizations
- Damage to 131 structures including 5 homes
- Electric utility shutdowns
- Freight and passenger railroad operations Suspended
- Local Road Closures

Background (Continued)

- The NTSB's Investigation and Pipeline Accident Report



Background (Continued)

- The NTSB's Pipeline Accident Report, Page 50:
  - "To the States of Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Florida, Georgia, Idaho, Illinois, Iowa, Kentucky, Louisiana, Maine, Maryland, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New York, North Carolina, Pennsylvania, South Carolina, South Dakota, Texas, Utah, Virginia, and Wyoming:
    - Remove the exemption so that all future natural gas infrastructure projects require licensed professional engineer approval and stamping. (P-19-16)"

Background (Continued)

- The NTSB's Safety Recommendation to 31 States that Allow Exemptions to Professional Engineer Approval and Stamping for Natural Gas Infrastructure Projects

Background (Continued)

- The CPUC's Response to the NTSB's Safety Recommendation

PG&E Presentation

CPUC Workshop: Implementation of NTSB P-19-016

January 13, 2022

For Discussion Purposes Only

Overview

- Current PG&E PE Approval and Stamping Requirements
- Benefits of Implementing the NTSB's Safety Recommendation P-19-016
- Challenges of Implementing the NTSB's Safety Recommendation P-19-016
- PG&E Recommendations

Current PG&E PE Approval and Stamping Requirements

- The PG&E PE requirement was originally published in a Company standard in 1984
  - 1984-1995: Engineering Drawing: 087950, “Design and Test Requirements”
  - 1995-2020: Gas Design Standard A-34, “Piping Design and Test Requirements,” Revision 0 in 1995, up until Revision 6 in July 2020
  - Currently: Gas Design Standard A-36, “Design and Construction Requirements for Gas Pipelines,” Publication Date: 06/23/2021 Effective Date: 07/01/2021 Rev. 11a

Gas Design Standard A-36, “Design and Construction Requirements for Gas Pipelines,” requires Professional Engineering Review as follows:

- New construction drawings for gas facilities to operate greater than 60 psig are to be reviewed and stamped by a current PE licensed in the state of California

Benefits of Implementing the NTSB's Safety Recommendation P-19-016

- Demonstrates competency of foundational engineering codes and principles
- Supports ethical and professionalism standards
- Promotes accountability of safety for project design
- Deepens standard of care for project design
- Provides additional layer of protection and rigor in the design phase

Challenges of Implementing the NTSB's Safety Recommendation P-19-016

- Scope of proposed regulation and requirements of gas design work requiring PE stamp
- PE licensure does not explicitly address natural gas design engineering
- Staffing and headcount impacts
- Potential workflow modifications and need for re-organizations
- Represented personnel and potential union negotiations

PG&E Recommendations

- Continue current process of PE stamping
- Proposed Scope: PE stamping required for the following gas projects:
  - Designs for pipelines to operate above 60 psig
  - Designs for compression, processing, and storage facilities
  - Designs for new or reconfigured district regulator stations
  - Uprates in accordance with 49 CFR § 192 Subpart K
  - Designs for launchers and receivers

Thank You

Lily Gharib
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Appendix

NTSB Report: Natural Gas Distribution System Project Development and Review

Eliminate the professional engineer licensure exemption for public utility work and require a professional engineer's seal on public utility engineering drawings.

The safety recommendation report was issued on November 14, 2018, in response to a series of explosions and fires on September 13, 2018, in Merrimack Valley, Massachusetts. These explosions and fires followed the release of high-pressure natural gas into a low-pressure gas distribution system. They resulted in damage to 131 structures, including the destruction of at least five homes. One individual was killed, and at least 28 others were injured.

Among other findings, the NTSB report concludes that the gas company would probably have identified the omission of regulator-sensing lines—thereby preventing the error that led to this accident—if the company had performed a comprehensive constructability review that required all departments to review the project plans and had a P.E. approve, or seal, the plans. In sealing such plans, a professional engineer takes responsibility for their accuracy and completeness. The report notes that the company field engineer was not a licensed P.E. and that neither state law nor company policy required a licensed P.E. to develop or review engineering plans for public utilities.

Source: NTSB report on gas explosion emphasizes role of engineering licensure in public protection (ncees.org)

Massachusetts Requirements

220 CMR: DEPARTMENT OF PUBLIC UTILITIES
220 CMR 105.00: USE OF PROFESSIONAL ENGINEERS FOR GAS UTILITY WORK

105.01: Purpose and Scope

(1) Purpose. 220 CMR 105.00 establishes regulations to promote the safety of natural gas engineering work or services through the use of Professional Engineers with sufficient knowledge of natural gas facilities, to provide direction to gas companies for certain engineering work or services. 220 CMR 105.00 does not waive or otherwise modify any provisions of M.G.L. c. 112, §§ 81D through 81T or 250 CMR: *Board of Registration of Professional Engineers and Land Surveyors* which establish requirements for Professional Engineers. Further, 220 CMR 105.00 may be supplemented by guidelines from the Department of Public Utilities, Commonwealth of Massachusetts.

(2) Scope. 220 CMR 105.00 applies to every Gas Company as defined in 220 CMR 105.02.

Massachusetts Requirements

220 CMR: DEPARTMENT OF PUBLIC UTILITIES
220 CMR 105.00: USE OF PROFESSIONAL ENGINEERS FOR GAS UTILITY WORK

Professional Engineer. A person who is registered as a professional engineer in the Commonwealth of Massachusetts and certified under M.G.L. c. 112, § 81E; provided, however, that the Professional Engineer has Sufficient Knowledge.

Sufficient Knowledge. An understanding of natural gas facilities in general and of the pipeline design, construction, operations, maintenance, standards, and procedures of a particular Gas Company that would permit effective review of that Gas Company's engineering plans or specifications.

15 Minute Break

SoCalGas and SDG&E Presentation

CPUC WORKSHOP
IMPLEMENTATION OF NTSB P-19-016

SoCalGas and SDG&E

January 13, 2022

Overview

- Current SoCalGas/SDG&E PE Approval and Stamping Policy
- Benefits of Implementing NTSB P-19-016
- Challenges of Implementing NTSB P-19-016
- SoCalGas and SDG&E Recommendations

Current SoCalGas/SDG&E PE Approval and Stamping Policy

- **Final Construction Drawings for the following gas facilities are to be approved and stamped by a P.E. licensed in California:**
  - **Transmission Pipelines per § 192.3 Definitions**
    - New/replaced transmission pipelines
    - New/replaced high pressure distribution taps to transmission pipelines
      - Includes high pressure mains and services directly tied to transmission pipelines
    - New or replaced in-line inspection (ILI) launcher or receiver
  - **Non-Standard Measurement & Regulation Facilities**
    - Customer Meter Sets >4” & >60 psig
    - New or replacement District Regulator Stations that require special designs
    - Pressure Limiting and City Gate Stations
    - Natural Gas Producer Interconnection Points-of-Receipt
    - Automated and Remote Control Shut-off valves

Benefits of Implementing NTSB P-19-016

- Increased accountability for safety of design and engineering deliverables
- Encourages professional growth to meet business requirements
- Enhanced project awareness
- PE licensure is recognized by governmental agencies and the public as a commitment to dedication, skill and quality
- Promotes communication, exchange of technical concepts, and troubleshooting amongst natural gas utility licensed engineers
- Licensure shows commitment to the profession and demonstrates heightened leadership and management skills which is an indicator to increased levels of authority and responsibility

Challenges of Implementing NTSB P-19-016

- Employee Engineers Obtaining PE License
  - Interpretation of Pipeline Engineering as it pertains to a specific engineering discipline
  - Civil Engineering licensure requirements more stringent than others
  - PE Board rules do not define natural gas pipeline engineering
- Determination and scope of what engineering documents must be reviewed and stamped by a PE
- Determination of the criteria for qualifying engineering projects
- How to address modifications to stamped plans during construction (RFI process)
- Change Management
  - Understanding the criteria / working with the PE Board on disciplines
  - New process workflow maps for various departmental workgroups
  - Modification of job profiles to require licensure and/or stamping responsibilities
  - Process for tracking and reconciliation of sealed engineering documents

SoCalGas and SDG&E Recommendations

- Continue with current P.E. stamping criteria on Issued-For-Construction Transmission facility designs and non-standard MRC designs
- Continue to require P.E. review for the modification of stamped drawings prior to and during the course of construction (RFI process)
- Establish baseline training/knowledge requirements for lower-risk projects
- Leverage risk-based approach to focus on higher-risk complex projects

Thank You

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Appendix A – Company P.E. Approval & Stamping Standard

- Policy implemented for qualifying work orders approved after January 1st, 2021
- New Company Standard on PE Stamping was published June 1, 2021: [**Standard 167.0112 (SoCalGas)** and **G7039 (SDG&E)]**
- Transmission, Distribution, Construction and Storage departments
- Applies to ***Issued for Construction*** (IFC) Drawings only
  - Changes to PE-stamped drawings during the course of construction (RFI)
- Internally and externally produced drawings
- Policy reflects two major categories:
  - Pipeline Engineering and Design
  - Measurement, Regulation, and Control Engineering and Design

Southwest Gas Presentation

SOUTHWEST GAS

CPUC Workshop Implementation of NTSB P-19-016

January 13, 2022

Kevin M. Lang, P.E.

Overview

- Current Southwest Gas PE Approval and Stamping Practices
- Benefits of Implementing NTSB P-19-016
- Challenges of Implementing NTSB P-19-016
- Southwest Gas Recommendations

Current Southwest Gas PE Approval and Stamping Practices

- Work completed under existing exemption[1]
- Utilize Company-approved design standards
- Corporate-level non-standard design review
- Formal engineering training program with focus on knowledge and competency

[1]CA Business and Professions Code §6747

Benefits of Implementing NTSB P-19-016

- Elevate standard of care on complex and high-risk natural gas projects
- Demonstrates competency of engineering principles and industry safety standards
- Supports ethical and professional standards

Challenges of Implementing NTSB P-19-016

- Change Management
- Scope and Applicability
- PE Discipline
- Regulatory
  - CA Business and Professions Code §6700
  - GO-112F

Southwest Gas Recommendations

- Further discussions on proposed criteria with focus on complex and high-risk work
  - Design work that creates or reconfigures a pressure regulator station;
  - Design work for new compressor stations;
  - Design work for new transmission pipelines;
  - Pressure increase projects for transmission and distribution pipelines.
- Legislative change considerations
- Timeline to implement changes
- Maintain a clear delineation between CA State PE Board and CPUC Safety Enforcement Division

Thank You!

Kevin M. Lang, P.E.

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Appendix A – Southwest Gas Position Paper

SOUTHWEST GAS CORPORATION

RE: NTSB Recommendation (P-19-16) – PE Exemption November 4, 2019

Background

The National Transportation Safety Board (NTSB) issued its accident investigation findings for the September 2018 NiSource natural gas pipeline accident in Merrimack Valley, Massachusetts. Their report included a recommendation (P-19-16) to thirty-one States (including Arizona, California, and Nevada) to eliminate the public utility exemption for Professional Engineer (PE) review and approval of natural gas facility design.

Policy Position

Southwest Gas (Company) supports the removal of the current public utilities exemption in State licensing laws for complex and high-risk natural gas projects, provided that clear delineation is made between the jurisdictional authority for natural gas pipeline safety compliance currently held by the State Public Utility Commissions and the oversight and licensing of Professional Engineers held by the State Licensing Boards.

The NTSB found that requiring a licensed professional engineer (PE) to stamp plans would illustrate that the plans had been approved by an accredited professional with the requisite skills, knowledge, and experience to provide a comprehensive review. Following the Merrimack Valley incident, the NTSB issued urgent recommendations to the State of Massachusetts and NiSource related to professional engineer review and stamping requirements. Both the State of Massachusetts and NiSource developed requirements for PE review that consider project complexity and risk. These changes were found to be acceptable by the NTSB.

Consistent with these models, the Company supports PE review and stamping of the following types of natural gas pipeline work based upon the complexity and relative risk of the work being performed:

- Design work that creates or reconfigures a pressure regulator station[1];
- Design work for new compressor stations;
- Design work for new transmission pipelines;
- Pressure increase projects[2] for transmission and distribution pipelines.

[1] The Code of Federal Regulations, Title 49, Part 192 establishes the regulatory requirements for pipeline safety. Part 192.739 defines which pressure regulator stations meet these requirements for periodic maintenance.
[2] Includes both 49 CFR Part 192, Subpart "K" as well as Southwest Gas MOP Increase procedures

SOUTHWEST GAS CORPORATION

The Company currently does not require PE review and signed stamping of its natural gas facility plans; however, the Company does have standards and processes in place that meet or exceed federal and state regulations and industry practices. These standards and practices ensure that all qualified personnel with the requisite skills, knowledge, and experience in the applicable departments review construction drawings for accuracy, completeness and correctness. This review is accomplished through the Company's work management system and other established work practices. Additionally, Company policies and procedures specify greater levels of organizational review for projects that meet certain thresholds. These include detailed Out-of-Service and Return-to-Service procedures for planned work requiring significant alteration of normal pipeline operations, as well as an escalated level of design review for significant projects or non-standard designs.

Even though PE licensees are bound to a code of ethics for engineers which creates a duty to hold safety, health, and welfare paramount and to perform services only in the areas of their competence, the Company recognizes that there is not a specific PE license for natural gas pipelines. The Company generally employs civil and mechanical engineers to perform and oversee its natural gas facility designs. The Company also recognizes that a PE license by itself does not guarantee that an individual has natural gas system specific knowledge or experience.

Recognizing these challenges, the Company believes it is important for an individual to have both an engineering degree and knowledge of the safe operation of a natural gas system. To this end, the Company is enhancing its formalized training for engineers to ensure all Company engineers have the necessary level of knowledge and experience to oversee design work on natural gas systems.

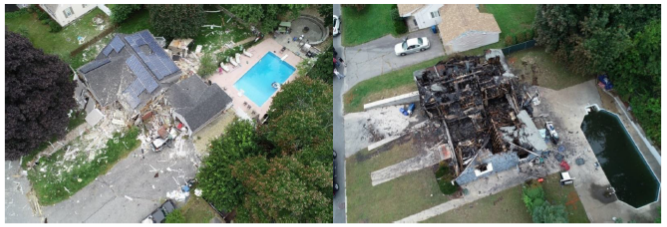
This knowledge and experience will provide all Company engineers the base technical competency to design natural gas projects in a safe and reliable manner. The addition of a PE review for complex and relatively high-risk projects will provide another level of risk mitigation and care.

Appendix B – Merrimack Valley Overview

SOUTHWEST GAS CORPORATION

NiSource - Merrimack Valley Accident Overview

On the afternoon of September 13, 2018, a series of structure fires and explosions occurred after natural gas at high pressure was released into a low-pressure natural gas distribution system in the northeast region of the Merrimack Valley in the Commonwealth of Massachusetts. The natural gas distribution system was owned and operated by Columbia Gas of Massachusetts, a subsidiary of NiSource, Inc. Columbia Gas of Massachusetts delivers natural gas to about 325,000 customers in Massachusetts. One fatality occurred from the series of incidents, and 22 people including three fire fighters were injured and transported to the hospital. 131 structures were damaged and at least five homes were destroyed.



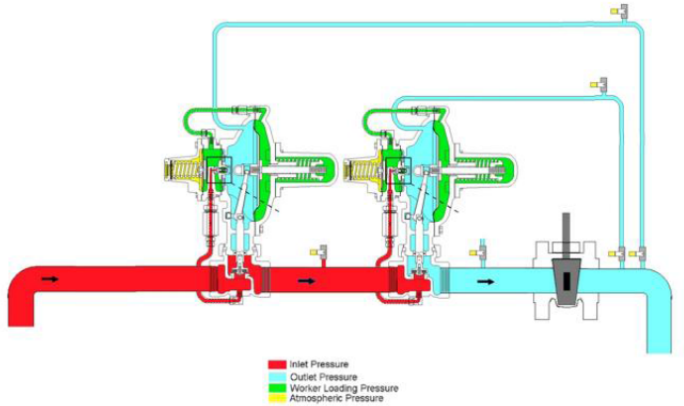
(Source: NTSB October 11, 2018 Preliminary Report)

Probable Cause[3]

The NTSB determined that the probable cause of the over-pressurization of the natural gas distribution system and the resulting fires and explosions was Columbia Gas of Massachusetts' weak engineering management, which did not adequately plan, review, sequence, and oversee the construction project that led to the abandonment of a cast iron main without first relocating regulator sensing lines to the new polyethylene main. Contributing to the accident was a low-pressure natural gas distribution system designed and operated without adequate overpressure protection.

[3] NTSB/PAR-19/02 Accident Investigation Abstract

SOUTHWEST GAS CORPORATION



Typical schematic of a worker and monitor regulator setup with sensing lines.

The cast iron low pressure distribution system was designed to operate at pressures in the range of 0.5 psig, which is slightly higher than the 0.25 psig pressure that a Southwest Gas customer would experience in their house piping. The system overpressure on Columbia's system was initially reported at over six (6) psig, or **more than 12 times** what the system was designed to handle. This additional pressure created uncontrolled pilot and burner flames on customer appliances, resulting in the multiple fires and explosions experienced during the incident.

15 Minute Break

Future Implementation of the NTSB's Safety Recommendation P-19-016

CPUC staff carefully analyzed the NTSB's Safety Recommendation P-19-016, its effect on the gas utilities under CPUC jurisdiction and its impact on public safety.

Future Implementation of the NTSB's Safety Recommendation P-19-016 (Continued)

Staff has determined that a licensed professional engineer by training has proper technical expertise, a duty to safety that overrides all other considerations, and bound by enforceable ethical and legal duties for the protection of the public health, safety, and welfare. In addition, having a professional engineer stamp and seal the construction plans will:

Future Implementation of the NTSB's Safety Recommendation P-19-016 (Continued)

- Reduce risk, increase safety, and strengthen the engineering management system
- Certify all aspects of the project are performed under the supervision and direction of a qualified engineer
- Demonstrate that the construction plans have been approved by an accredited professional with the requisite skills, knowledge, and experience to provide a comprehensive review
- Enhance public safety with negligible effect on gas utilities
- Ensure the construction plans are traceable, verifiable, and complete

Future Implementation of the NTSB's Safety Recommendation P-19-016 (Continued)

Potential Options for Implementing Safety Recommendation P-19-016

- Resolution
- Order Instituting Rulemaking (OIR)

Link to the CPUC's Proceeding and Rulemaking Webpage:
https://www.cpuc.ca.gov/proceedings-and-rulemaking

California Public Utilities Commission

Next Steps

- Staff may make a recommendation on which option is best to implement the NTSB Safety Recommendation
- Staff may hold an additional workshop

Public Comments

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Closing Comments

Thank You

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