Incident in Westmoreland County, PA & PHMSA Enforcement Summary

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NEPSR Pipeline Safety Seminar

South Portland, ME

October 2016

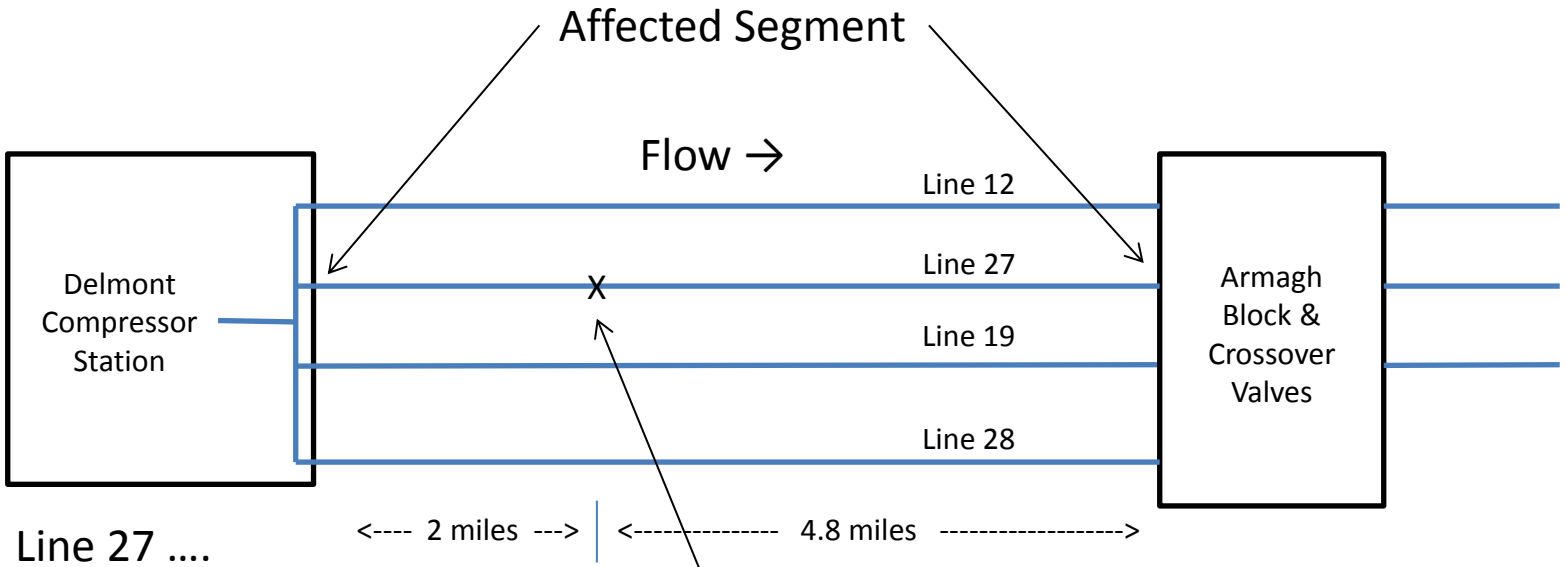
Spectra Energy
Texas Eastern Transmission
Line 27 Failure
Delmont, PA

(25 miles east of Pittsburgh)

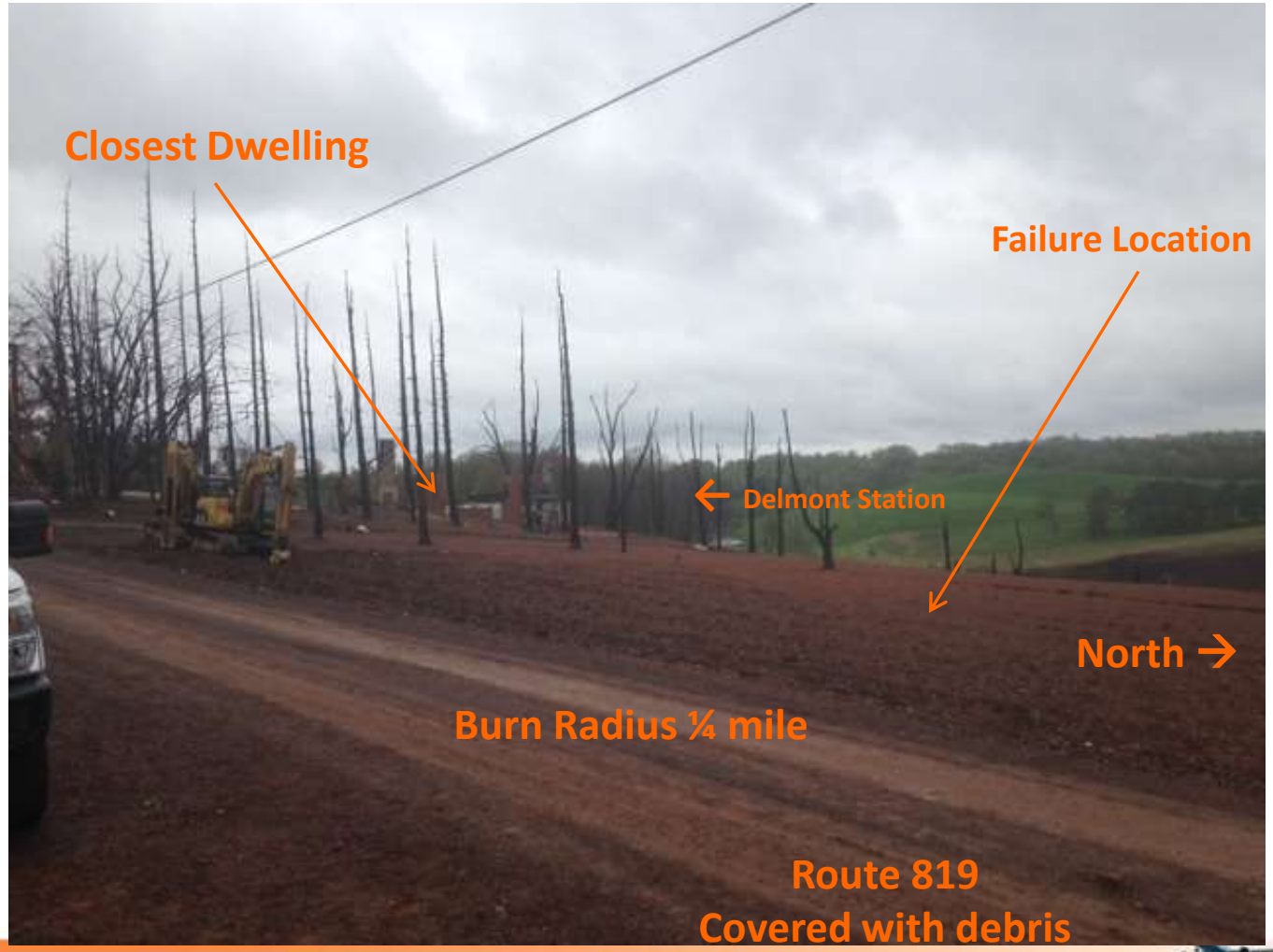
Friday, 08.13am, April 29, 2016

Simplified Diagram

(All four pipelines are currently shutdown and evacuated)



25 miles east of Pittsburgh, PA



Local Impact

- One known injury, third-degree burns over 75% of his body from radiant heat, as he was escaping the burning house
- One house completely destroyed
- Three other homes and their vehicles in close proximity received external damage due to radiant heat from the fire
- Emergency Responders evacuated nine homes in the area
- General Burn Radius of ¼ Mile

Downstream Markets

- The three other pipelines were also shutdown
- Spectra had contacted major customers in the Philadelphia and New York Metro areas about supply impact
- Supplemental gas in-feeds downstream of the failure location restored partial service to 30% of capacity
- Major customers have alternate supplies, but now have limited flexibility

Portion of Pipe Evidence

Suspected Origin of Failure

Suspected Origin of Failure

Girth Weld

Long Seam

Evidence Sticker

First Undamaged Girth Weld Downstream of Failure Location

Field-Applied Tape-Coat

Follow Up

- Corrective Action Order issued on May 03, 2016
- Operator prepared excavation and assessment plan for three parallel lines
- Restart of each individual line in pressure increments, at 25%, 50%, and 80%, to be held at least one hour after pressure stabilization.
- Line 19 was returned to normal operating service first on May 31, 2016 while lines 12 & 28 continued to operate at reduced 80% operating pressure.
- Metallurgical Analysis was completed on July 5, 2016

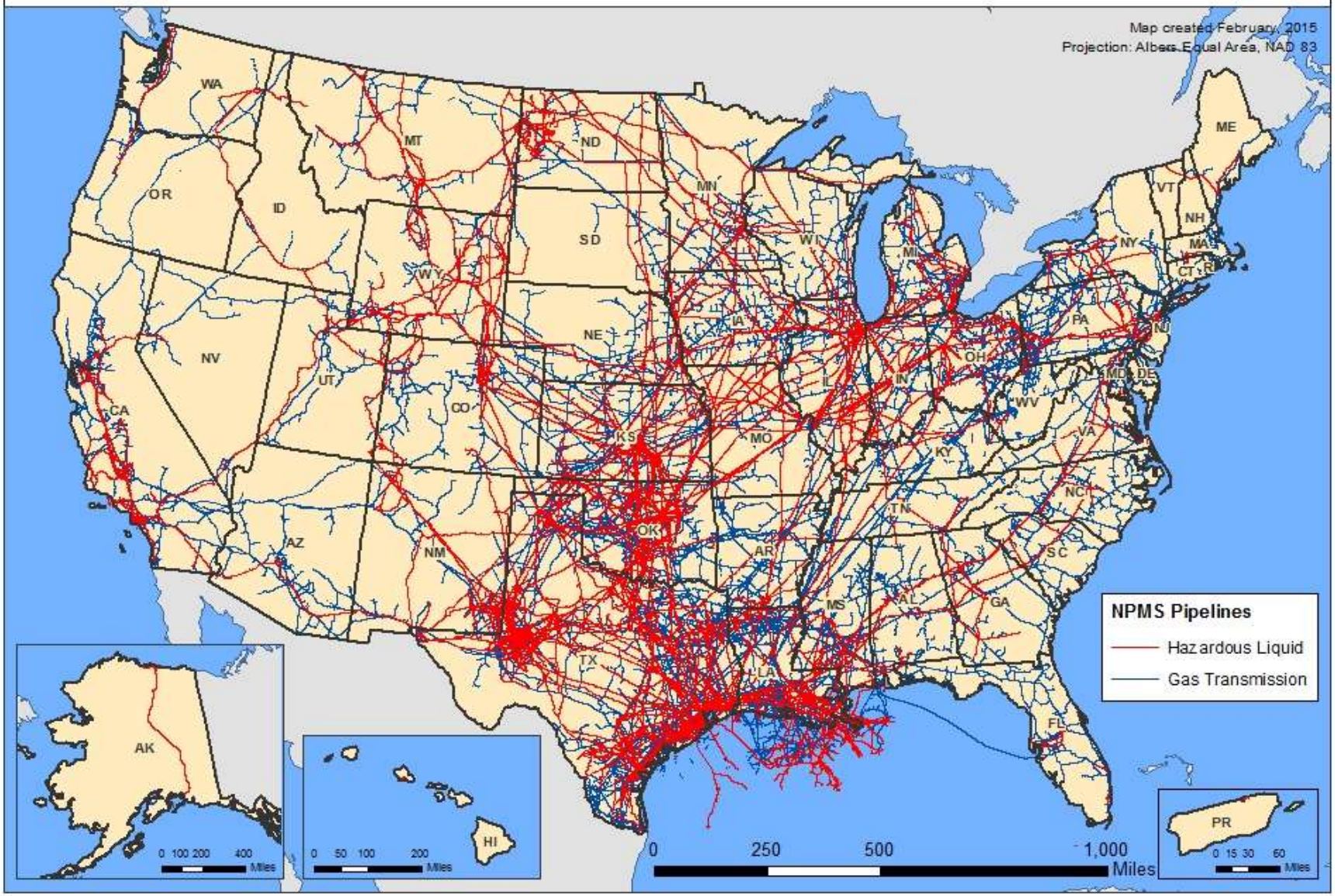
Metallurgical Analysis

- The results of the analysis indicate that the rupture initiated at the 5:30 orientation at a region of external corrosion near Girth Weld 2470. The rupture initiated in the axial direction and then propagated axially and circumferentially. Final failure was ductile in nature. The region of corrosion was approximately 12 inches in the axial direction and 55 inches in the circumferential direction (58% around the Girth Weld), with a maximum depth of 0.303 inched (75% of nominal wall thickness).

PHMSA Enforcement Summary
All Regions

Gas Transmission And Hazardous Liquid Pipelines

Pipeline data as of 01/20/2015



PHMSA Pipeline Interstate Infrastructure

Type	Miles	Break Out Tanks	LNG Plants	LNG Tanks	Operator Count
Gas Transmission	194,910				159
Hazardous Liquid	145,831	5,004			167
Liquefied Natural Gas			24	59	22

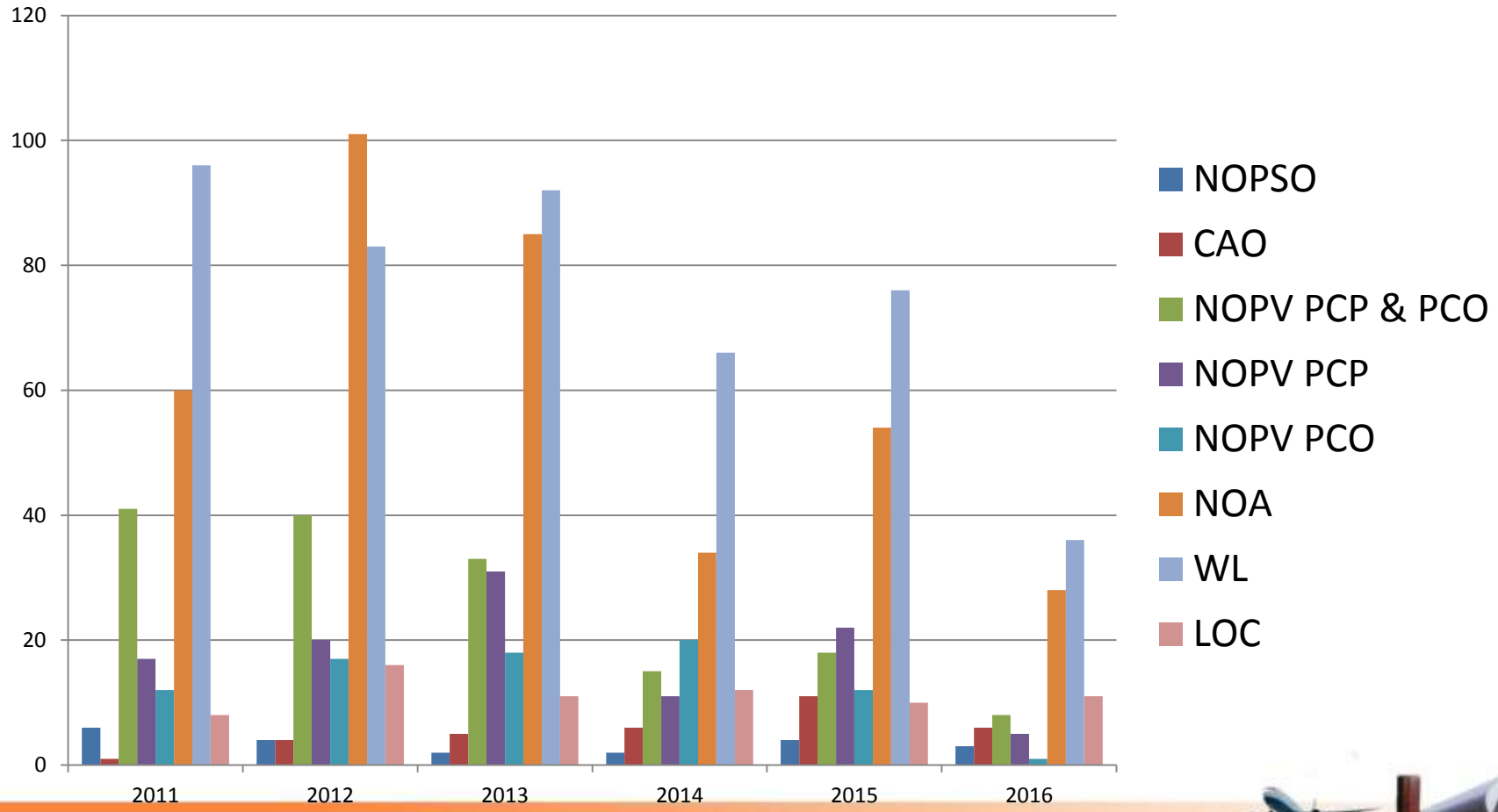
Types of Enforcement Actions

- NOPSO – Notice of Proposed Safety Order
- CAO - Corrective Action Order
- PCP - Proposed Civil Penalty
- PCO - Proposed Compliance Order
- NOPV - Notice of Probable Violation
- NOA - Notice of Amendment
- WL - Warning Letter
- LOC - Letter of Concern

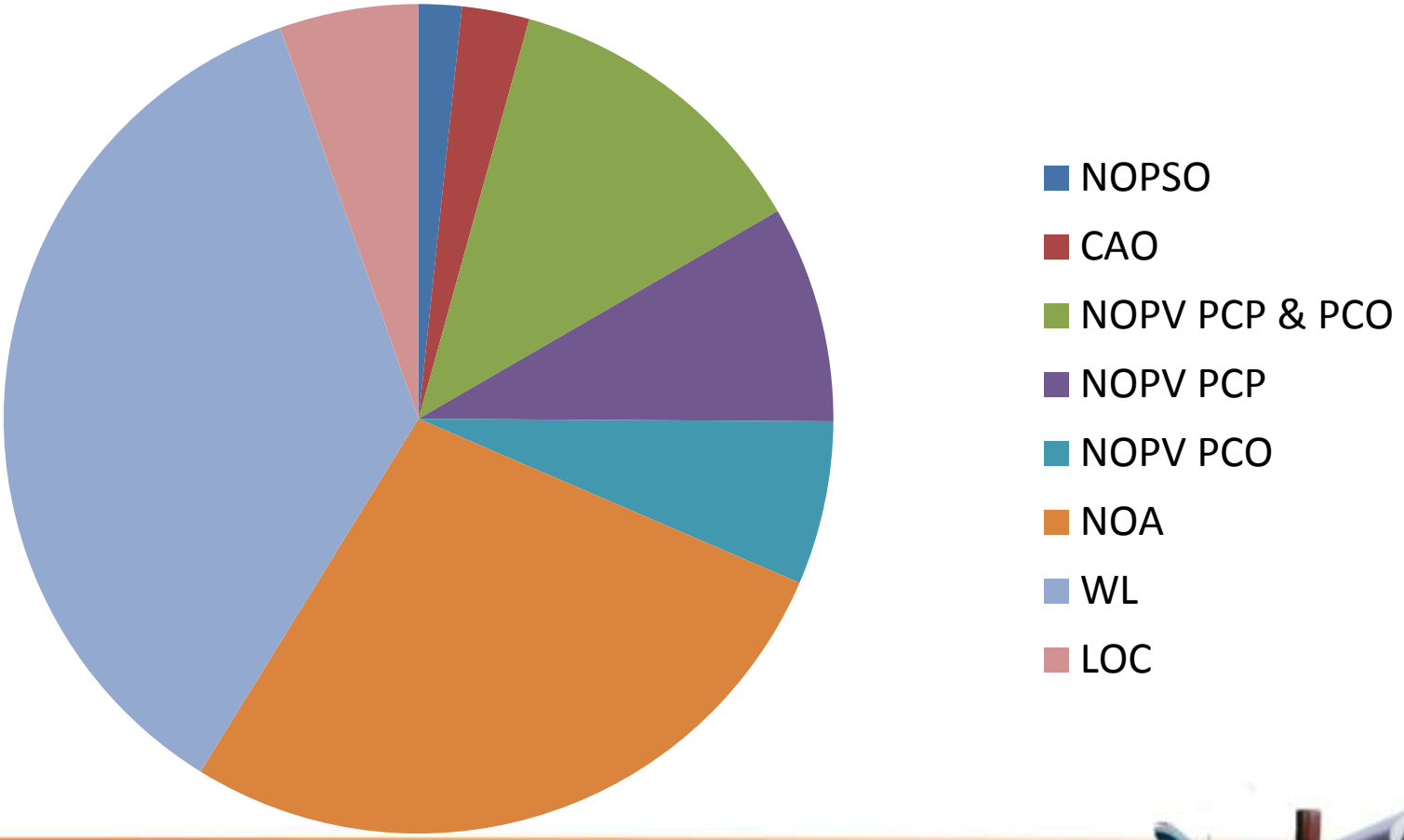
Enforcement Summary 2011-Present

Row Labels	2011	2012	2013	2014	2015	2016	Grand Total
NOPSO	6	4	2	2	4	3	**21**
CAO	1	4	5	6	11	6	**33**
NOPV PCP & PCO	36	46	46	20	27	22	**197**
NOPV PCP	20	12	17	5	10	7	**71**
NOPV PCO	14	19	19	21	15	14	**102**
NOA	59	101	85	34	54	28	**361**
WL	61	83	92	66	76	36	**414**
LOC	8	16	11	12	10	11	**68**
Total	**205**	**285**	**277**	**166**	**207**	**127**	**1267**

Enforcement Summary 2011-Present



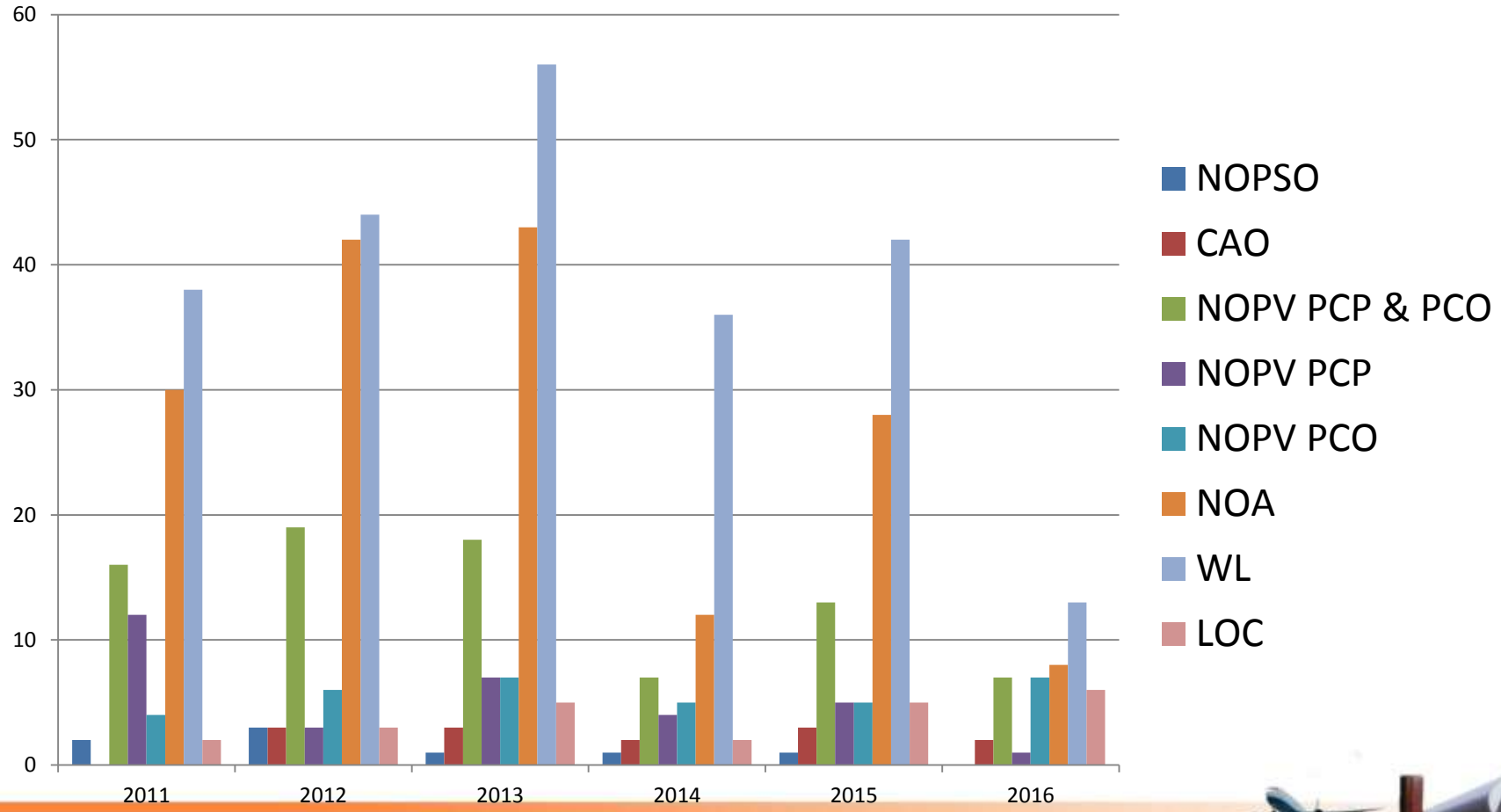
Enforcement Summary 2011-Present



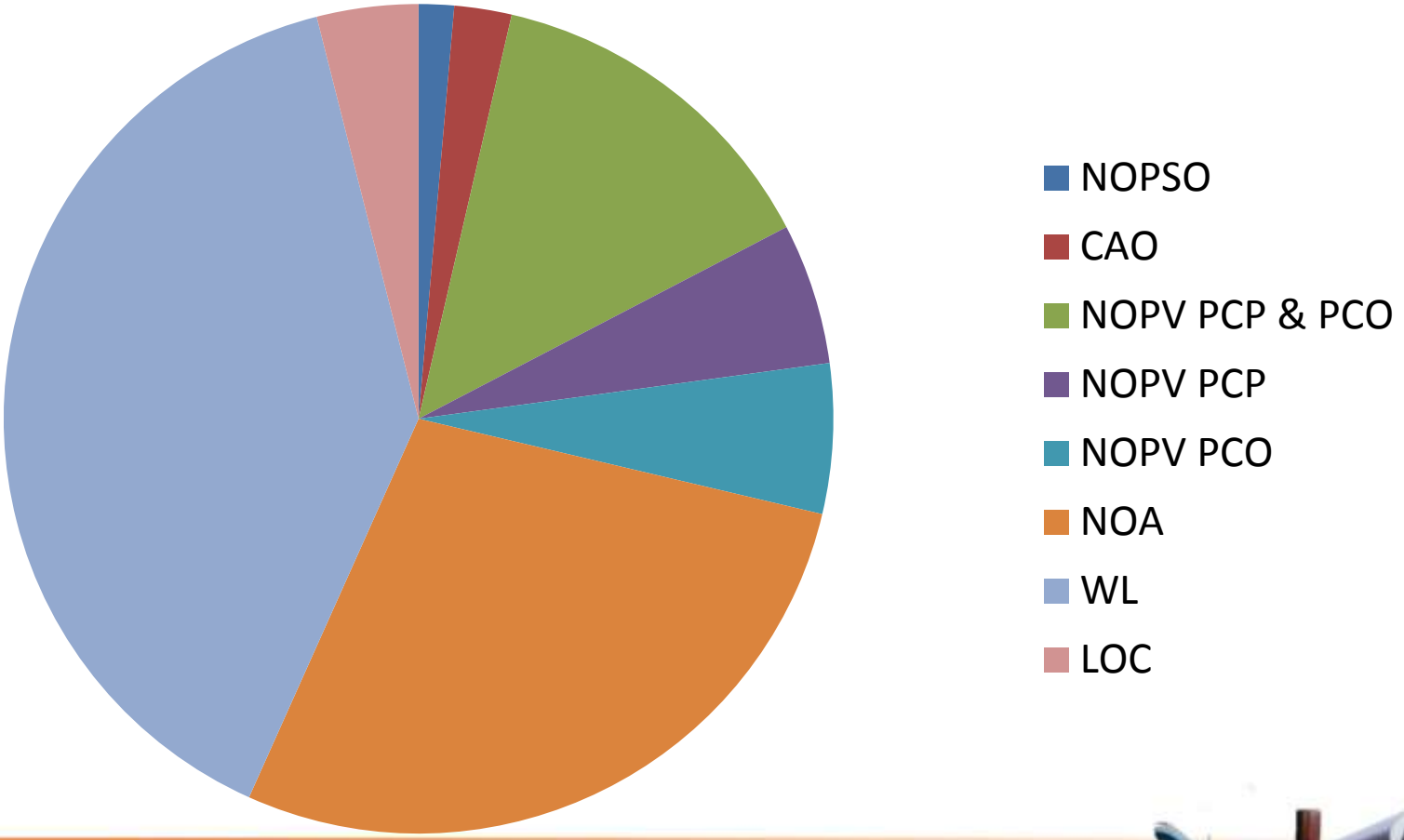
GT Enforcement Summary 2011-Present

Type	2011	2012	2013	2014	2015	2016	Total
NOPSO	2	3	1	1	1		**8**
CAO		3	3	2	3	2	**13**
NOPV PCP & PCO	16	19	18	7	13	7	**80**
NOPV PCP	12	3	7	4	5	1	**32**
NOPV PCO	4	6	7	5	5	7	**34**
NOA	30	42	43	12	28	8	**163**
WL	38	44	56	36	42	13	**229**
LOC	2	3	5	2	5	6	**23**
Total	**104**	**123**	**140**	**69**	**102**	**44**	**582**

GT Enforcement Summary 2011-Present



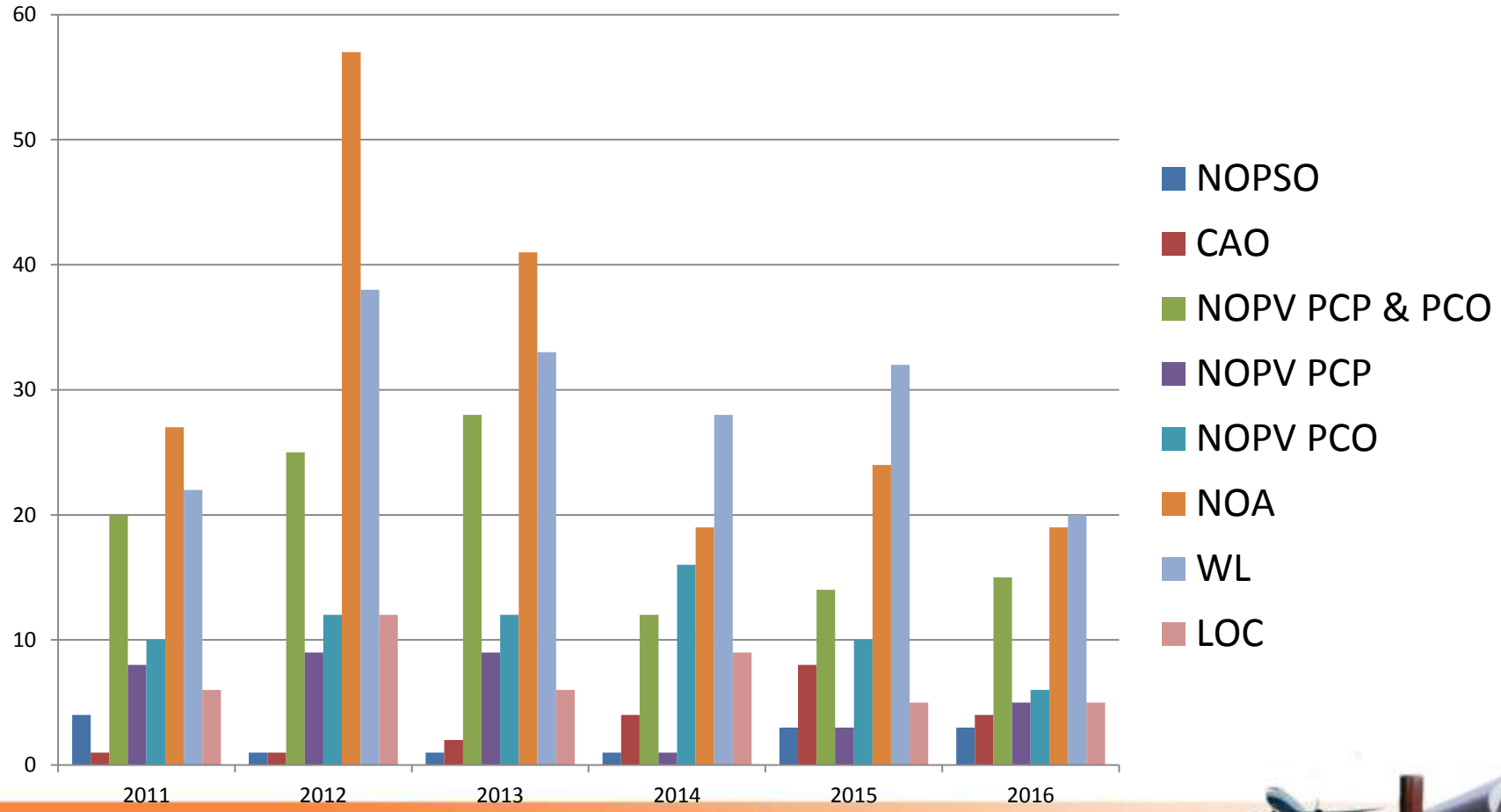
GT Enforcement Summary 2011-2016



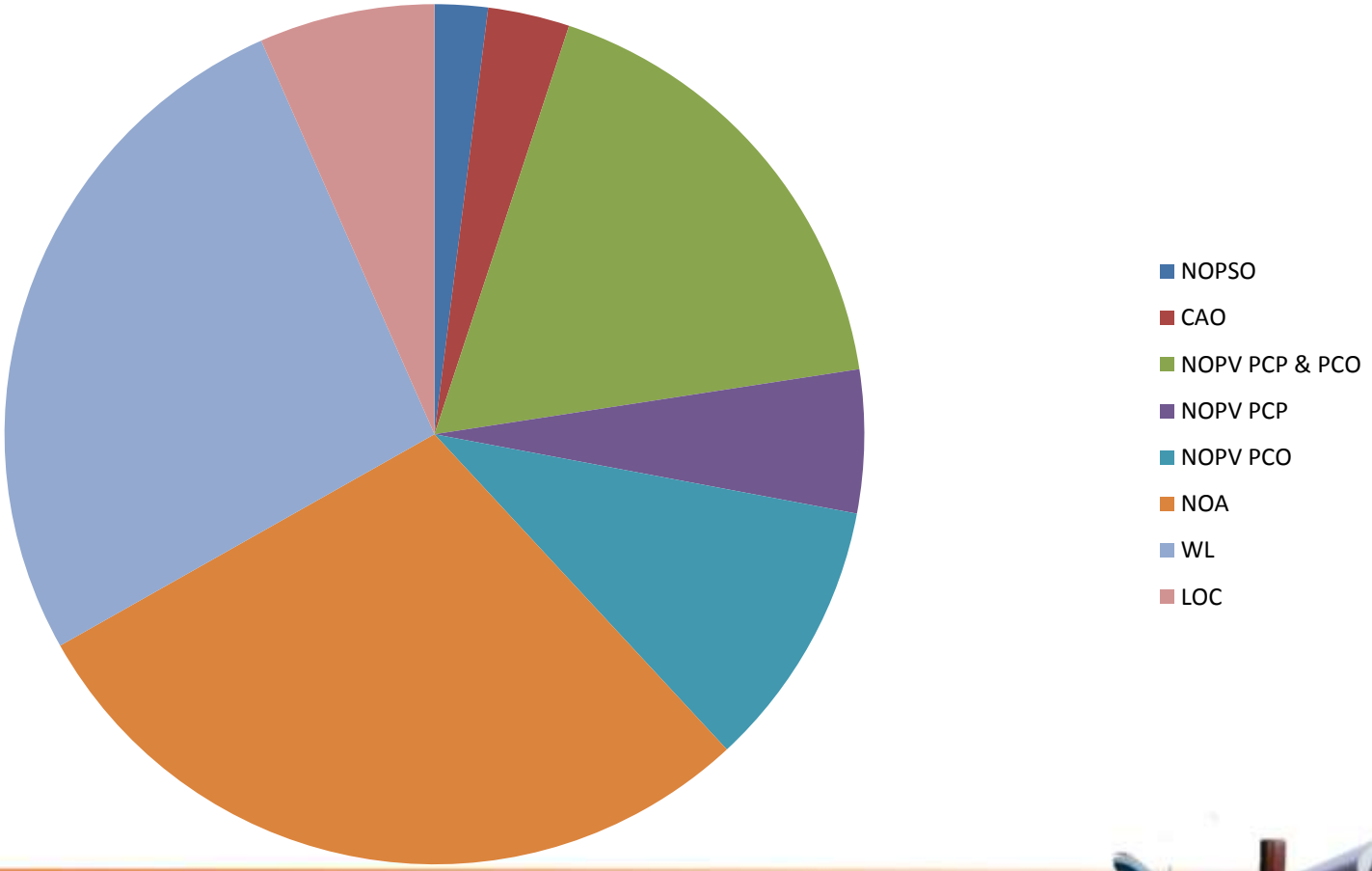
HL Enforcement Summary 2011-Present

Type	2011	2012	2013	2014	2015	2016	**Total**
NOPSO	4	1	1	1	3	3	**13**
CAO	1	1	2	4	8	4	**20**
NOPV PCP & PCO	20	25	28	12	14	15	**114**
NOPV PCP	8	9	9	1	3	5	**35**
NOPV PCO	10	12	12	16	10	6	**66**
NOA	27	57	41	19	24	19	**187**
WL	22	38	33	28	32	20	**173**
LOC	6	12	6	9	5	5	**43**
Total	**98**	**155**	**132**	**90**	**99**	**77**	**651**

HL Enforcement Summary 2011-Present



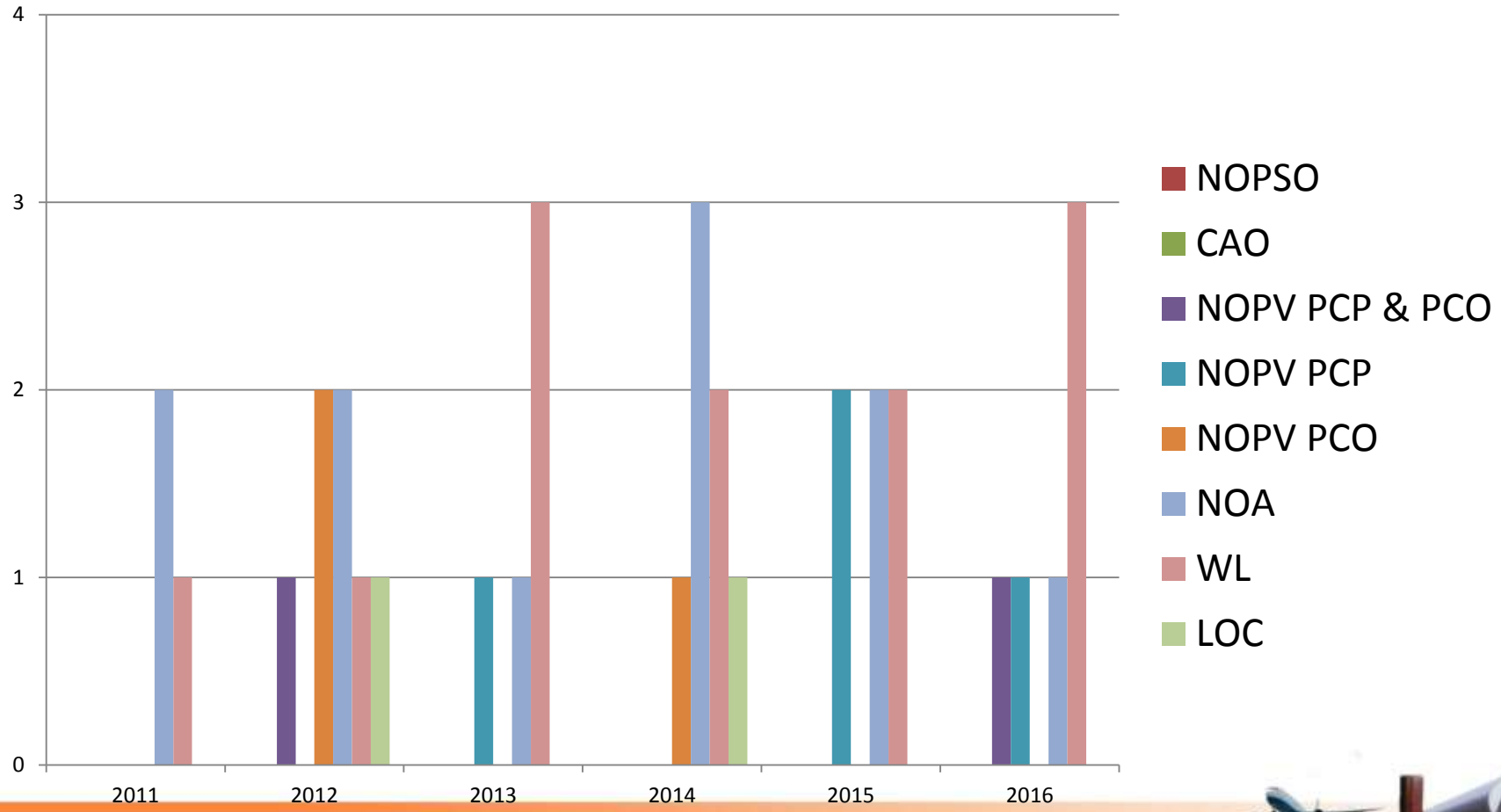
HL Enforcement Summary 2011-Present



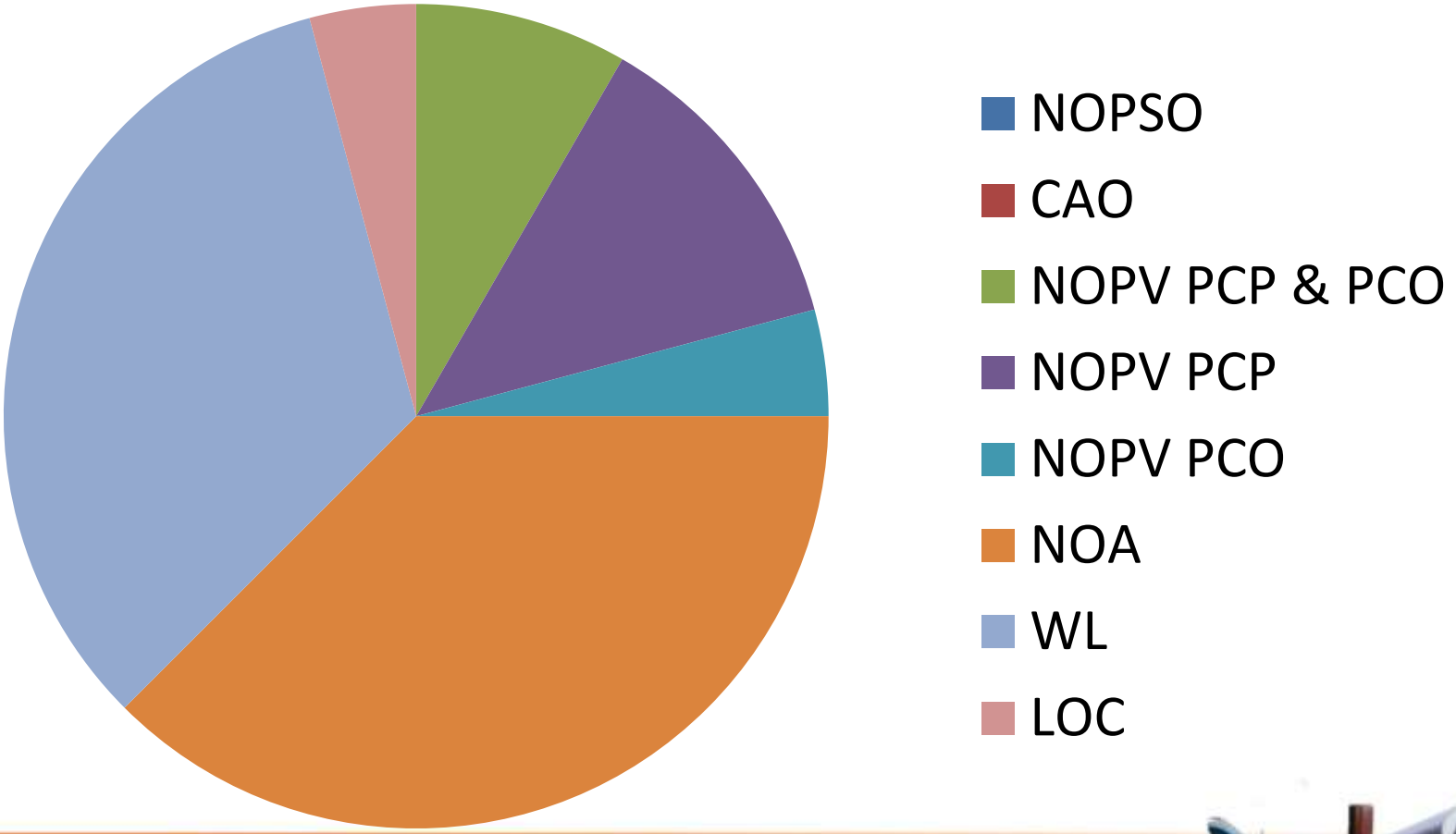
LNG Enforcement Summary 2011-Present

Type	2011	2012	2013	2014	2015	2016	**Total**
NOPSO							
CAO							
NOPV PCP & PCO		1				1	**2**
NOPV PCP			1		2	1	**4**
NOPV PCO		2		1			**3**
NOA	2	2	1	3	2	1	**11**
WL	1	1	3	2	2	3	**12**
LOC		1		1			**2**
Total	**3**	**7**	**5**	**7**	**6**	6	**34**

LNG Enforcement Summary 2011-Present



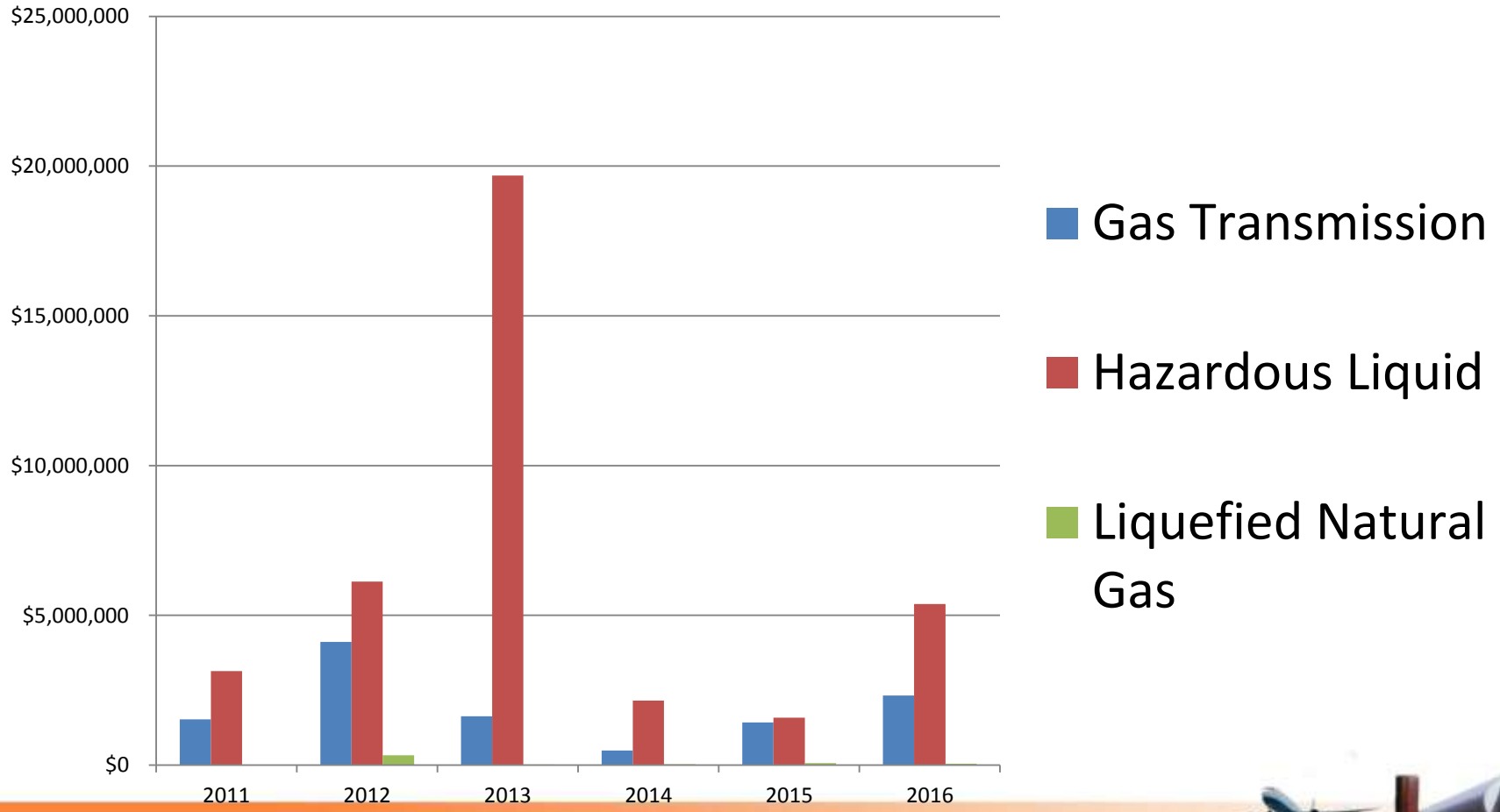
LNG Enforcement Summary 2011-Present



Proposed Civil Penalty Summary 2011-Present

Year	Gas Transmission	Hazardous Liquid	Liquefied Natural Gas	PCP $ Total
2011	$1,526,600	$3,137,600		$4,664,200
2012	$4,112,500	$6,123,500	$332,700	$10,568,700
2013	$1,633,400	$19,682,000	$15,000	$21,330,400
2014	$488,900	$2,153,500	$28,800	$2,671,200
2015	$1,420,600	$1,584,400	$69,600	$3,074,600
2016	$2,325,100	$5,381,400	$46,000	$7,752,500
Total	**$11,507,100**	**$38,062,400**	**$492,100**	**$50,061,600**

Proposed Civil Penalty Summary 2011-Present



Total Case Summary 2011-Present

Year	Gas Transmission	Hazardous Liquid	Liquefied Natural Gas	Total
2011	104	98	3	**205**
2012	123	155	7	**285**
2013	140	132	5	**277**
2014	70	90	6	**166**
2015	102	99	6	**207**
2016	44	77	6	**127**
Total	**583**	**651**	**33**	**1267**

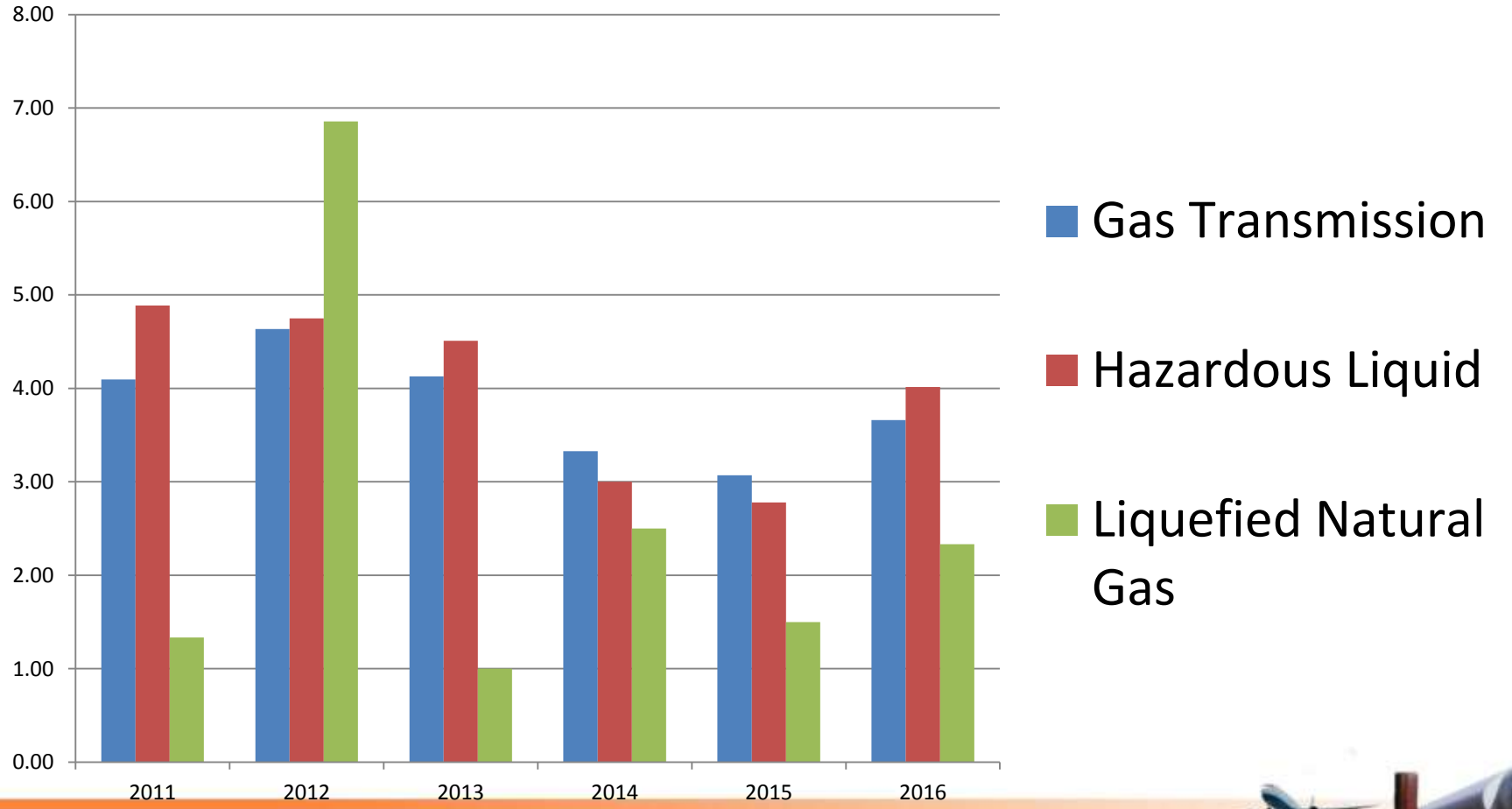
Total Items Cited Summary 2011-Present

Year	Gas Transmission	Hazardous Liquid	Liquefied Natural Gas	Total
2011	426	479	4	**909**
2012	570	736	48	**1354**
2013	578	595	5	**1178**
2014	233	270	15	**518**
2015	313	275	9	**597**
2016	161	309	14	**484**
Total	**2281**	**2664**	**95**	**5040**

Average of Items Cited Per Case Summary 2011-Present

Year	Gas Transmission	Hazardous Liquid	Liquefied Natural Gas	Total
2011	4.10	4.89	1.33	**4.43**
2012	4.63	4.75	6.86	**4.75**
2013	4.13	4.51	1.00	**4.25**
2014	3.33	3.00	2.50	**3.12**
2015	3.07	2.78	1.50	**2.88**
2016	3.66	4.01	2.33	**3.81**
Total	**3.91**	**4.09**	**2.88**	**3.98**

Average of Items Cited Per Case Summary 2011-Present



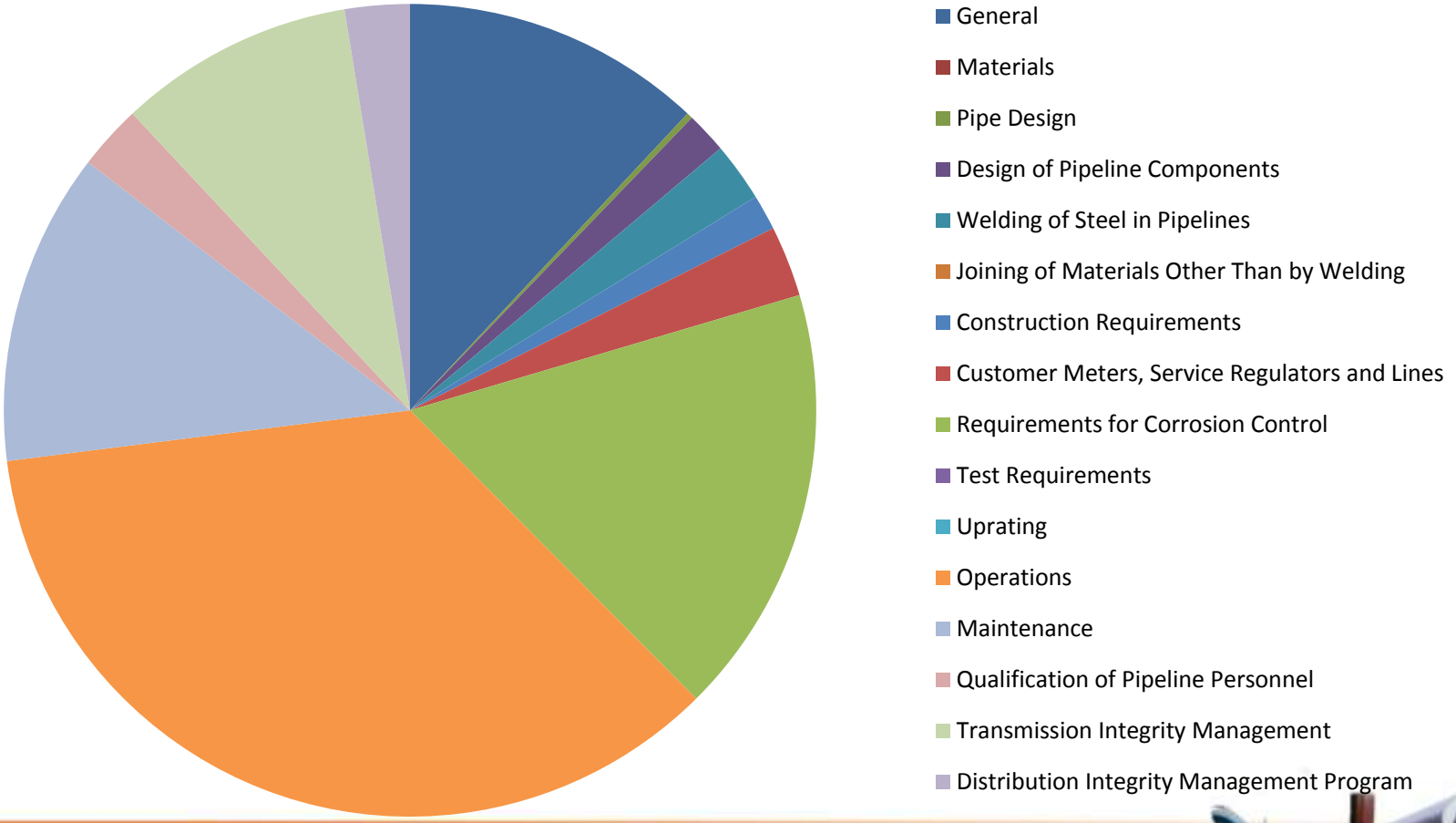
GT Total Code Citation Summary 2011-2016

Subpart	2011	2012	2013	2014	2015	2016	Total
General	51	40	60	22	35	38	**246**
Materials						2	2
Pipe Design	1						1
Design of Pipeline Components	7	21	4	3	7	3	**45**
Welding of Steel in Pipelines	10	25	5	1	8	4	**53**
Joining of Materials Other Than by Welding		2		3	5	1	**11**
Construction Requirements	6	36	2	1	6		**51**
Customer Meters, Service Regulators and Lines	12	12	8	8	5	5	**50**
Requirements for Corrosion Control	73	59	58	27	18	17	**252**
Test Requirements			1		2	2	**5**
Uprating							
Operations	151	241	339	64	144	44	**983**
Maintenance	53	75	78	61	39	21	**327**
Qualification of Pipeline Personnel	11	40	5	6	11	12	**85**
Transmission Integrity Management	40	18	10	9	16	6	**99**
Distribution Integrity Management Program	11	1	8	22	17	6	**65**
Total	**426**	**570**	**578**	**227**	**313**	**161**	**2275**

GT Total Code Citation Summary 2011-Present

Subpart	2011	2012	2013	2014	2015	2016	Total
General	12%	7%	10%	10%	11%	24%	**11%**
Materials						1%	**0%**
Pipe Design	0%						**0%**
Design of Pipeline Components	2%	4%	1%	1%	2%	2%	**2%**
Welding of Steel in Pipelines	2%	4%	1%	0%	3%	2%	**2%**
Joining of Materials Other Than by Welding		0%		1%	2%	1%	**0%**
Construction Requirements	1%	6%	0%	0%	2%		**2%**
Customer Meters, Service Regulators and Lines	3%	2%	1%	4%	2%	3%	**2%**
Requirements for Corrosion Control	17%	10%	10%	12%	6%	11%	**11%**
Test Requirements			0%		1%	1%	**0%**
Uprating							
Operations	35%	42%	59%	28%	46%	27%	**43%**
Maintenance	12%	13%	13%	27%	12%	13%	**14%**
Qualification of Pipeline Personnel	3%	7%	1%	3%	4%	7%	**4%**
Transmission Integrity Management	9%	3%	2%	4%	5%	4%	**4%**
Distribution Integrity Management Program	3%	0%	1%	10%	5%	4%	**3%**

GT Total Code Citation Summary 2011-Present



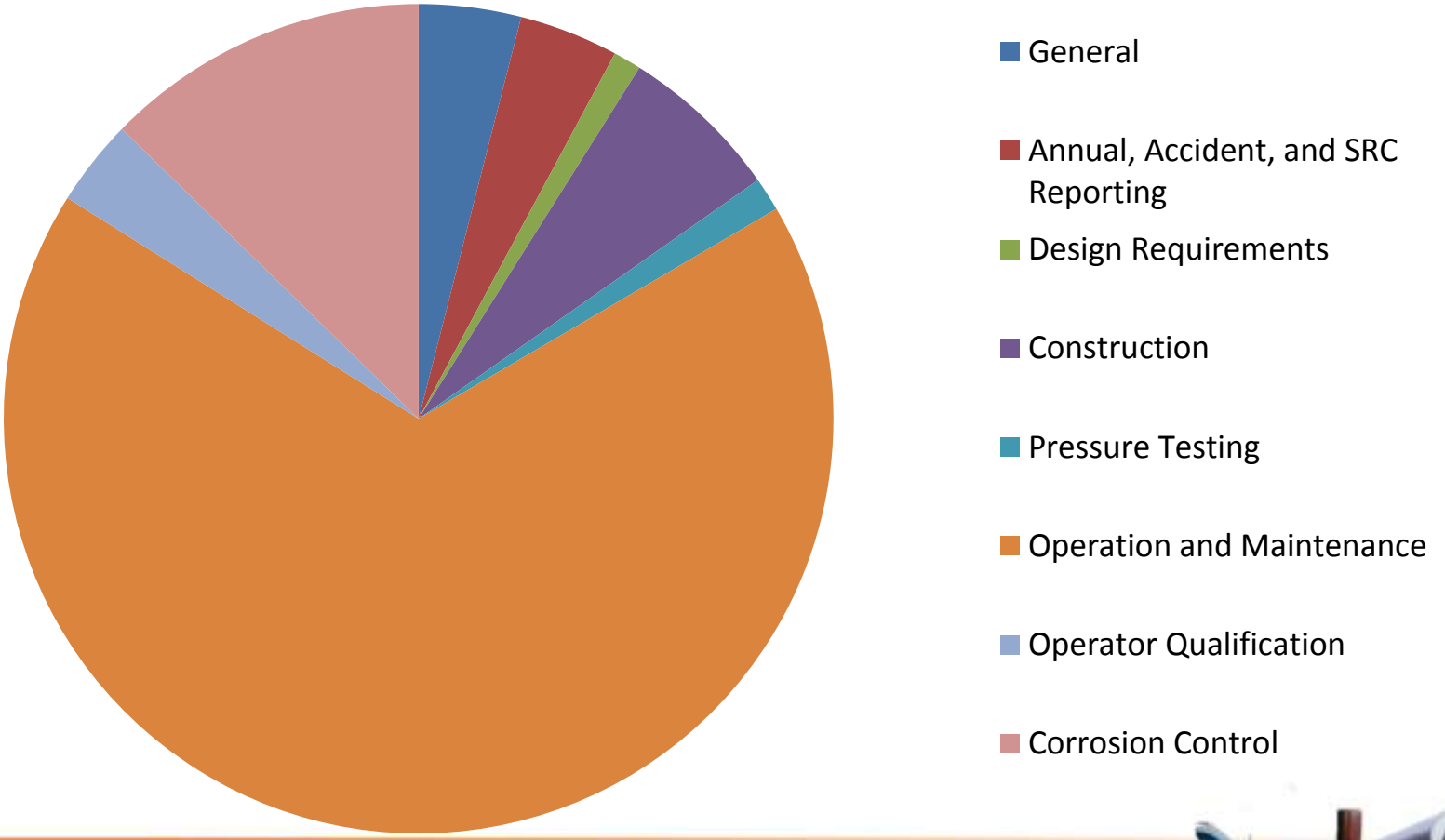
HL Total Code Citation Summary 2011-Present

Subpart	2011	2012	2013	2014	2015	2016	Total
General	14	16	14	17	22	23	**106**
Annual, Accident, and SRC Reporting	19	34	17	7	11	15	**103**
Design Requirements	2	8	8	9		2	**29**
Construction	20	44	29	23	24	28	**168**
Pressure Testing	15	11	5		2	2	**35**
Operation and Maintenance	303	502	440	181	182	187	**1,795**
Operator Qualification	31	15	10	9	5	20	**90**
Corrosion Control	75	106	72	24	29	32	**338**
Total	**479**	**736**	**595**	**270**	**275**	**309**	**2664**

HL Total Code Citation Summary 2011-Present

Subpart	2011	2012	2013	2014	2015	2016	Total
General	3%	2%	2%	6%	8%	7%	4%
Annual, Accident, and SRC Reporting	4%	5%	3%	3%	4%	5%	4%
Design Requirements	0%	1%	1%	3%		1%	1%
Construction	4%	6%	5%	9%	9%	9%	6%
Pressure Testing	3%	1%	1%		1%	1%	1%
Operation and Maintenance	63%	68%	74%	67%	66%	61%	67%
Operator Qualification	6%	2%	2%	3%	2%	6%	3%
Corrosion Control	16%	14%	12%	9%	11%	10%	13%

HL Total Code Citation Summary 2011-Present



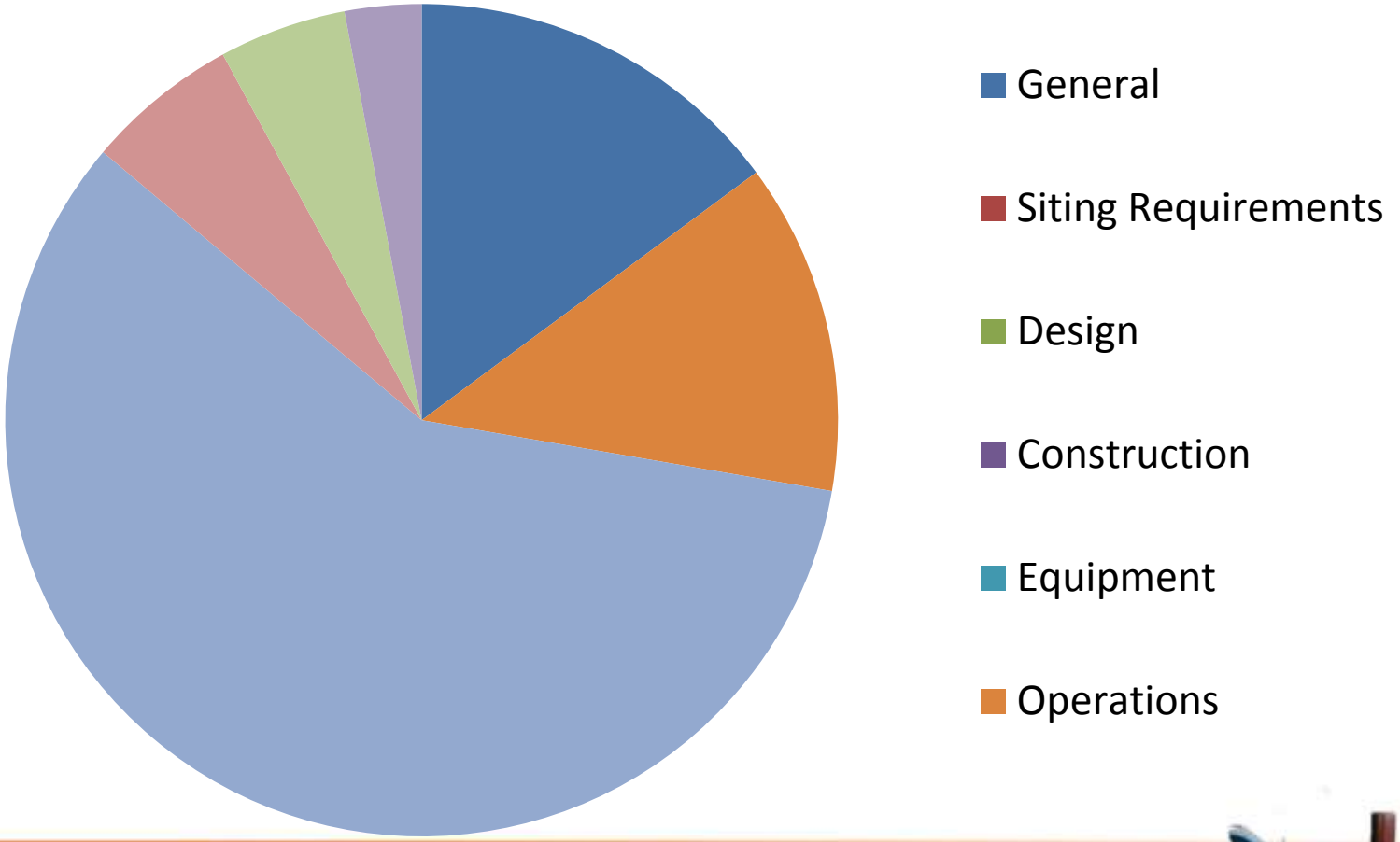
LNG Total Code Citation Summary 2011-Present

Subpart	2011	2012	2013	2014	2015	2016	Total
General		2	1	7	3	2	**15**
Siting Requirements							
Design							
Construction							
Equipment							
Operations	2	2	2	6		1	**13**
Maintenance	1	41	2	4	5	6	**59**
Personnel Qualifications and Training	1	2		1		2	**6**
Fire Protection		1		2	1	1	**5**
Security				1		2	**3**
Total	**4**	**48**	**5**	**21**	**9**	14	**101**

LNG Total Code Citation Summary 2011-Present

Subpart	2011	2012	2013	2014	2015	2016	Total
General		4%	20%	33%	33%	14%	15%
Siting Requirements							
Design							
Construction							
Equipment							
Operations	50%	4%	40%	29%		7%	13%
Maintenance	25%	85%	40%	19%	56%	43%	58%
Personnel Qualifications and Training	25%	4%		5%		14%	6%
Fire Protection		2%		10%	11%	7%	5%
Security				7%			**2%**

LNG Total Code Citation Summary 2011-Present




ANY
QUESTIONS
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