



UNEASY NEIGHBORS: ELECTRIC TRANSMISSION LINES AND PIPELINES

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OVERVIEW

- **IS THERE A PROBLEM?**
- **WHERE ARE WE NOW?**
- **WHERE ARE WE GOING?**



Historical Neighbors

- Pipelines and transmission lines have existed parallel for decades.
- At times pipelines and transmission lines have even existed in the same corridor for decades.

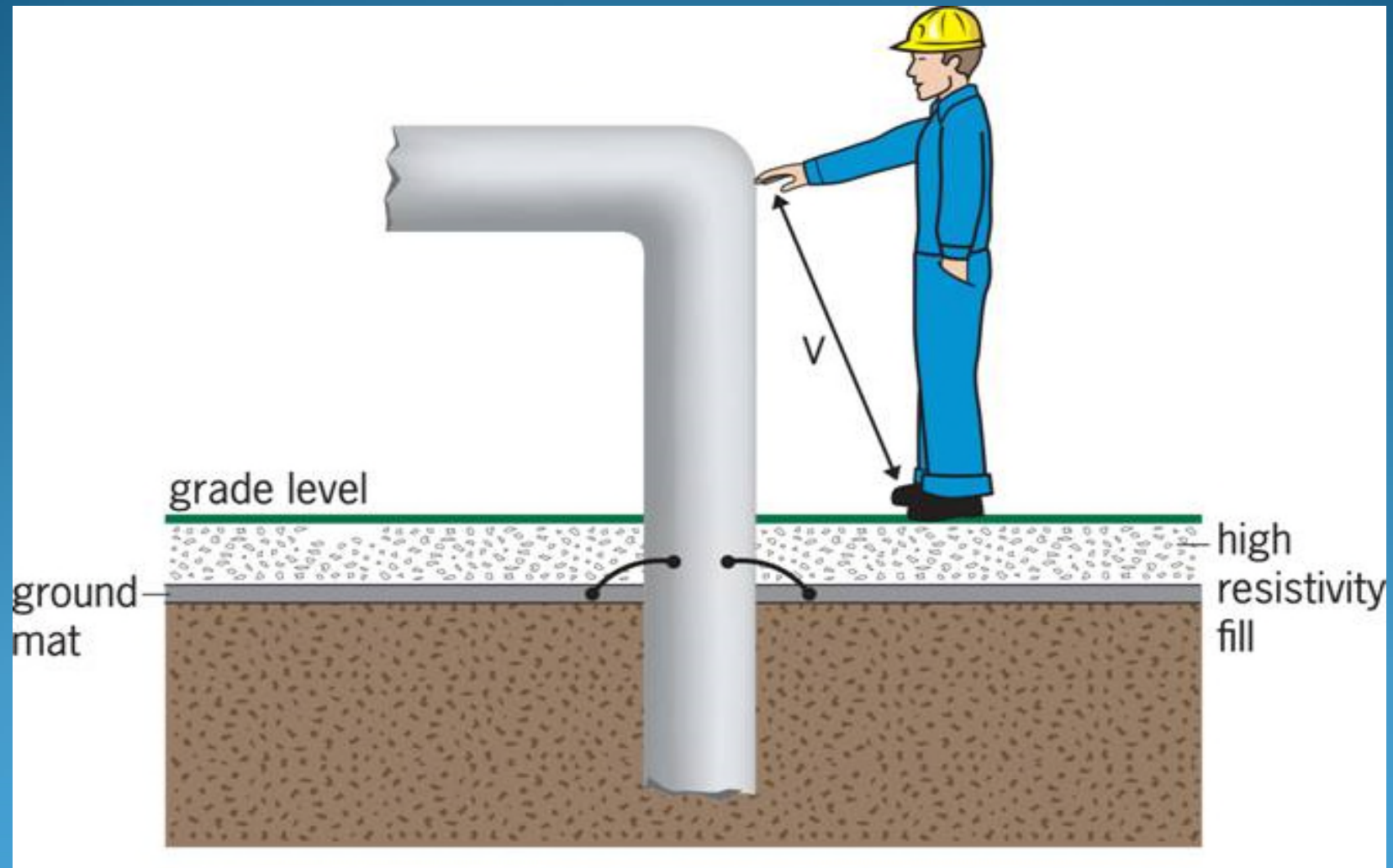


IS THERE A PROBLEM?

- **POTENTIAL ISSUES**
 - **INDUCED VOLTAGE - TOUCH/STEP RISK**
 - **INDUCED CURRENT – POTENTIAL ACCELERATED CORROSION**

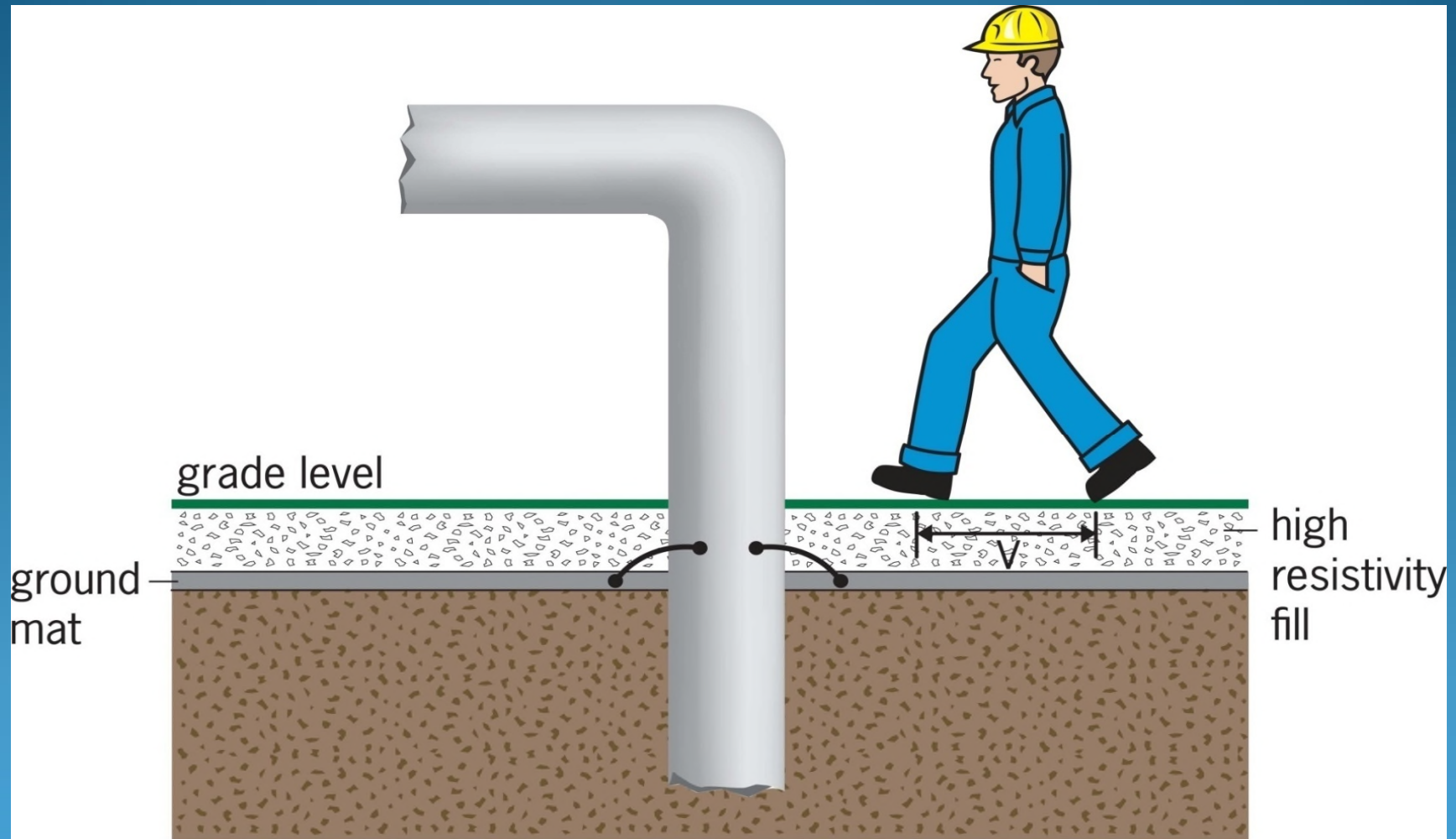
Induced Voltage Touch Hazard

- Touch hazard refers to the risk of electrical shock from touching an energized pipeline or appurtenance.



Induced Voltage - Step Hazard

- Step hazard refers to the risk of electrical shock from a voltage difference between two body parts touching the ground.





Induced Voltage - Mitigation

- Clear standards govern mitigation of induced voltage
 - Mitigation to 15V for above ground appurtenances
 - NACE SP0117-2014
 - No mitigation requirements for underground facilities
 - NACE SP0117-2014
- Mitigation with grounding mats for surface facilities is common.
- Mitigation can be accomplished economically.

Induced Voltage - Mitigation

- Grounding mats installed to mitigate induced voltage at above ground appurtenances.





Induced Current

- Opinions vary greatly on the topic of induced current
 - Some are very concerned about the possibility of accelerated corrosion
 - Some point to decades of historical colocation of facilities without incident

AC Corrosion ... NOT ATMOS LINE



AC Corrosion ... NOT ATMOS LINE



AC Corrosion ... NOT ATMOS LINE



Induced Current

- The case for mitigation:
 - General Standards
 - 49 CFR 192.473 - (A) EACH OPERATOR WHOSE PIPELINE SYSTEM IS SUBJECTED TO STRAY CURRENTS SHALL HAVE IN EFFECT A CONTINUING PROGRAM TO MINIMIZE THE DETRIMENTAL EFFECTS OF SUCH CURRENTS.
 - TOUCH/STEP STANDARDS
 - NACE International Standard SP0177-2014
 - INTEGRITY STANDARDS
 - 49 CFR §§192.911, 192.917, 192.933 and 192.935 (Transmission Pipeline Integrity)
 - 49 CFR §§192.1007 (Distribution Pipeline Integrity)



Induced Current

- The case against mitigation:

Induced Current - NACE

From NACE SP0117-2014 Foreword:

- *“Many are now concerned with AC corrosion on buried pipelines adjacent to or near overhead electric transmission towers. **This subject is not quite fully understood, nor is there an industry consensus on this subject.** There are reported incidents of AC corrosion on buried pipelines under specific conditions, and there are also many case histories of pipelines operating under the influence of induced AC for many years without any reports of AC corrosion. The members of NACE Task Group (TG) 025 agreed that any criteria for AC corrosion control should **not** be included in this standard.”*



Induced Current - Mitigation

- Mitigation for induced current requires complex detailed modeling
- Solutions can vary greatly based on the modeling software and the assumptions made in the modeling
- Mitigation costs can range greatly
 - As high as \$2 million dollars a mile
 - As low as \$90,000 a mile



Induced Current - Mitigation

- Mitigation techniques primarily include use of:
 - Linear zinc/copper ribbons buried between the pipeline and the transmission line;
 - Copper ground wells that attach to the pipeline; or a
 - Combination of the above



HVAC Power lines

Trench with Zinc
Ribbon Installed
and Grading
Performed

Pipeline
Centerline



IS THERE A PROBLEM?

- **Opinions vary!!!**



WHERE ARE WE NOW?

- Proximity of Facilities
- Revision of CCN Rules
- New PUC Ordering Paragraph
- Cost Recovery



Where are we now? -Proximity

One thing is clear – Pipelines and transmission lines will continue to be neighbors for numerous reasons.

- **LIMITED RIGHTS-OF-WAY**
- **LANDOWNER OPPOSITION**
 - NIMBY
 - Keystone XL Pipeline
 - Northeast pipeline projects
 - Transmission line CCN
- **Environmental Constraints**
 - Wetlands
 - Endangered Species



Where are we now? – CCN Routing

- Historically pipelines have been considered as compatible corridors for transmission line routing.
 - Recent rule changes at the PUC have eliminated this “plus factor.”



Where are we now? – CCN Routing

PIPELINES NO LONGER A COMPATIBLE ROUTE

“The amendments will remove any presumption that the commission has a preference for transmission line routes to parallel natural gas or other pipelines by identifying types of rights-of-way that generally may be compatible with transmission lines. The list of compatible rights-of-way does not include pipelines.” (Page 1, Final Order, Project No. 42740)

PIPELINES CANNOT BE TOTALLY AVOIDED

“This intentional omission of pipelines is intended to remove any preference for paralleling or utilizing pipeline rights-of-way while not prohibiting such consideration.” (Page 1, Final Order, Project No. 42740)



Where are we now? – PUC

- New Ordering Paragraph adopted after mitigation issue was litigated in a CCN case.
 - “Oncor shall conduct surveys to identify pipelines that could be affected by the Hicks to Elizabeth Creek transmission line and coordinate with pipeline owners in modeling and analyzing potential hazards because of AC interference affecting pipelines being paralleled.” (Final Order, PUC Docket No. 42087)



Where are we now?

- Cost Recovery
 - No RRC or PUC guidance exists currently as to whether the pipeline or the transmission line should pay for mitigation

Where are we now? -Cost Recovery

Both electric and gas utilities could arguably recover mitigation costs if deemed prudent by the appropriate agency.

Electric –

**Interim update of transmission rates - 16 TAC §25.192(h)
General rate Case
GULF STATES UTILITIES CO. V. PUCT - 841 S.W.2d 459 (1992)**

Gas –

**Gas reliability infrastructure program
General rate case
GULF STATES UTILITIES CO. V. PUCT - 841 S.W.2d 459 (1992).**

Where are we now? -Cost Recovery

- **HEALTH & SAFETY CODE SUBCHAPTER H**

- NOTICE TO PIPELINE OPERATOR, and
- PIPELINE OPERATOR DETERMINES NO RISK, or
- PIPELINE OPERATOR DETERMINES RISK AND IS PAID FOR MITIGATION MEASURES, or
- CONSTRUCTION IS UNDER AN EXISTING WRITTEN AGREEMENT, or
- CONSTRUCTION BY REGULATED UTILITY DUE TO NATURAL DISASTER

- **COURT INTERPRETATIONS**

- TRAVIS COUNTY v. FLINT HILLS RESOURCES, ET AL, 456 Fed. Appx. 410 (2011)

- **ADMINISTRATIVE INTERPRETATIONS**

- STATEMENTS BY SOAH JUDGES IN CCN CASES THAT CODE IS REMEDY FOR PIPELINE COST RECOVERY
- COMMISSION HAS DECLINED TO PROVIDE COST RECOVERY EACH TIME ISSUE OF MITIGATION HAS BEEN LITIGATED.



Where are we going?

- **PUCT PROJECTS/INITIATIVES**

- Informal discussions with transmission service providers and pipeline operators
- No formal project at this time

- **RRC PROJECTS/INITIATIVES**

- Informal discussions between staff and pipeline operators
- Potential guidance or rule on mitigation standards



Where are we going?

- Difficult issues complicate the regulatory process moving forward
 - Lack of consistency in positions on mitigation for induced current
 - Difficulty in demonstrating that costs are reasonable and necessary



Where are we going?

- What do we need to change the status quo?
 - Joint PUC and RRC rulemaking



QUESTIONS?