

Workshop

Remote Sensing and Reliability of Gas and Electrical Infrastructure Systems

Location: Eversource Energy Center, University of Connecticut
UConn-Alumni Center, 2384 Alumni Drive, Storrs, CT

Date: **Thursday, August 30th, 2018**

The Gas Technology Institute (GTI) and the Eversource Energy Center at the University of Connecticut (UConn) are coordinating a workshop to identify the state-of-the-art remote sensing research and technology for solving real-world challenges to natural gas and electrical infrastructure relating to natural forces.

The workshop will discuss the risks to natural gas, electrical, and other utilities' infrastructure and their resiliency against external natural forces such as earth movement, landslides, floods/flash floods, weather events, wind, and fire. The workshop will explore recent advancements in remote sensing technologies for use in identifying risks to utility infrastructure and opportunities for enhancing their resiliency.

Introduction

Natural forces damage is one of the main challenges to safe operations of natural gas pipelines and electrical transmission power lines. Reported data by the U.S. DOT Pipeline and Hazardous Materials Safety Administration (PHMSA) has shown that natural forces are a root cause of significant gas pipeline incidents. Also, data reported from the US Department of Energy, Energy Information Administration show significant increase in power line disturbances caused by weather related incidents.

Remote Sensing technologies such as acoustic, radar, laser, and multispectral imagery systems are continuously being introduced on stationary, vehicular, aerial and space-based platforms with potential uses in Right-of-Way (ROW) monitoring and assessment of the risks to natural gas and electrical grid infrastructure due to natural forces. The workshop is intended to identify these technologies and key issues related to their use, identify research gaps and development needs, and ultimately develop a roadmap for their implementation.

The **workshop** is structured to be both informative and collaborative. Speakers from the U.S. DOE, DOT-PHMSA, academia, utilities, and professional organizations, and industry are invited to present and participate in the development and implementation of remote sensing technologies in risk management of these systems.

The dialogue among the attendees will provide insight on the opportunities and technology gaps and the outcome of the workshop will formulate a roadmap of the development needs of the focus areas identified in the Workshop Agenda.

Scope

The workshop topics cover various applications of remote sensing technology in the risk management and reliability of natural gas and electrical infrastructure. Examples of topic areas to be discussed in the workshop include, but not limited to, the following:

Remote Sensing Technology Applications:

- *Applications of LiDAR, hyperspectral, multispectral, and thermal imagery from UAV and other airborne platforms in natural gas and electrical infrastructure.*
- *Monitoring of earth movement, landslides/debris flows, and flash flooding for Integrity management and post-event evaluation of infrastructure systems.*
- *Safety and reliability of electrical power line systems and its mitigation procedures against the risk of wildfire and other extreme weather events.*

Data Management and Risk Assessment:

- *Automated detection algorithms and post-event evaluations of natural force threats.*
- *Predictive Analytics using multiple data sources to sort risks of natural forces*
- *Predicting gas leak migration and mitigation from remote sensing measurements*

Contact:

Gas Technology Institute:

- *Khalid Farrag, Ph.D., P.E. | Khalid.farrag@gastechnology.org | 847-768-0803*

Eversource Energy Center, University of Connecticut:

- *Jason Parent, Ph.D. | jason.parent@uconn.edu | 860-486-4169*

Workshop Agenda

Date: Thursday, August 30, 2018 – 8:00 AM- 5:00 PM

Location: Eversource Energy Center, University of Connecticut
UConn-Alumni Center, 2384 Alumni Drive, Storrs, CT

Overall Objective: Identify current state of the technology, development gaps, implementation needs, and provide recommendations on remote sensing monitoring of natural force threats.

SESSION 1: Regulatory and Industry Presentations (8:00 AM- 11:30 AM)

- *Introduction and Summary of Workshop, GTI-Eversource*
- *Research Activities and Needs - Regulatory Perspective, U.S. DOT PHMSA*
- *Remote sensing technologies (LiDAR, hyperspectral, multispectral, thermal imagery, and other) in risk assessment*
- *Utilities Implementation and Needs*
 - *Natural force threats, monitoring and research needs, SoCal Gas*
 - *Aerial LiDAR data acquisition and use for ground movement detection, PG&E*
 - *Implementation of Remote sensing technologies, Eversource*

SESSION 2: Technical Presentations (12:30 PM-3:30 PM), topics:

- *Industry Focus Areas, Research and Developments*
- *Research and Application of remote sensing in ROW monitoring, U.S. DOE, ARPA-E*
- *Post-event evaluation of earth movement, landslides/debris flows, and flash flooding and other natural force threats*
- *Risk Analysis and Threat Mitigation of natural gas transmission systems and their threat-mitigation procedures.*
- *Automated detection algorithms and post-event evaluations of natural force threats,*
- *Electrical power lines risk assessment against extreme weather conditions*

SESSION 3: Group Discussion: Developments and Applications Road Map (3:45 PM– 5:00 PM)

[Adjourn]