



U.S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration



Northern Michigan Pipeline Safety Symposium Tip of the Mitt Watershed Council



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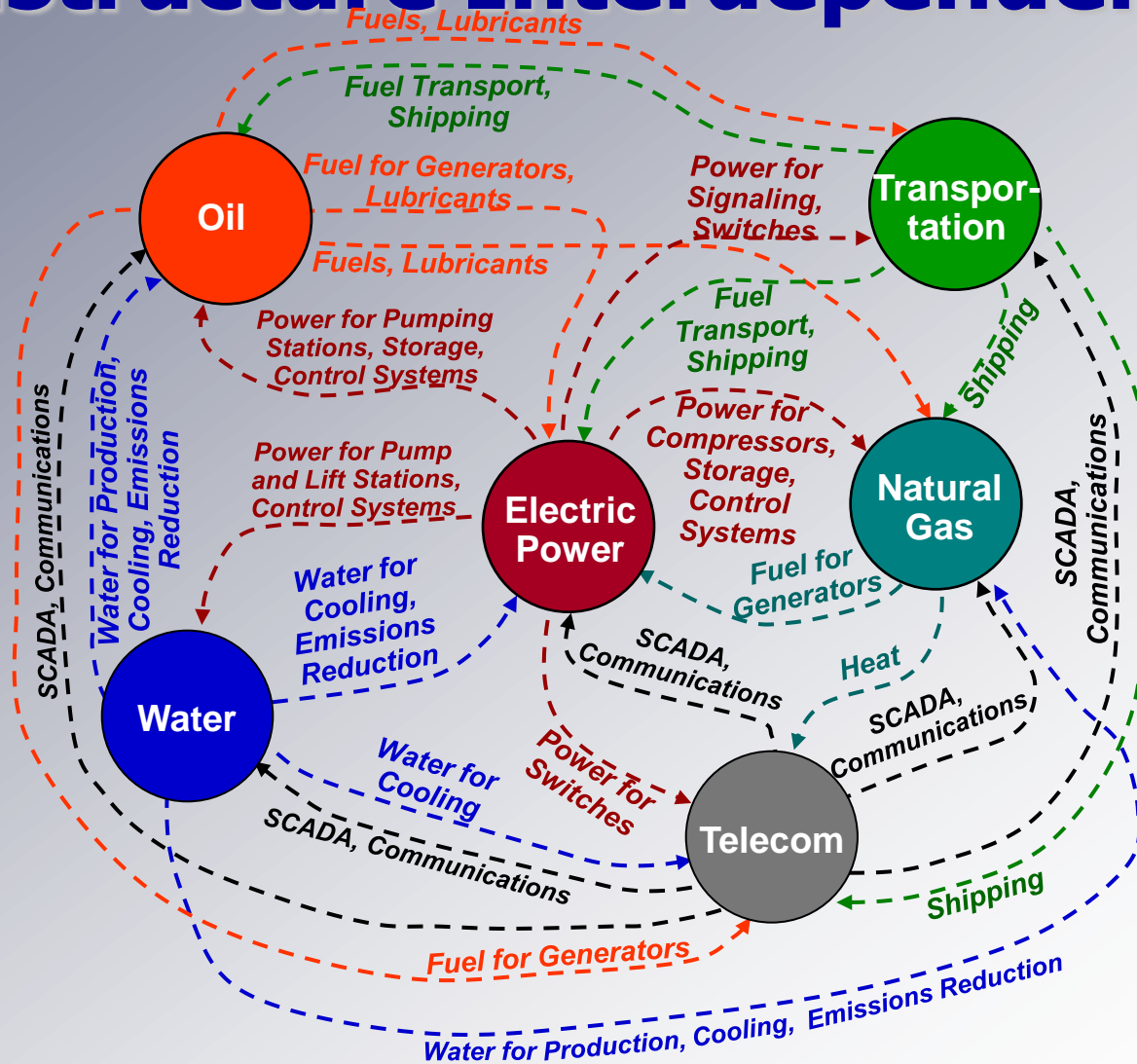


Role of Pipelines

- **2.6 million miles of energy pipelines transport 2/3 of the primary energy consumption in the U.S.**
- **Support our basic human needs, economic mobility, and security**
 - **Direct: gasoline, natural gas, propane**
 - **Indirect: electric generation, telecommunications, water supply**
- **Interdependencies between pipelines and other vital services are not well understood**



Infrastructure Interdependencies





Our Mission

To protect people and the environment from the risks of transporting hazardous materials by pipeline.



What We Regulate

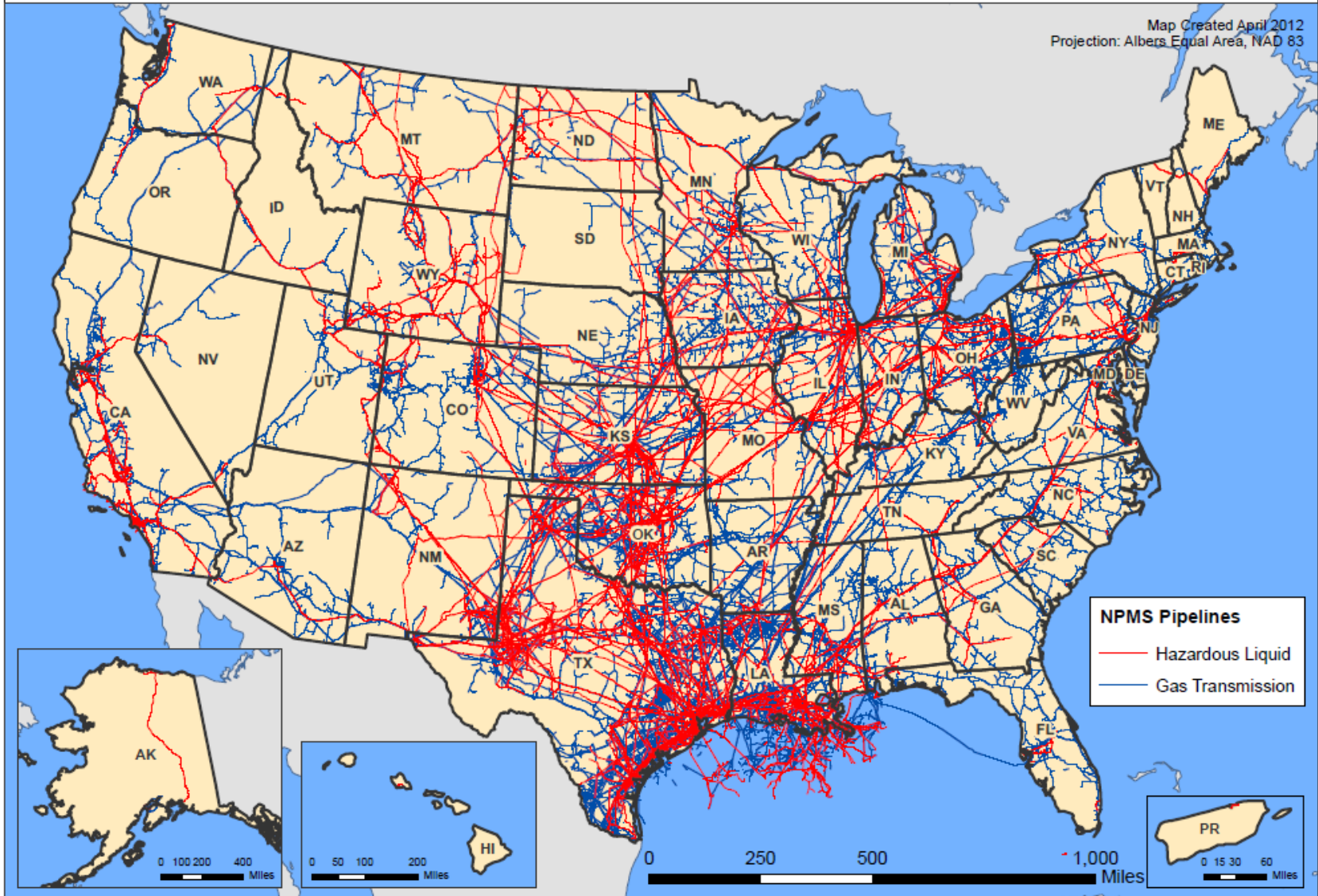
Pipeline Miles by System Types – as-of 3/7/2014			
System Type	Miles	%Total	# Operators
Hazardous Liquid	185,629	7%	410
Gas Transmission	303,308	11%	953
Gas Gathering	16,728	1%	342
Gas Distribution (Mains & Services)	2,138,676	81%	1,356
Total	2,644,341		Some Operators have multiple System Types
Liquefied Natural Gas	130 Plants	203 Tanks	82



Gas Transmission And Hazardous Liquid Pipelines

Pipelines as of 4/10/2012

Map Created April 2012
Projection: Albers Equal Area, NAD 83





Context and Background

- **Hazardous Liquid Pipelines**
 - **185,629 miles operated by 410 operators**
 - **70% engaged in interstate commerce**
 - **Alternative modes present higher risks**
 - **93% of U.S. transportation fueled by oil**
 - **17% of U.S. freight at 2% of total freight bill**

(Interstate Highway System is ~48,000 miles)



- **9,000 gallons
(215 bbls)**

- **33,000 gallons
(785 bbls)**





For Perspective

Line 5 capacity of 540,000 bbls/day:

- **688 Railcars**
- **2512 Tanker Trucks**



Pipeline System 2008-2012

- **9,259,157,795,428 bbl-miles crude**
 - ✓ **11.8 billion railcar miles**
(112 million unit trains)
 - ✓ **43.1 billion tanker truck miles**
- **8,082,039,488,453 bbl-miles products**
 - ✓ **10.3 billion railcar miles**
(98 million unit trains)
 - ✓ **37.6 billion tanker truck miles**
- **2,801,484,098,111 bbl-miles HVLs**



Context and Background

- **Natural Gas Pipelines**
 - **Deliver 25% of energy consumed in U.S.**
 - **No viable alternative mode of transportation**
 - **Transport natural gas to 70 million residential and commercial customers**
 - **Significant growth projected to meet demand**





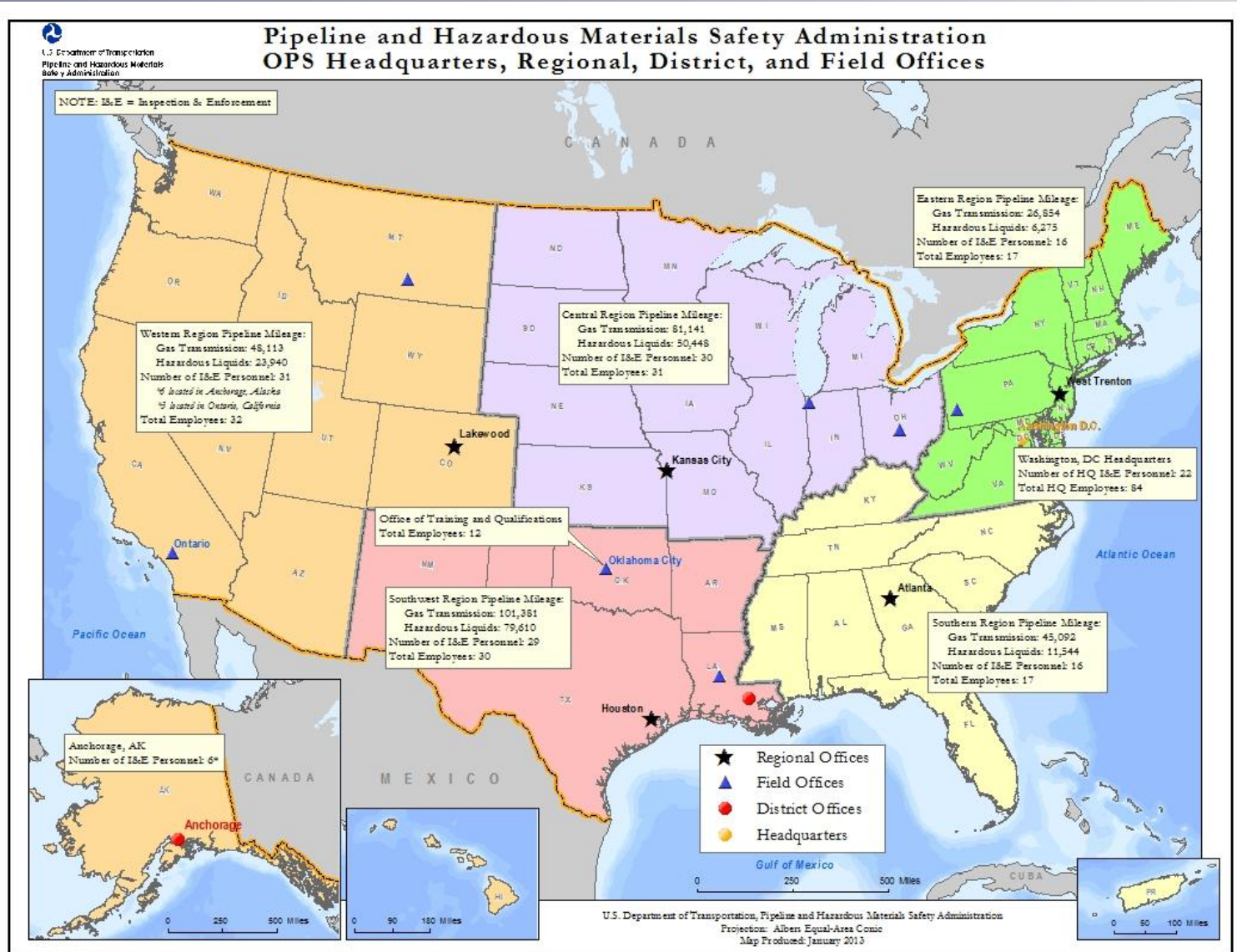
Michigan

Transmission Pipeline Mileage:

- **503 miles HVLS**
- **1268 miles crude oil**
- **1415 miles refined products**
- **8741 miles natural gas**



Where We Are





What We Do

Our Base Programs

- **Data Analysis and Trending**
- **Regulatory Development and Coordination**
- **Inspection, Enforcement and Emergency Response**
 - **Integrity Management**
 - **Emergency Response**
- **State Pipeline Safety Grant Programs**
- **Damage Prevention and Public Education**
- **Research and Development**



Strategic Focus

- **Safety**
 - *Reduce the risk of harm to people due to the transportation of hazardous materials by pipelines*
- **Reduce Congestion**
 - *Pipeline system capacity lost due to incidents, corrective action orders and other issues*
- **Global Connectivity**
 - *Standardize the requirements for pipeline transportation internationally*
- **Environmental Stewardship**
 - *Reduce the risk to the environment due to the transportation of hazardous liquids by pipeline*
- **Preparedness and Response**
 - *Mitigate the consequences after a pipeline failure has occurred*



Program Focus: Safety

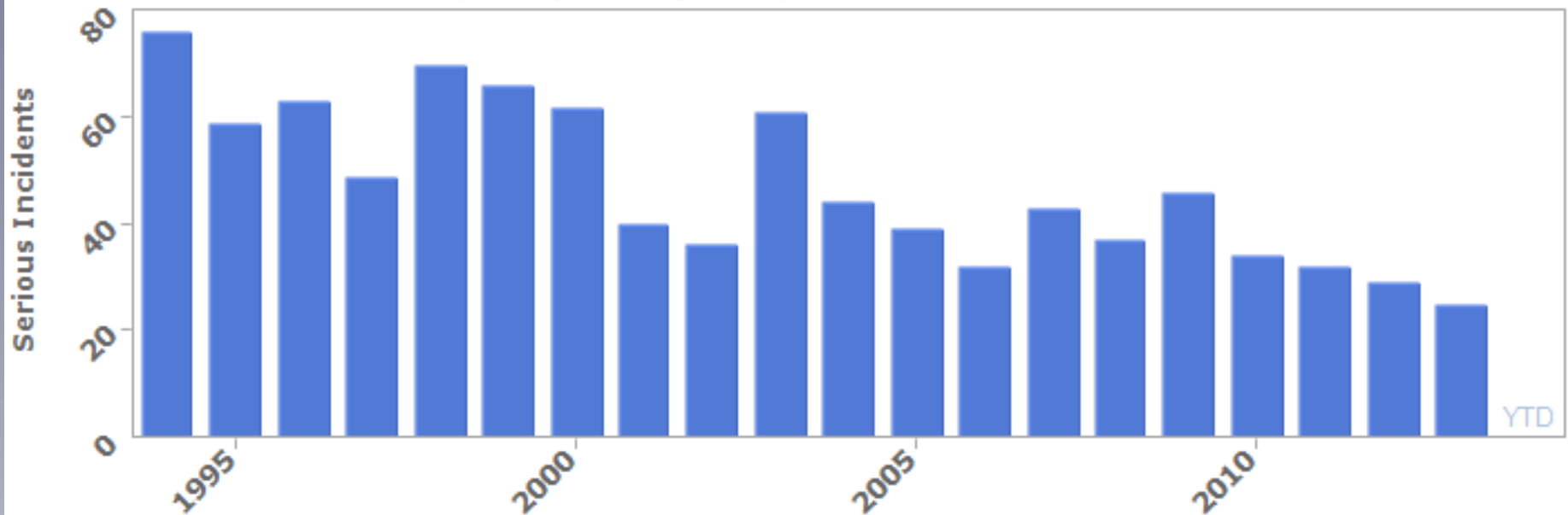
- **Performance measurement**
 - data-driven, risk informed strategies
- **Long-term focus on Integrity Management**
- **Inspection Integration**
- **Special inspections/emphasis on poor performing pipeline operators**
- **Focus on damage prevention and mitigation of high consequence accidents**
- **Cooperative efforts with stakeholders**
 - including enhanced communications (S.C.)
- **Support for state partners**



Serious Incidents

All System Types downward trend continues in 2013

National, All Pipeline Systems, Serious Incidents: Count 1994-2013



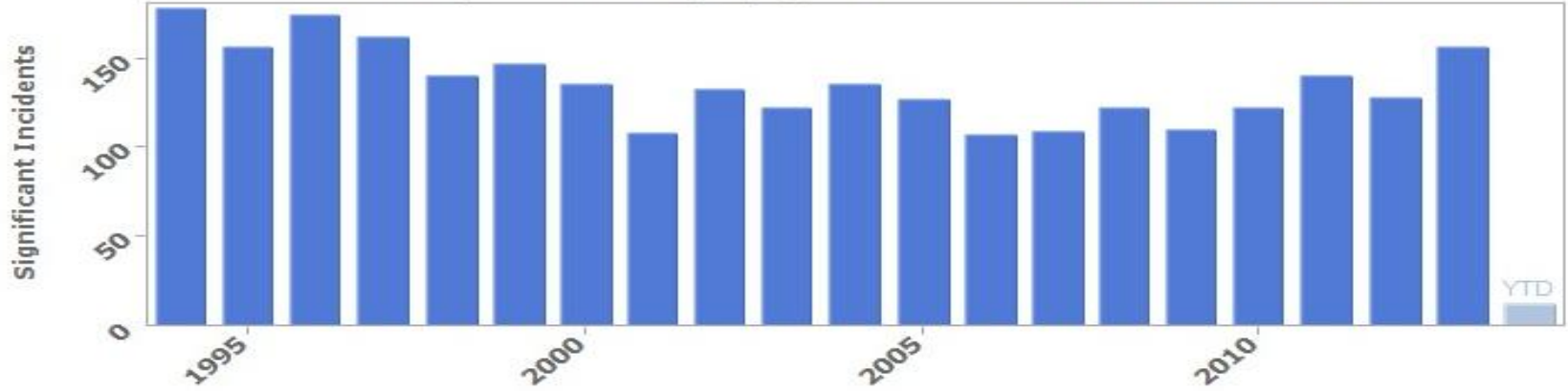
Source: PHMSA Significant Incidents Files, Feb 04, 2014

84% Gas Distribution, 12% Hazardous Liquid, 4% Gas Transmission



Hazardous Liquid

National, Hazardous Liquid, Significant Incidents: Count 1994-2013



Source: PHMSA Significant Incidents Files, March 04, 2014

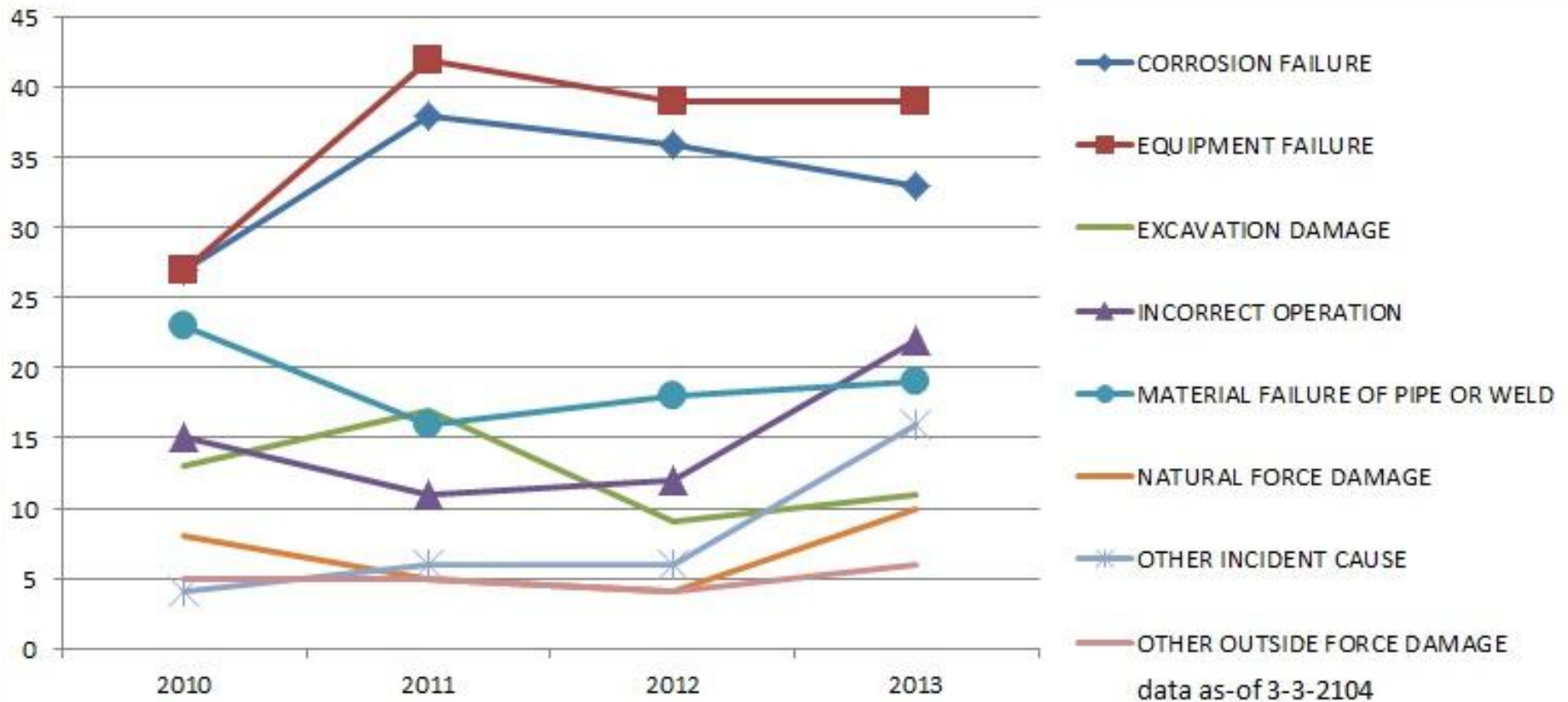
National, Hazardous Liquid, Serious Incidents: Count 1994-2013



Source: PHMSA Significant Incidents Files, March 04, 2014



Hazardous Liquid Significant Incidents by Cause





Michigan

3-yr Average (all Pipeline Systems):

- **7 significant incidents**
- **1 serious incident w/ 1 fatality**

3-yr Average (Hazardous Liquids):

- **2 significant incidents**
- **792 net bbls lost**
- **0 fatalities or injuries**



811

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Always Call 811 Before You Dig**

Know what's below. Always call 811 before you dig.
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What PHMSA Doesn't Do:

- **Authorize or Approve Pipelines**
- **Oversee Pipeline Siting or Routing**
- **Grant Emminent Domain Authority**
- **Monitor or Track Commodity Shipments**
- **Enforce Right-of-way Contract Provisions or Resolve Disputes**
- **Environmental Remediation**



What PHMSA Does Do:

- **49 CFR Part 195**

Transportation of Hazardous Liquids by Pipeline

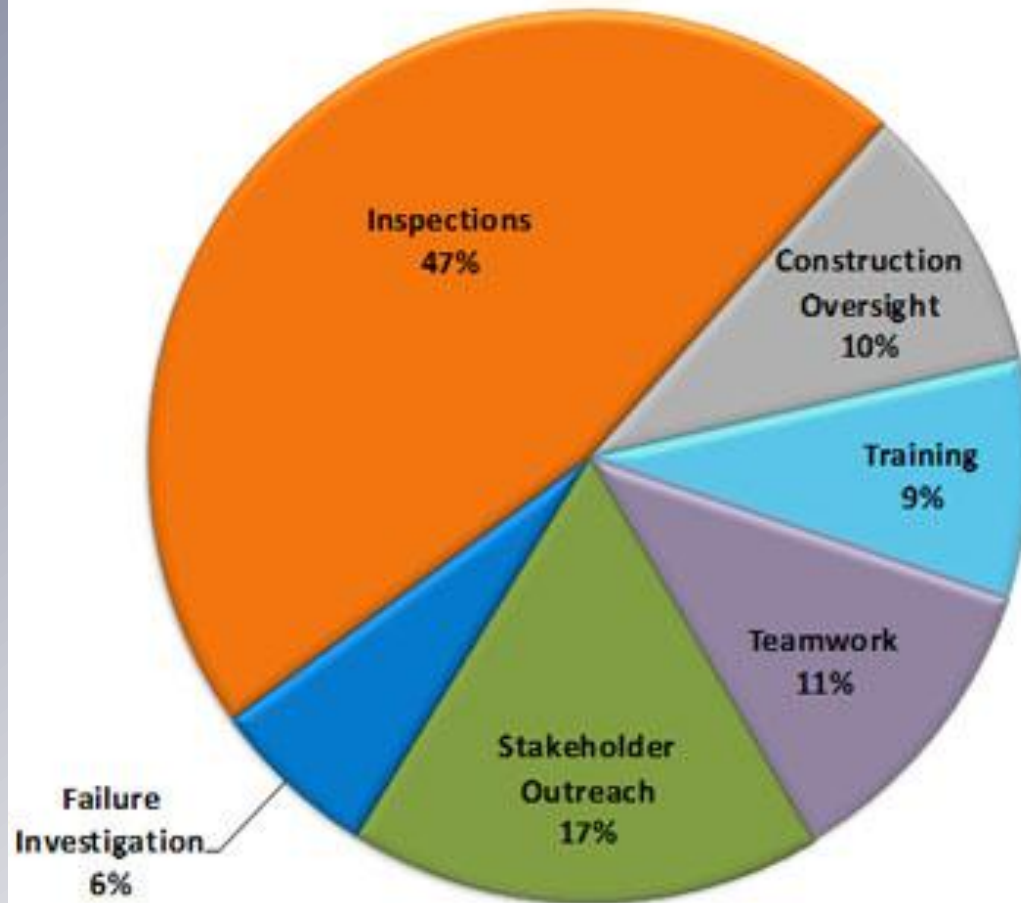
- **49 CFR Part 194**

Response Plans for Onshore Oil Pipelines



What PHMSA Does Do:

OPS Inspector Effort Allocation 2013
All Regions





49 CFR Part 195

Transportation of Hazardous Liquids by Pipeline



Hazardous Liquids?

- **Refined Petroleum Products – gasoline, diesel fuel, jet fuel, condensate, etc.**
- **Crude Oil – including diluted bitumen.**
- **Highly Volatile Liquids – ethane, propane, ethylene, natural gas liquids, etc.**
- **Anhydrous Ammonia**
- **Carbon Dioxide**
- **Ethanol**



49 CFR Part 195

- **Reporting**
- **Design, Materials, and Construction**
- **Pressure Testing**
- **Operations**
 - ✓ **Maximum Operating Pressure**
- **Maintenance**
- **Corrosion Control**
- **Integrity Management**
- **Operator Qualification**
- **Public Awareness**
 - ✓ **Establish and Maintain Liaison with Emergency Responders**
- **Damage Prevention**



Enbridge Line 5

Capacity Expansion Project

- **Notification in May 2012**
- **Project Briefing**
- **Special Inspection**
- ✓ **December 2012**



Enbridge Line 5

Straits of Mackinac Crossing

- **Pipeline Inspections and Mitigation Measures**
- **Construction Records and Pressure Testing**
- **Integrity Assessments**

April 25, 2014 Response to Senate Inquiry Summarizes Efforts



49 CFR Part 194

Response Plans for Onshore Oil Pipelines



Oil?

- **Refined Petroleum Products – gasoline, diesel fuel, jet fuel, condensate, etc.**
- **Crude Oil – including diluted bitumen.**
- **Petroleum distillate or oil that is produced by natural gas wells and stored at atmospheric pressure and temperature (condensate).**



Not Oil?

- **Natural gas is not considered an oil.**
- **Highly volatile liquids (ethane, propane, ethylene, liquid petroleum gas, natural gas liquids, etc.) are not considered to be oil.**
- **Anhydrous Ammonia**
- **Carbon Dioxide**
- **Ethanol**



OPA 90 Plans

- **49 CFR Part 194 outlines response plan requirements for onshore pipelines.**
- **Plans must be submitted to PHMSA for review and approval.**
- **Plans must be resubmitted every 5 years or if substantial information changes.**



Enbridge Line 5

Enbridge Superior Region Response Zone Plan

- Submitted
- Reviewed and Approved
- Public Version Posted
- ✓ FOIA Electronic Reading Room



Emergency Response PHMSA Role

- **Not an emergency response Agency.**
- **Don't conduct environmental monitoring.**
- **Don't direct remediation activities, but can assist with coordination.**



Emergency Response PHMSA Role

- **Investigate the cause of the release.**
- **Verify future integrity of the pipeline.**
 - ✓ **Monitor repairs**
 - ✓ **Pressure reduction**
 - ✓ **Corrective Action Order**
 - ✓ **Apply findings**
- **Provide assistance and advice on pipeline matters to Incident Command.**



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