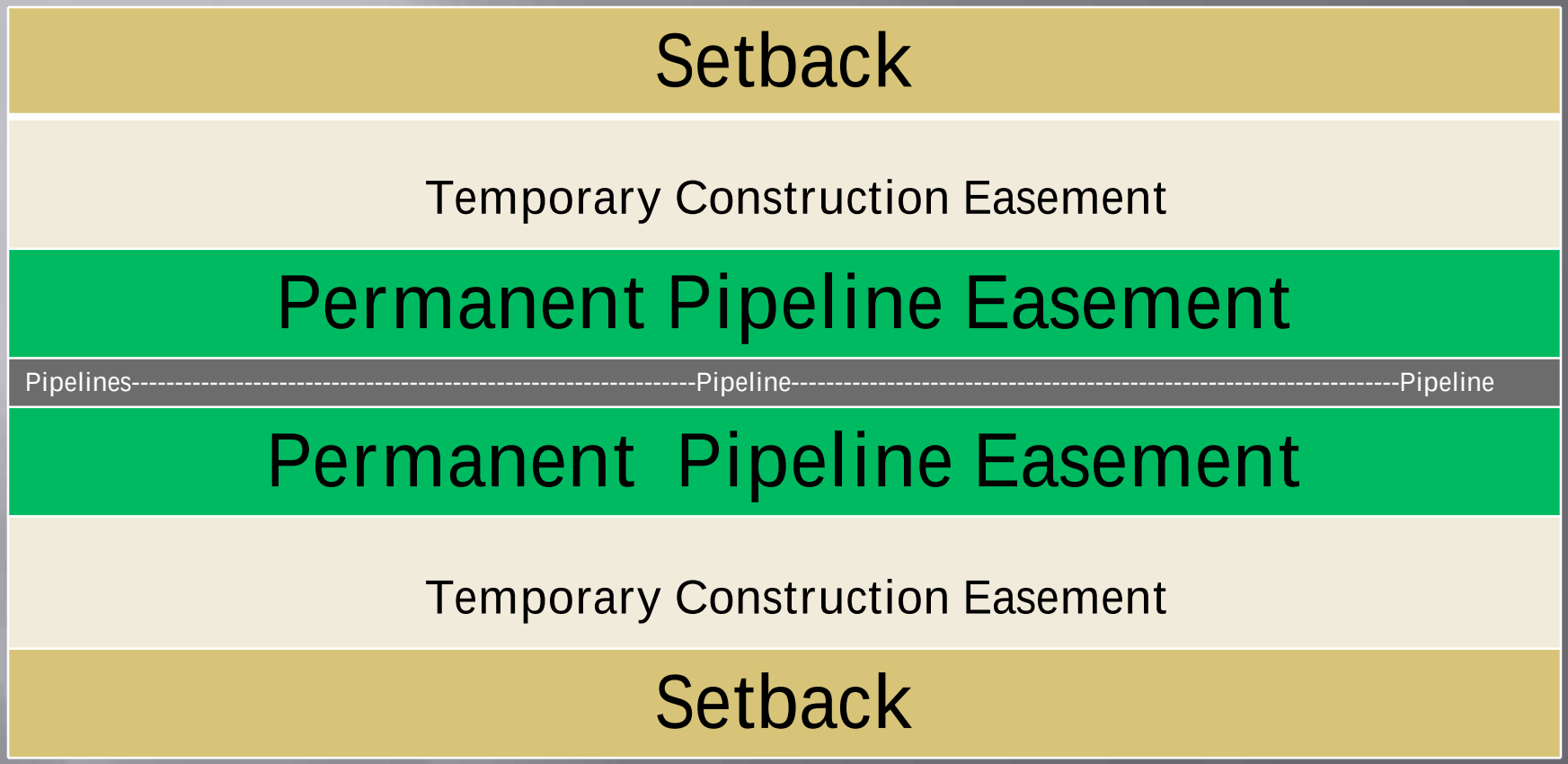
SETBACKS, A REAL SAFETY BENEFIT OR AN ILLUSION OF SAFETY
A NATURAL GAS PIPELINE PERSPECTIVE

Terry Boss
Sr. VP Environment Safety and Operations
INGAA

Need for Energy

- Energy Improves the Quality of Life
- Location Dilemma
  - Location of the Energy
  - Location of the Market
- Linear Facilities
  - Footpaths
  - Rivers
  - Highways
  - Railroads
  - Shipping Channels
  - Flight Corridors
  - Pipelines
- Technology and Knowledge are Changing
- Expectations are Changing

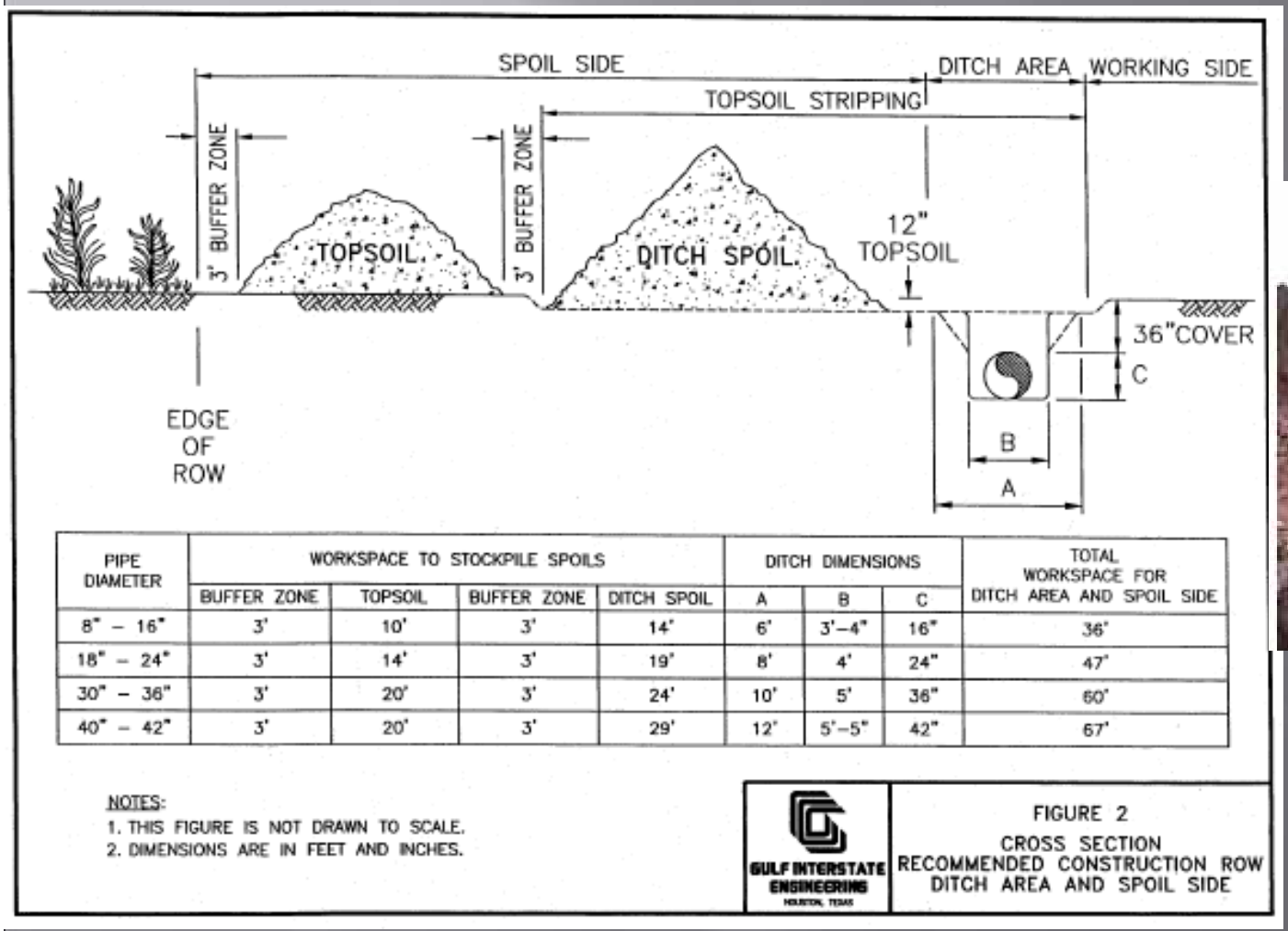
Terminology



Permanent Pipeline Easement

- Facilitate Access for:
  - Operation
  - Inspection
  - Maintenance
- Identification of Pipeline Location
  - Company
  - Landowners
  - Excavators
- Technology and Knowledge are Changing
- Expectations are Changing

Temporary Construction Easement



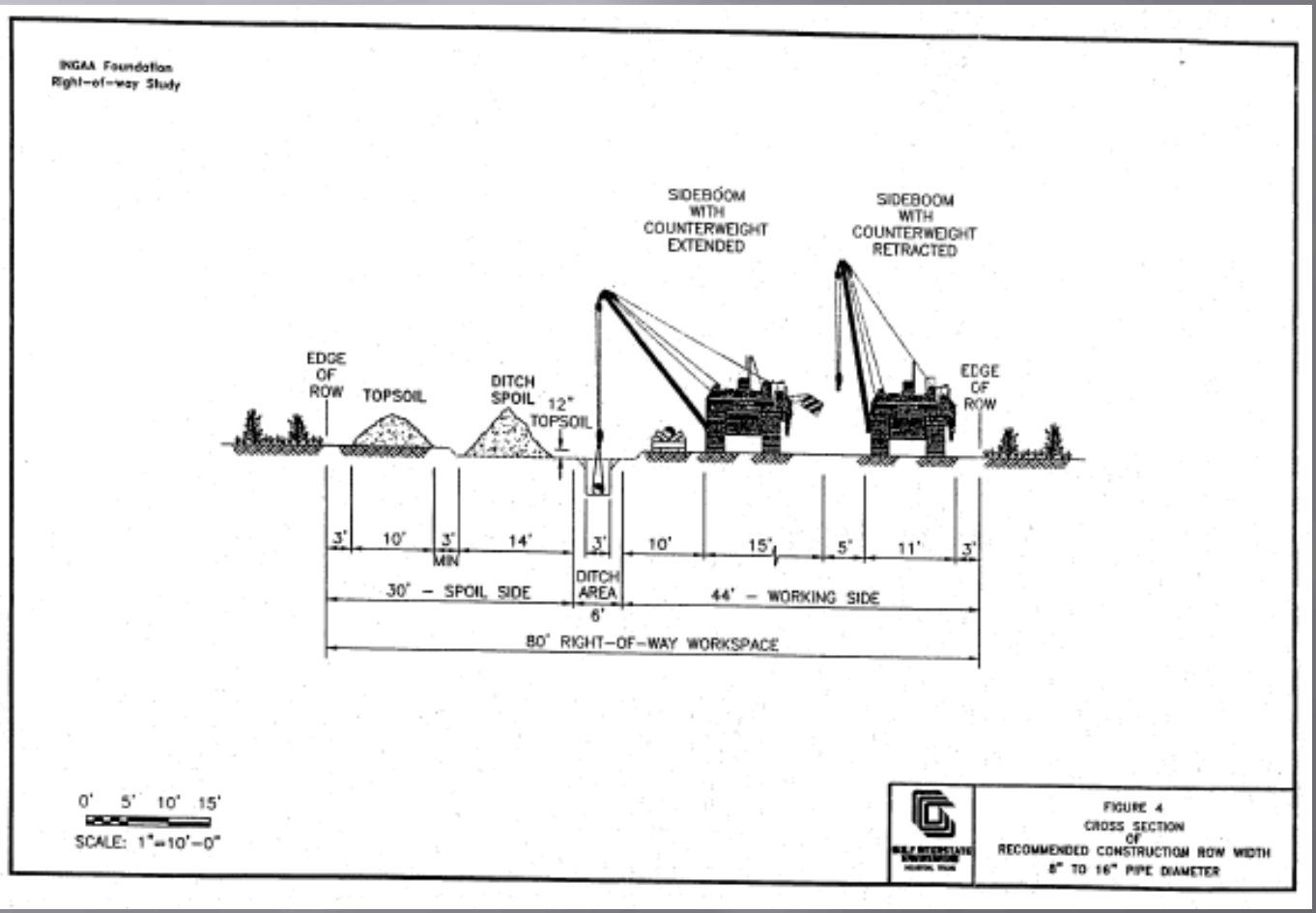
PIPE DIAMETER	WORKSPACE TO STOCKPILE SPOILS				DITCH DIMENSIONS			TOTAL WORKSPACE FOR DITCH AREA AND SPOIL SIDE
	BUFFER ZONE	TOPSOIL	BUFFER ZONE	DITCH SPOIL	A	B	C	
8" – 16"	3'	10'	3'	14'	6'	3'–4"	16"	36'
18" – 24"	3'	14'	3'	19'	8'	4'	24"	47'
30" – 36"	3'	20'	3'	24'	10'	5'	36"	60'
40" – 42"	3'	20'	3'	29'	12'	5'–5"	42"	67'

NOTES:
1. THIS FIGURE IS NOT DRAWN TO SCALE.
2. DIMENSIONS ARE IN FEET AND INCHES.

GULF INTERSTATE ENGINEERING
HOUSTON, TEXAS

FIGURE 2
CROSS SECTION
RECOMMENDED CONSTRUCTION ROW
DITCH AREA AND SPOIL SIDE

Temporary Construction Easement



Temporary Construction Space

- Facilitate Access for Construction of Needed Energy Pipelines
  - Engineering
  - Public Safety
  - Employee Safety
  - Environment
  - Historical Significance
- Technology and Knowledge Are Changing
- Expectations are Changing

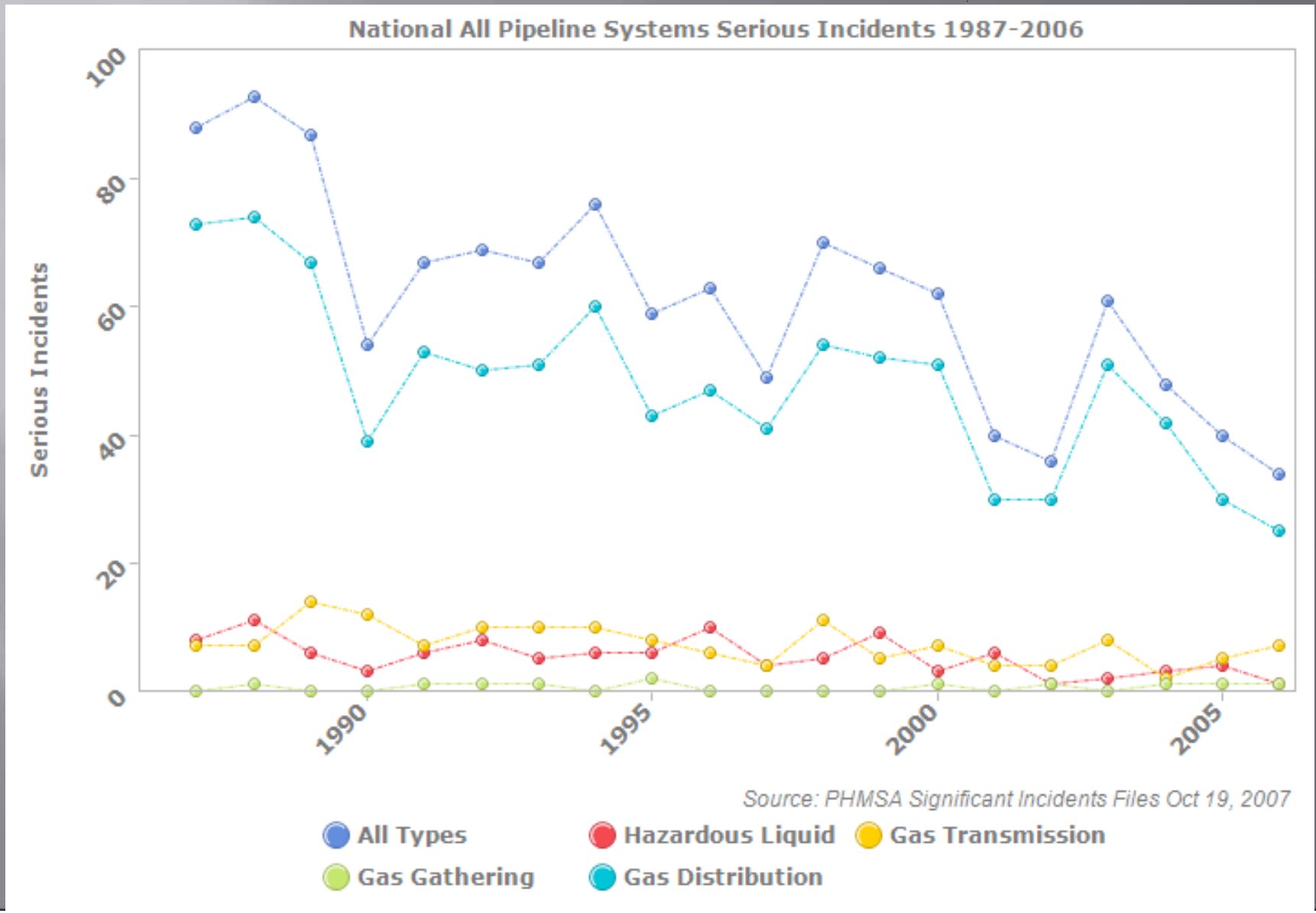
Definition of Setback

- Spacing between a Pipeline and Some Activity
  - Buildings
  - Vegetation
  - Excavation
  - Explosive Charges
  - Wildlife Habitat
  - Vehicle Loading
  - Visual Impact
- Today's Definition is Public Safety

Risk Management Review & Demonstrations

- Risk to Public = Probability * Consequence
- Review Practices (Risk Management 1.0)
  - "Almanac"
    - Pipeline Safety Regulations
    - Consensus Standards
    - Pipeline Company Practices
  - "Emeritus Report" (Why was this done?)
- Risk Management 2.0
  - Reduce the Probability (B31.8S; IMP)
  - Inform about Consequences (Communications)

Serious Incidents (All Pipelines)



Consequences

Public Consequences

National Gas Transmission Onshore: Consequences Summary Statistics: 2002-2006

Year	Public Fatalities		Industry Fatalities		Public Injuries		Industry Injuries		Total Property Damage (B) (C)	Damage to Public Property (D) (B)		Damage to Industry Property (E) (B)	
2002	1	100%	0	0%	0	0%	4	100%	$21,044,702	$844,084	4%	$11,068,814	52%
2003	0	0%	1	100%	3	37%	5	62%	$51,759,964	$11,162,307	21%	$23,618,889	45%
2004	0	0%	0	0%	0	0%	2	100%	$9,916,578	$170,670	1%	$5,722,475	57%
2005	0	0%	0	0%	2	40%	3	60%	$131,269,854	$90,523,128	69%	$30,471,690	23%
2006	1	33%	2	66%	1	25%	3	75%	$25,553,112	$2,648,566	10%	$17,200,717	67%
Totals	2	40%	3	60%	6	26%	17	73%	$239,544,210	$105,348,755	44%	$88,082,585	36%

Results of the Gas IMP Program

Table 3
2004 – 2006 PHMSA Integrity Management Metrics

PHMSA METRIC Onshore & Offshore Pipelines	2004	2005	2006
Total Onshore & Offshore Gas Transmission Miles	296,740	295,613	288,765
Total Miles Inspected	30,398	19,669	19,765
Miles of HCA Pipe	21,727	20,116	18,830
HCA Miles Inspected	3,956	2,739	3,406
Number of Immediate Repairs in HCAs	101	237	158
Number of Scheduled Repairs in HCAs	595	403	405
Number of Leaks in HCAs	117	105	86
Number of Failures in HCAs	8	20	11
Number of Incidents in HCAs			
Time Dependent	2	0	1
Time Independent	5	8	7
Stable	1	2	3

Progress of The IMP Program

- Number of Incidents
  - Time Dependent
  - Stable
- Number of Leaks
  - Time Dependent
  - Stable
- Number of Immediate Repairs
  - Time Dependent
  - Stable
- Probability ↓ Therefore Risk ↓

Manage Time Independent Defects

- Excavation Damage Prevention Understanding
  - 1st Party
  - 2nd Party
  - 3rd Party
- One Call Programs
- Common Ground Alliance (CGA)
- Excavation Damage Prevention Initiative (EDPI)
- Pipeline Easement Management
- Local Government Practices

Summary

- Pipelines are Key to Quality of Life
- Cohabitation with Pipelines is Necessary
- Common Language for Dialogue is Desirable
- Reducing Probability of an Incident Achieves the Same Goals as Setbacks (Reducing Risk)
- Risk to the Public Is being Addressed and Reduced
  - Past
  - Present
  - Future
- Communication is Major Step to Understanding
- Are the Present Efforts Sufficient?