

# Panel 1: National Perspectives on Key Technical Challenges



Kenneth Lee

Director of Engineering & Research, Office of Pipeline Safety

**Pipeline Research and Development Forum  
September 11-12, 2018**



# What PHMSA OPS Regulates

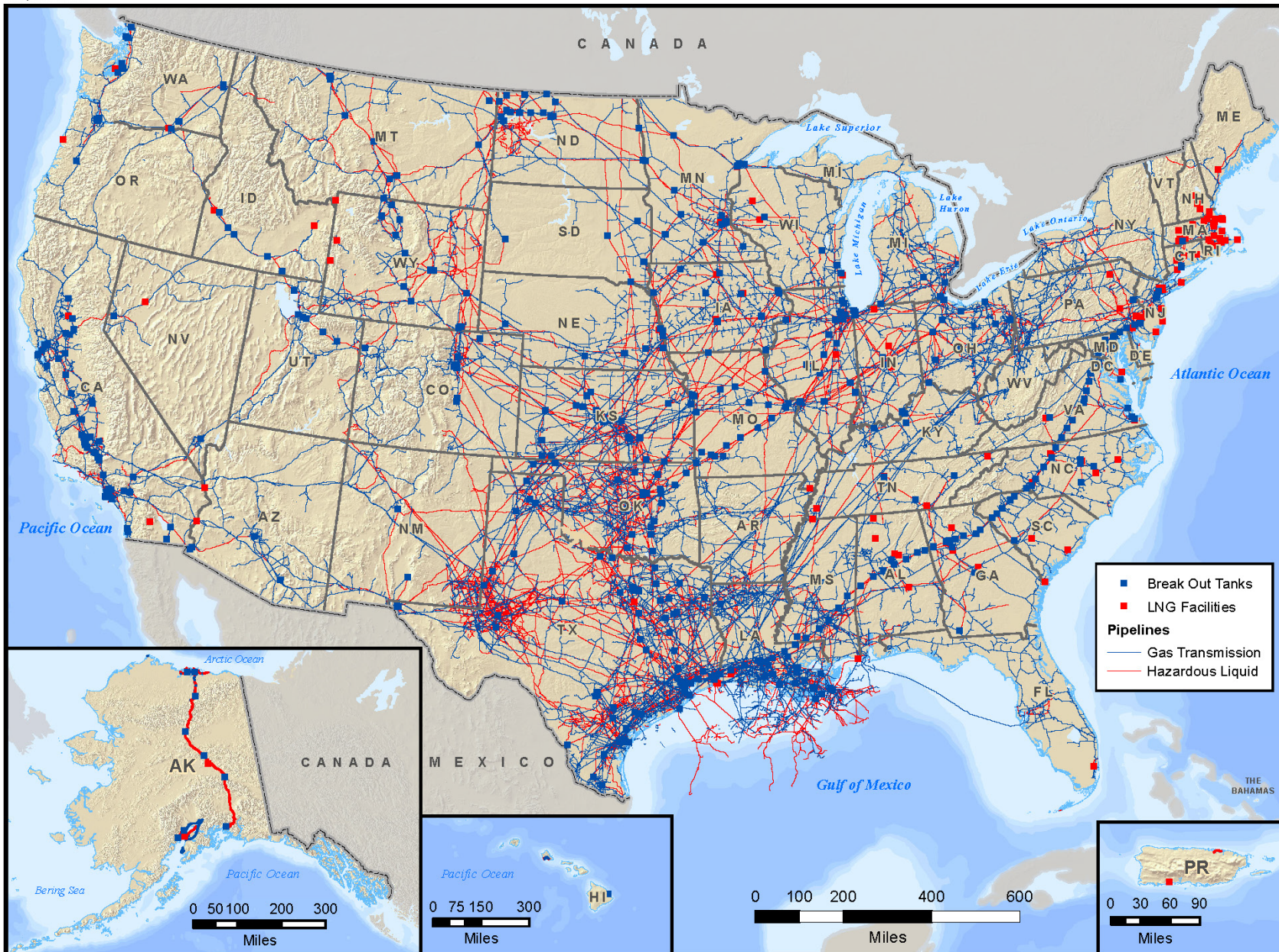
System Type	Miles	% Miles	# Operators
Hazardous Liquid	212,189 7,920 Tanks	8%	517
Gas Transmission	300,390	11%	1,032
Gas Gathering	18,186	1%	351
Gas Distribution (Mains & Services )	2,230,727	80%	1,295
<b>Total Pipeline Miles</b>	<b>2,761,492</b>	<b>100%</b>	Note: Some operators have multiple system types
<b>Liquefied Natural Gas</b>	<b>151 Plants</b>	<b>226 Tanks</b>	<b>83</b>
<b>Underground Gas Storage</b>	<b>397 Facilities</b>	<b>17,458 Wells</b>	<b>124</b>





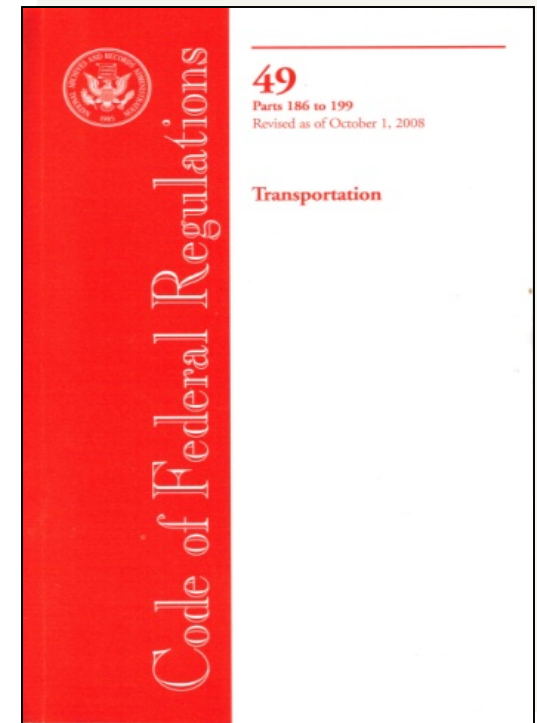
# Gas Transmission and Hazardous Liquid Pipelines in the United States

## National Pipeline Mapping System



# Some of PHMSA's Roles and Responsibilities

- **Minimum safety standards: 49 CFR Parts 190-199, including:**
  - Part 192: Natural Gas Pipelines
  - Part 195: Hazardous Liquids Pipelines
  - Part 193: LNG Facilities
- **Inspection & Enforcement**
- **Safety Awareness & Outreach**
- **Research & Development**





# Research Program Performance Since 2016 Pipeline R&D Forum

- Last Forum: Nov 16-17, 2016 in Cleveland. 330 attendees
- Core & CAAP University Research Programs:
  - PHMSA solicited 23 topics
  - Received 131 White Papers & 62 Proposals
  - Awarding 30 projects: \$14M PHMSA + \$5.3M Resource Sharing  
<https://primis.phmsa.dot.gov/matrix/>
- **See Program Backgrounder at registration desk for more details**



# Recently Completed Projects Include:

- EMAT Guided Wave ILI of Unpiggable Natural Gas Pipelines
- Emissions Quantification Validation Process
- Natural Gas Pipeline Leak Rate Measurement System
- Rapid Aerial Small Methane Leak Survey
- In-Ditch Validation Methodology for Determination of Defect Sizing
- Framework for Verifying and Validating the Performance and Viability of External Leak Detection Systems
- Intrinsically Locatable Technology for Plastic Piping Systems
- Pipeline Damage Prevention Radar
- Characterization and Fitness for Service of Corroded Cast Iron Pipe



# Recent Incidents Highlight the Need for Pipeline Research

- Sept. 2015 Centreville, VA: Gasoline pipeline leak at 4" corrosion fatigue crack in dent



# Recent Incidents Highlight the Need for Pipeline Research

- Nov 2017 South Dakota: ~9,700 barrel oil spill





# Recent Incidents Highlight the Need for Pipeline Research

- February 2018 Dallas, TX: House explosion & fatality from gas distribution leak



# Recent Incidents Highlight the Need for Pipeline Research

- March 2014 Plymouth, WA: Explosion at LNG facility
- Jan 2018 Cameron Parish, LA: LNG storage tank leak



# Thank You!/RD&T Program Contacts

## **Kenneth Lee**

Director – Engineering & Research  
Department of Transportation  
Pipeline & Hazardous Materials Safety Administration  
Office of Pipeline Safety  
P(202) 366-2694  
Email [kenneth.lee@dot.gov](mailto:kenneth.lee@dot.gov)

## **Robert Smith**

Department of Transportation  
Pipeline & Hazardous Materials Safety Administration  
Office of Pipeline Safety  
P(919) 238-4759  
Email [robert.w.smith@dot.gov](mailto:robert.w.smith@dot.gov)  
**Linked in** <https://www.linkedin.com/in/robert-smith-935aa033>

## **Joshua Arnold**

Department of Transportation  
Pipeline & Hazardous Materials Safety Administration  
Office of Pipeline Safety  
P(202) 366-6085  
Email [joshua.arnold@dot.gov](mailto:joshua.arnold@dot.gov)

## **PHMSA RD&T Providing/Supporting:**

