

Dominion Energy
IRP Technical Conference
May 29, 2019

IRP 2019 Schedule

- **February 20, 2019 – Technical Conference**
 - IRP Standards and Guidelines
 - Review of 2018 Order
 - Proposed 2019 IRP Outline
 - Renewable Natural Gas Update
 - Wexpro Well Freeze-offs

- **April 2, 2019 – Technical Conference**
 - Heating Season Review
 - Long Term Planning
 - Normal Heating Degree Days Update
 - Rural Expansion
 - Rate Case Preview

- **April 25, 2019 – Technical Conference**
 - RFP Recommendations (Confidential)
 - Supply Reliability Results (Confidential)

- **May 29, 2019 – Technical Conference**
 - Wexpro Matters (Confidential)
 - Integrity Management Update

- **June 20, 2019 – Technical Conference**
 - Presentation of Integrated Resource Plan

Wexpro Update

May 29, 2019

2018 Wexpro Highlights:

REDACTED

2018 Wexpro Drilling Results

2018 Results - Vermillion (Trail & Canyon Creek)

REDACTED

2018 Results – Pinedale (Stewart Point)

REDACTED

2018 Results – Trail Only Step-Through Completions

REDACTED

2018 Results – Trail Only Step-Through Completions

REDACTED

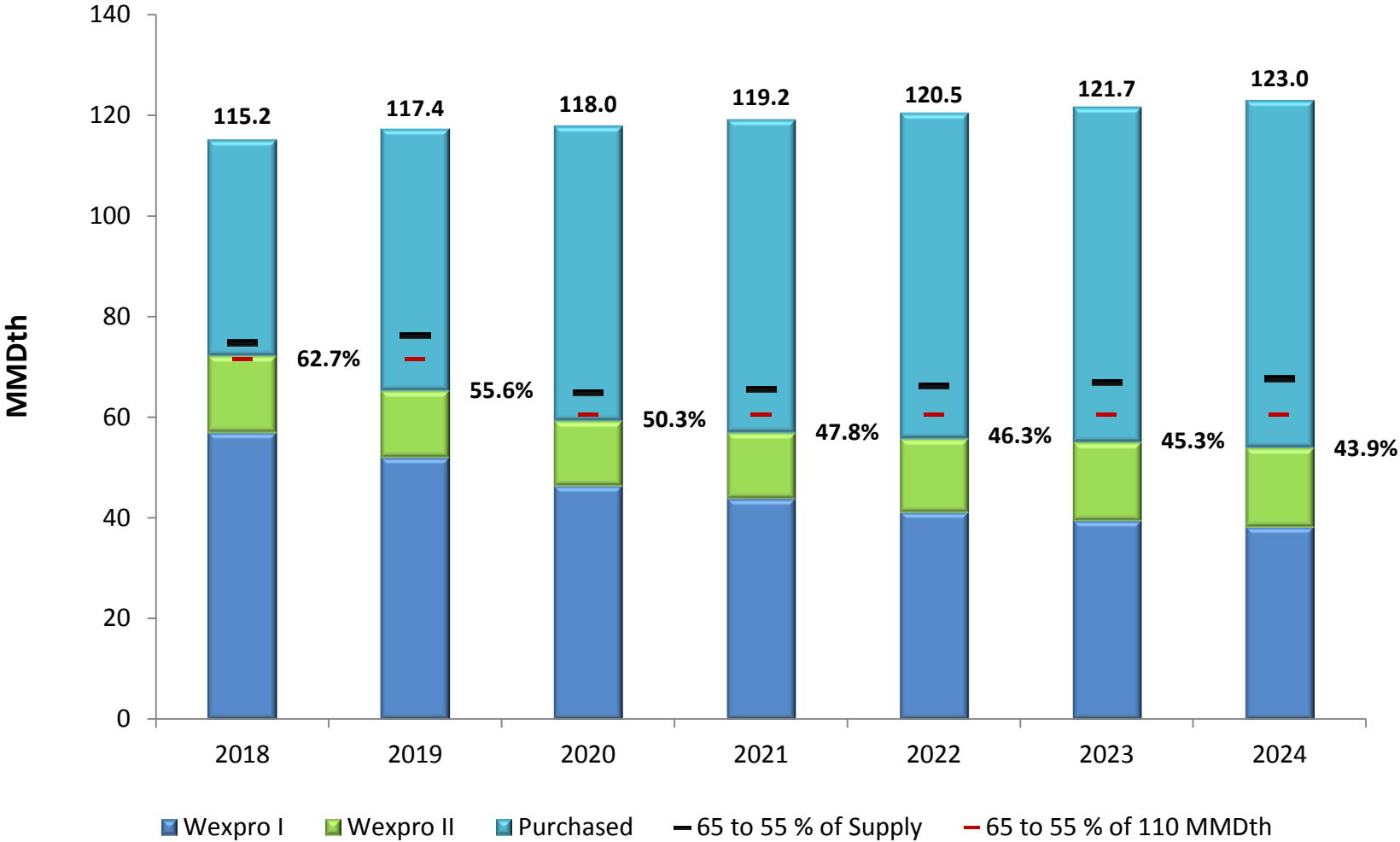
2018 Results – Northeast Canyon Creek

REDACTED

Future Drilling Programs

Gas Supply

Total DEUWI Gas Supply (IRP Year: June - May)



Vermillion 2019 and 2020 (calendar year) Drilling Proposal

REDACTED

Vermillion 6-year planning locations

REDACTED

Vermillion 2020 Program COS

REDACTED

Pinedale Drilling Program

REDACTED

Misc Updates

Wexpro Innovation Projects

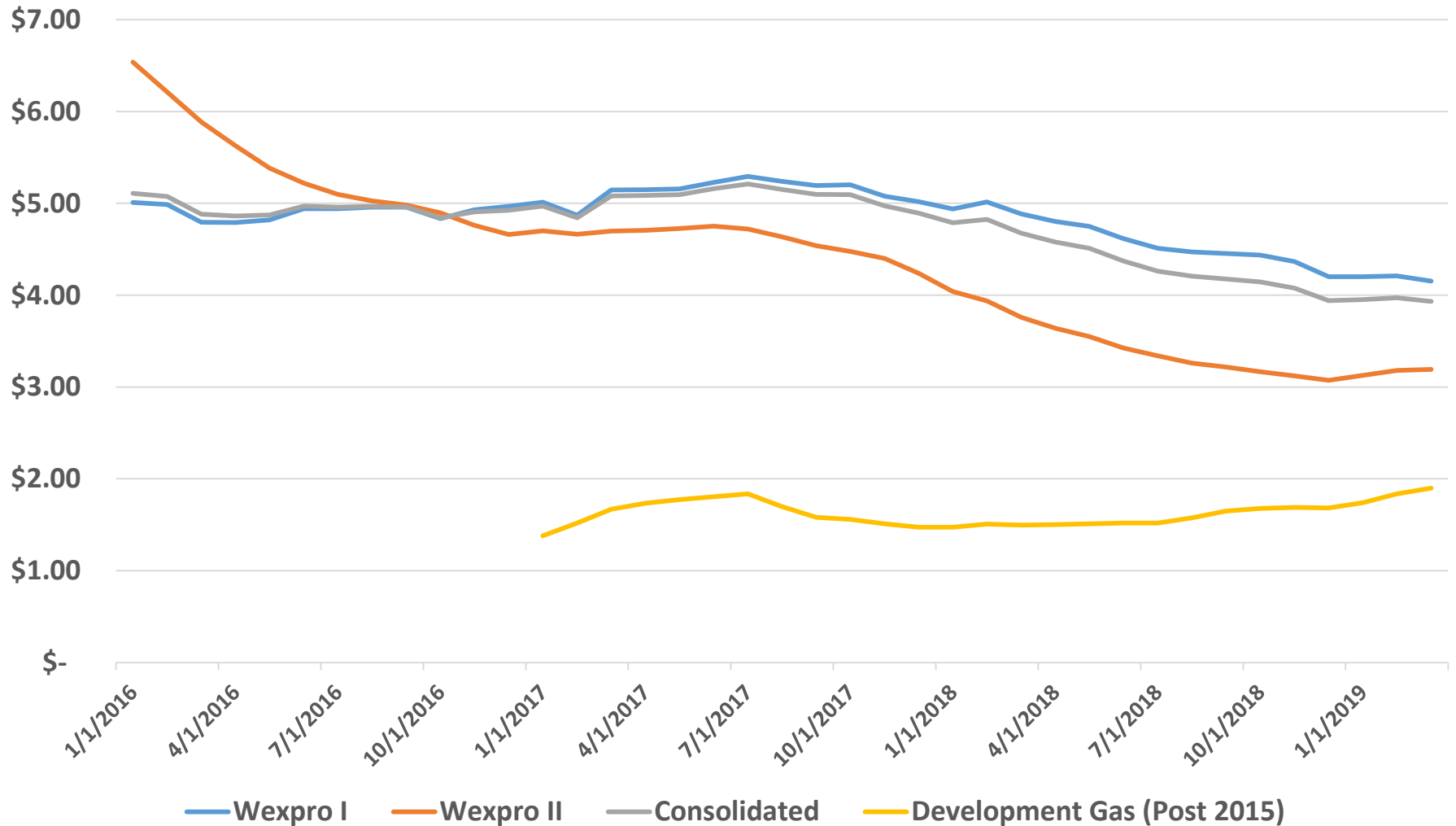
Team Focusing on Reducing Customer Costs / GHG Emissions

REDACTED

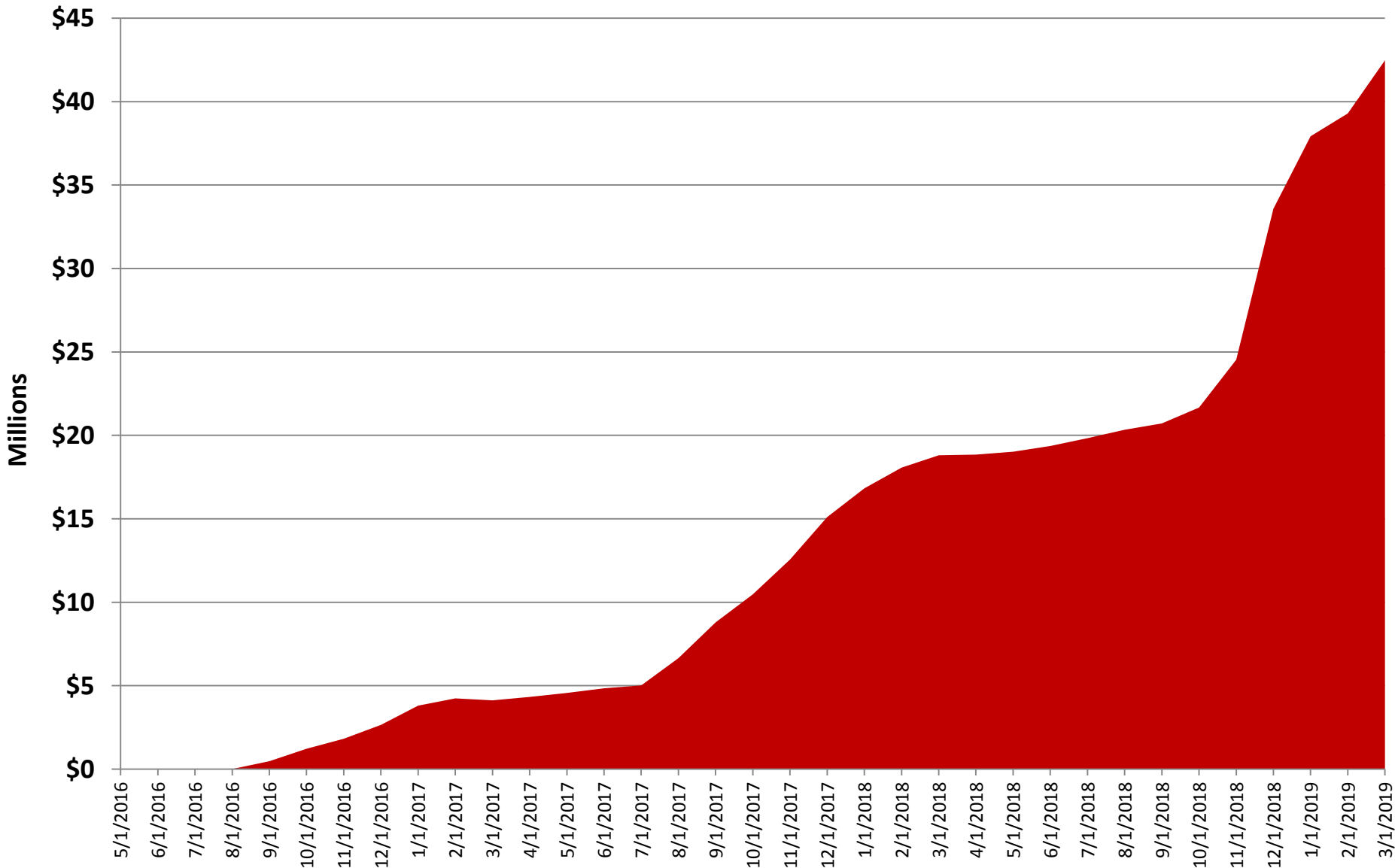
Cost-of-Service Update

TTM - Cost-of-Service History

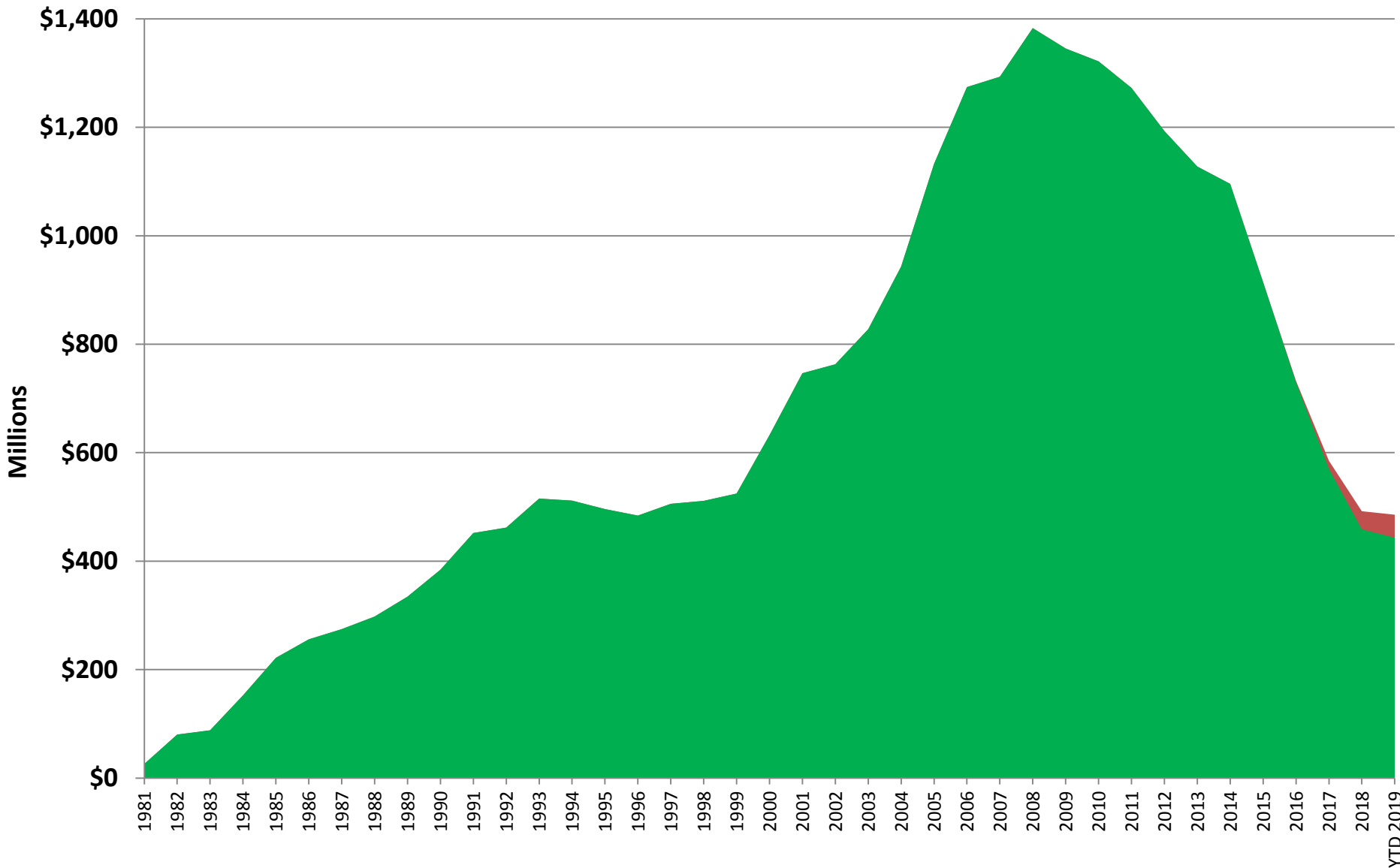
January 2016 – March 2019



Cumulative Savings from D8 Cost-of-Service Gas 2016 – YTD 2019

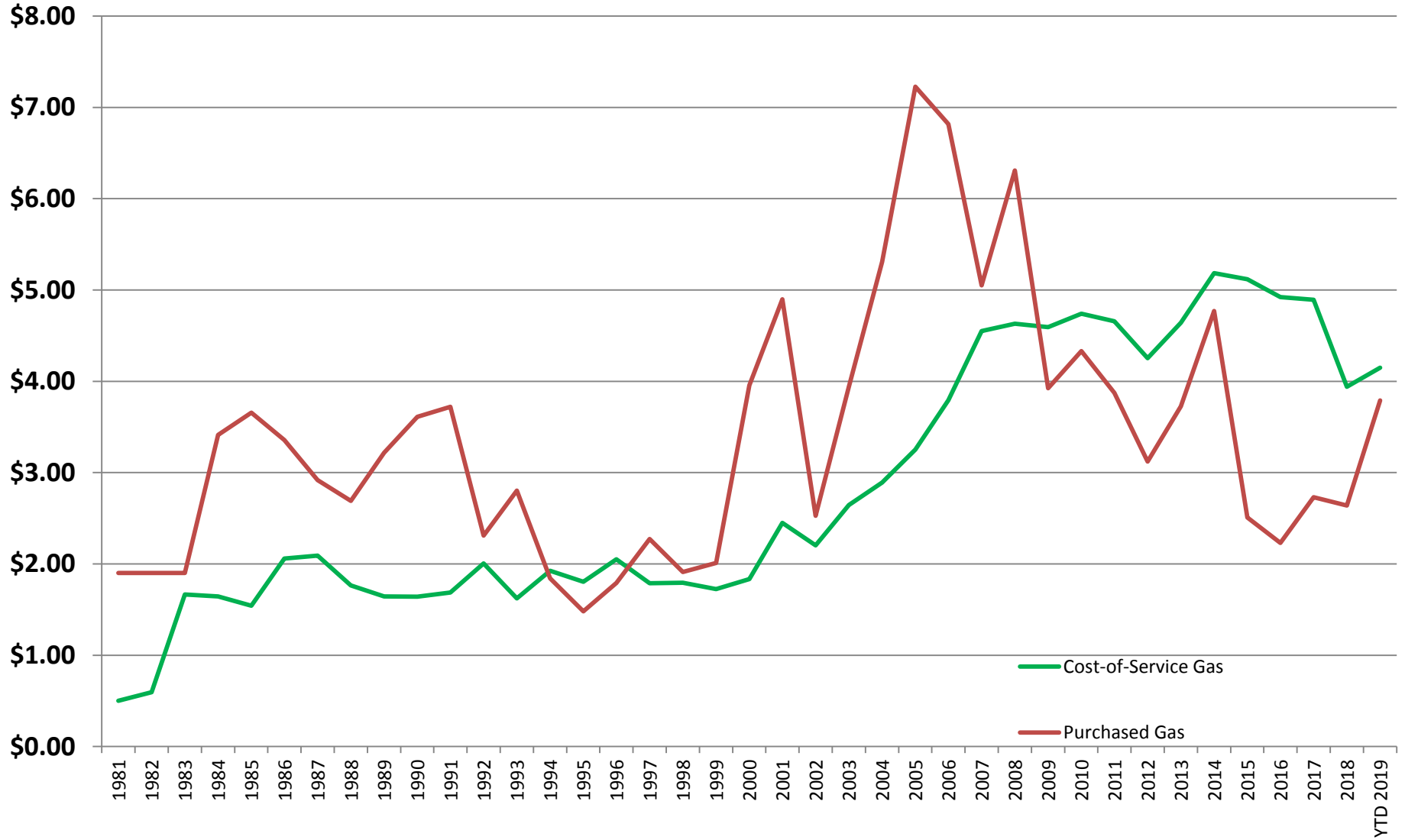


Cumulative Savings from Total Cost-of-Service Gas 1981 – YTD 2019



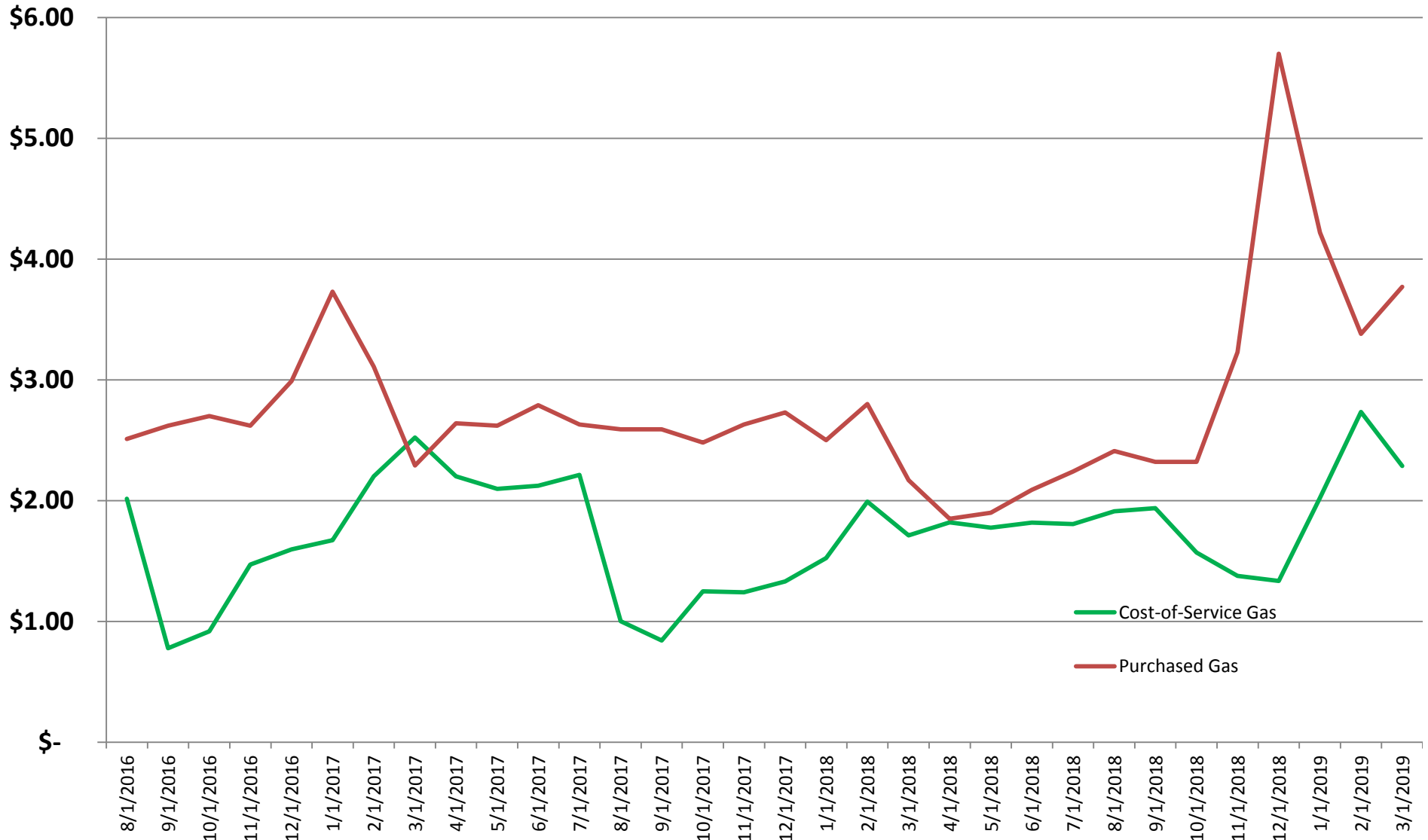
Purchase Gas vs. Cost-of-Service Gas – All Categories

1981 – YTD 2019

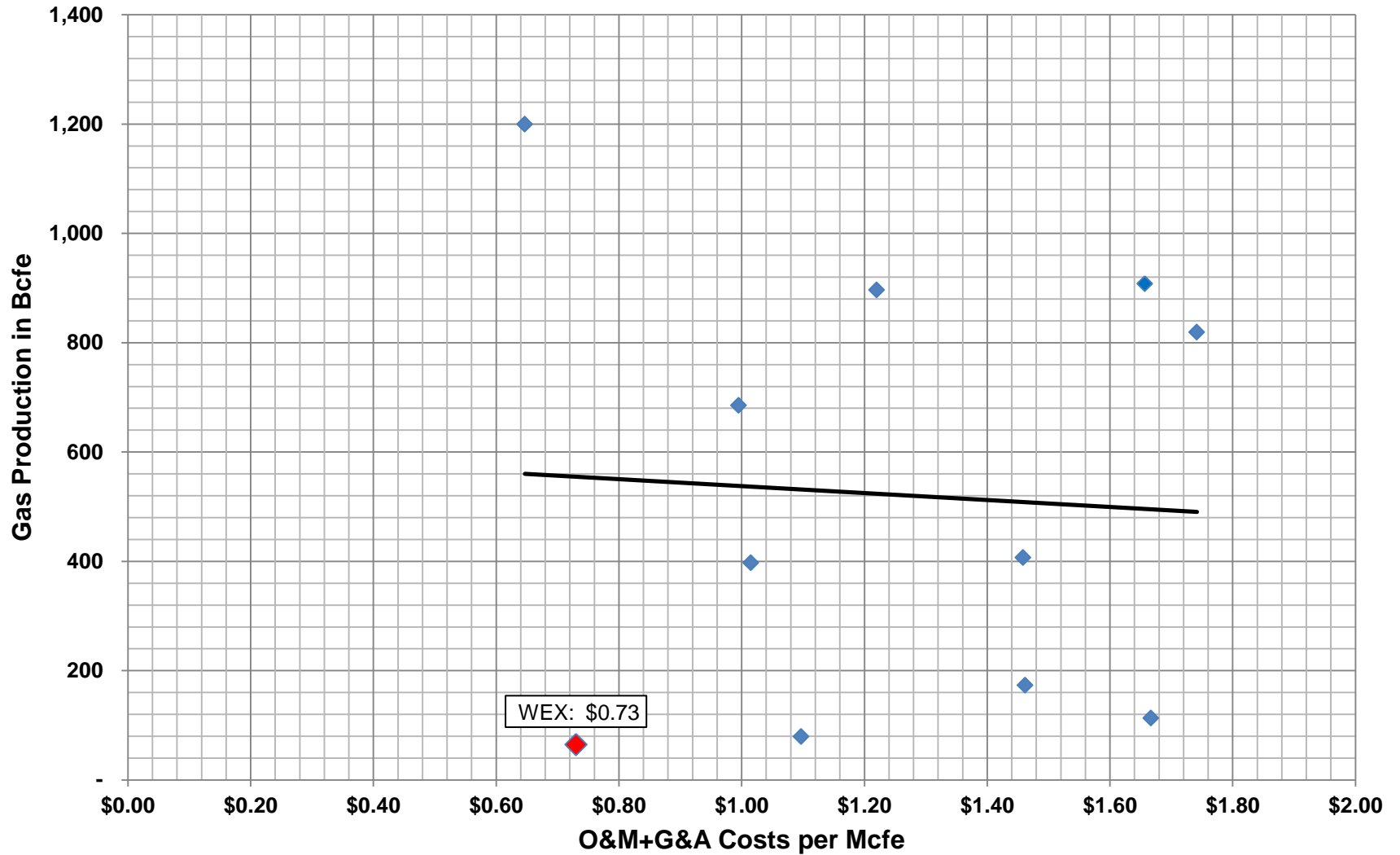


Purchase Gas vs. Cost-of-Service Gas – D8 Category Only

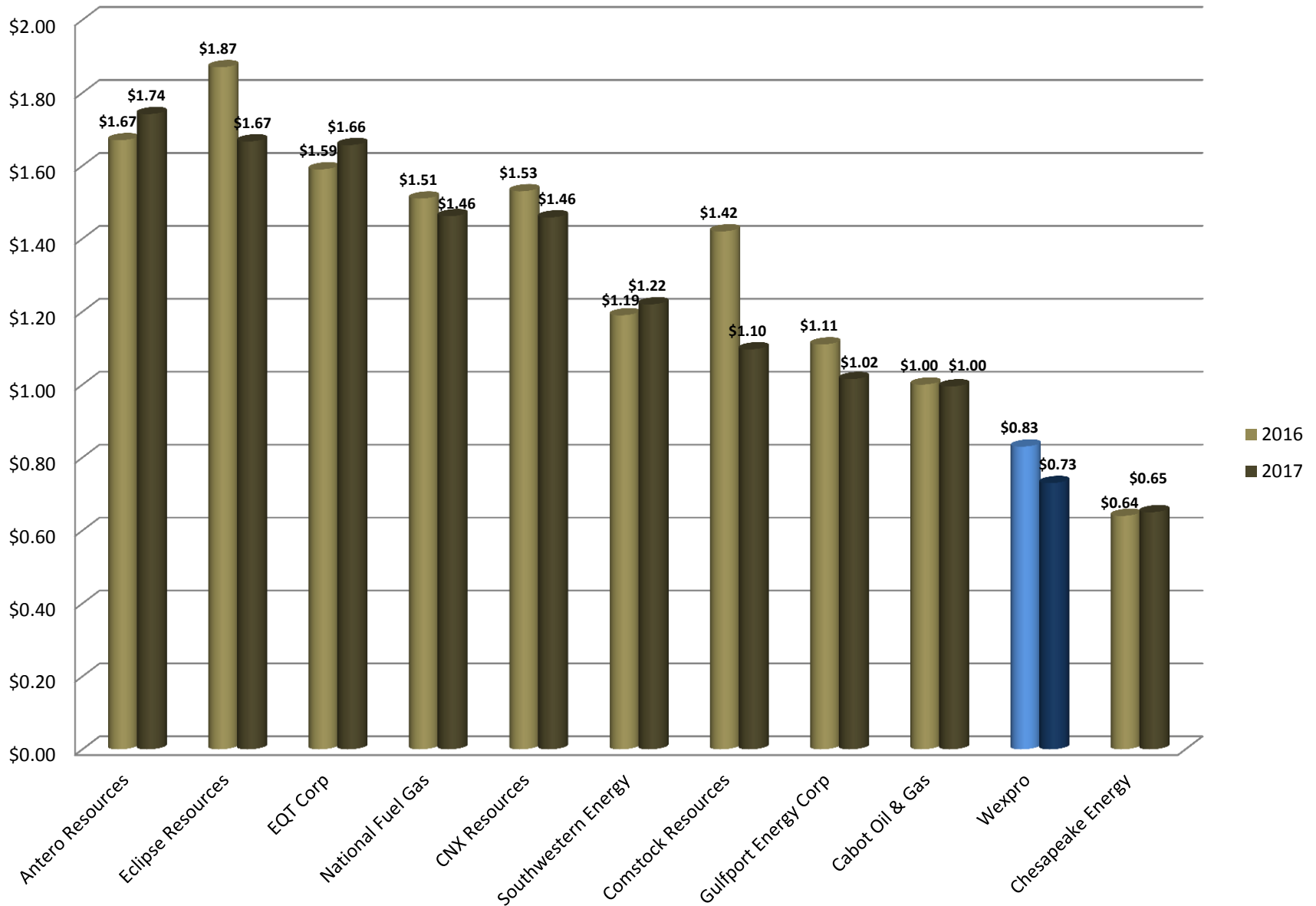
January 2016 – March 2019



2017 Wexpro O&M & G&A vs Industry (70% Gas-weighted Production)



2016/2017 Wexpro O&M & G&A vs Industry (70% Gas-weighted Production)



DEU

Integrity Management

TIMP & DIMP



Integrity Management

TIMP & DIMP

May 29, 2019

Contents

- Definitions
- What is Integrity Management?
- Recent History
- Regulation Update – Mega Rule
- Industry Best Practices
- Company Best Practices and Accelerated Actions
- Integrity Management Results

Definitions

- Feeder Line (FL) – high pressure (HP) gas distribution system, consists of steel pipe only, ¾" - 30" diameter, 1,712 miles.
- High Pressure - operating pressure greater than 60 psig.
- Intermediate High Pressure (IHP) – operating pressure less than or equal to 60 and greater than delivery pressure.
- Main – IHP gas distribution system, connects feeder line to service, a mix of steel and plastic materials, ½" - 8" diameter, 18,061 miles.
- Service – IHP/HP gas distribution system, connects main/feeder line to customer meter, a mix of steel and plastic materials, ½" - 8" diameter, 10,356 miles.
- Transmission – The segments of FLs that operates at a stress level equal to or greater than 20% specified minimum yield stress (SMYS).

What is Integrity Management?

- Integrity Management
 - Safety program for customers, employees, and the general public.
 - Pipeline system is covered by 2 integrity programs.
 - Transmission Integrity Management Program (TIMP)
 - Distribution Integrity Management Program (DIMP)

What is Integrity Management?

- Transmission Integrity Management Program
 - Identify all high consequence areas (HCA)
 - Baseline Assessment Plan
 - Identification of Threats
 - Risk
 - Assess Facilities (In line inspection, External Direct Corrosion Assessment, ...)
 - Remediate
 - Continual Evaluation
 - Performance Measures
 - Management of Change (MOC)
 - Quality Assurance
 - Communication Plan
 - Identification of new HCAs.

What is Integrity Management?

- Distribution Integrity Management Program
 - Knowledge
 - Identify threats
 - Evaluate and rank risk
 - Identify and implement measure to address risk
 - Measure performance, monitor results, and evaluate effectiveness
 - Periodic evaluation and improvement
 - Report results

Recent History

- September 9, 2010 – San Bruno, California
 - 8 people killed
 - 51 injured
 - Destroyed 38 homes
 - Damaged 70 homes



Recent History

- December 11, 2012 - Sissonville, West Virginia
 - Columbia Gas Transmission
 - 20" natural gas service



Recent History

- March 12, 2014 - New York City, New York
 - 8 people killed
 - 70 injured
 - Destroyed 2 apartment buildings
 - Displaced 100 families



Recent History

- Reauthorization Hearings
 - Eight hearings in 2010 & 2011
 - Pipeline Safety Act 2011
- National Transportation Safety Board (NTSB)
 - Numerous safety recommendations



Regulation Update – Mega Rule

- April 8, 2016

DEPARTMENT OF TRANSPORTATION

Pipeline and Hazardous Materials Safety Administration

49 CFR Parts 191 and 192

[Docket No. PHMSA–2011–0023]

RIN 2137–AE72

Pipeline Safety: Safety of Gas Transmission and Gathering Pipelines

AGENCY: Pipeline and Hazardous
Materials Safety Administration
(PHMSA), DOT.

Regulation Update – Mega Rule

- PHMSA is splitting this rulemaking into 3 different rulemakings



Regulation Update – Mega Rule

- Rule 1st - MAOP Reconfirmation, Expansion of Assessment Requirements, and Other Related
 - 6-month grace period for 7-calendar-year reassessment intervals
 - Seismicity
 - MAOP exceedance reporting
 - Material verification, MAOP reconfirmation, & amendments related to §192.619
 - Non-HCA assessments and MCA definition

Summer 2019

Regulation Update – Mega Rule

- Rule 2nd - Repair Criteria, Integrity Management Improvements, Cathodic Protection, MOC
 - Repair criteria (HCA and non-HCA)
 - Inspections following extreme events
 - Safety features on ILI launchers and receivers
 - Management of change
 - Corrosion control
 - Integrity management clarifications
 - Strengthened assessment requirements

4th Quarter 2019

Regulation Update – Mega Rule

- Rule 3rd - Safety of Gas Gathering Pipelines
 - Reporting requirements
 - Appropriate safety regulations for gas gathering lines in Class 1 locations
 - Definitions related to gas gathering

1st Quarter 2020

Industry Best Practices

- Interstate Natural Gas Association of America (INGAA)
 - Integrity Management Continuous Improvement Initiative (IMCI)
Application of TIMP to transmission pipelines with a population of 2.5 people per residential structure, 20 people per small identified site (i.e., convenience stores, business, etc.), or 200 people per large identified site (i.e., schools, hospitals, etc) in the potential impact radius.
90% complete by 2020
100% complete by 2030
 - Fitness for Service (FFS)
Pressure test pre-regulatory transmission pipe to current regulatory test standards or inline inspect by 2020.

Company Best Practices and Accelerated Actions

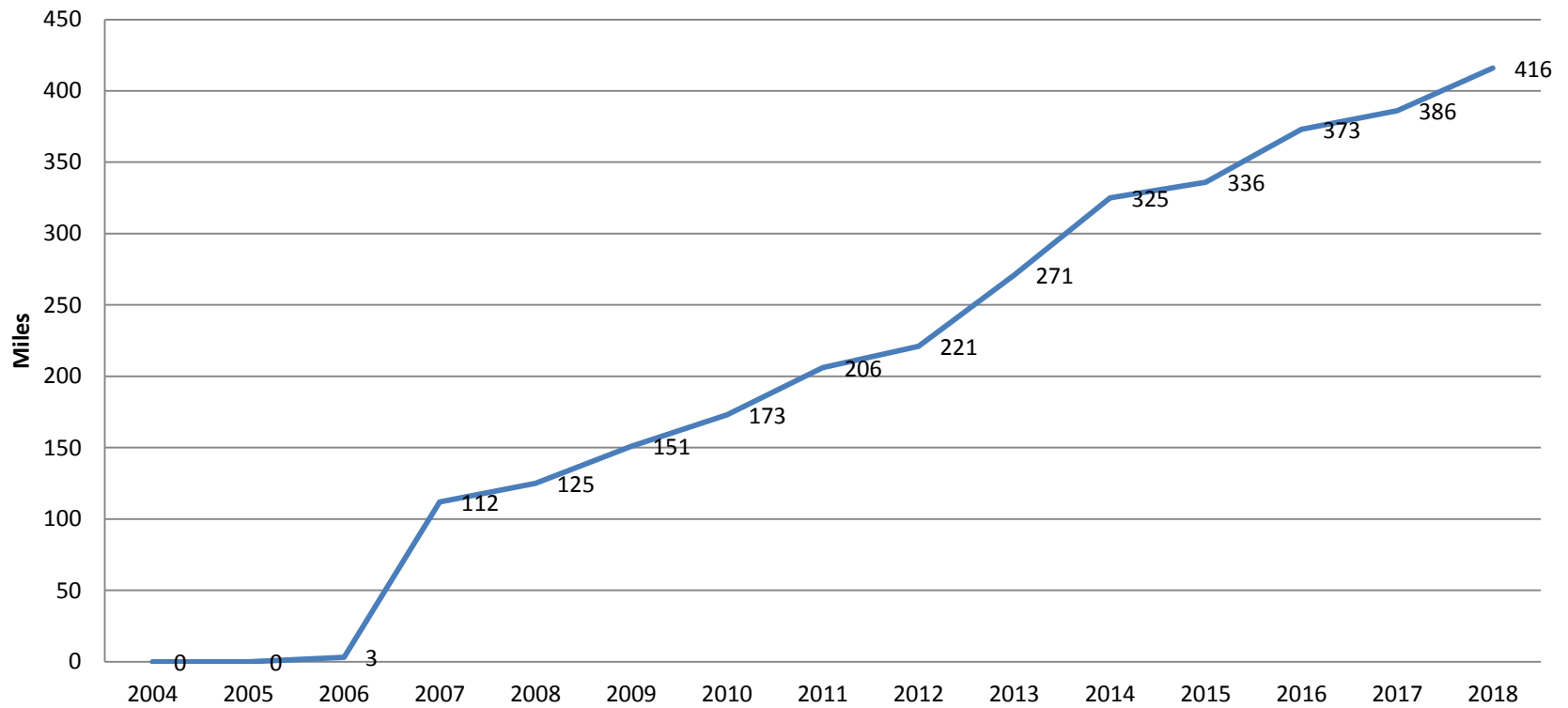
- Perform close interval survey (CIS) to all transmission pipe
- Development and application of alternate current corrosion direct assessment (ACCCA) for assessing the threat of AC corrosion.
- IHP standby
 - ≥4" diameter main, high consequence areas (hospitals, schools, care facilities), 1-way feeds high load mains
- Meter paints program
 - 10,922 complete
- 3rd Party review of ILI program
- Competitive bidding – reduction in external corrosion direct assessment (ECDA) costs
- Leak Survey in house
- HP Standby
 - Monitor all 3rd Party excavations/boring in proximity to HP pipelines.

Integrity Management Results (TIMP)

- 2018
 - Transmission
774 miles
 - HCA
144 miles

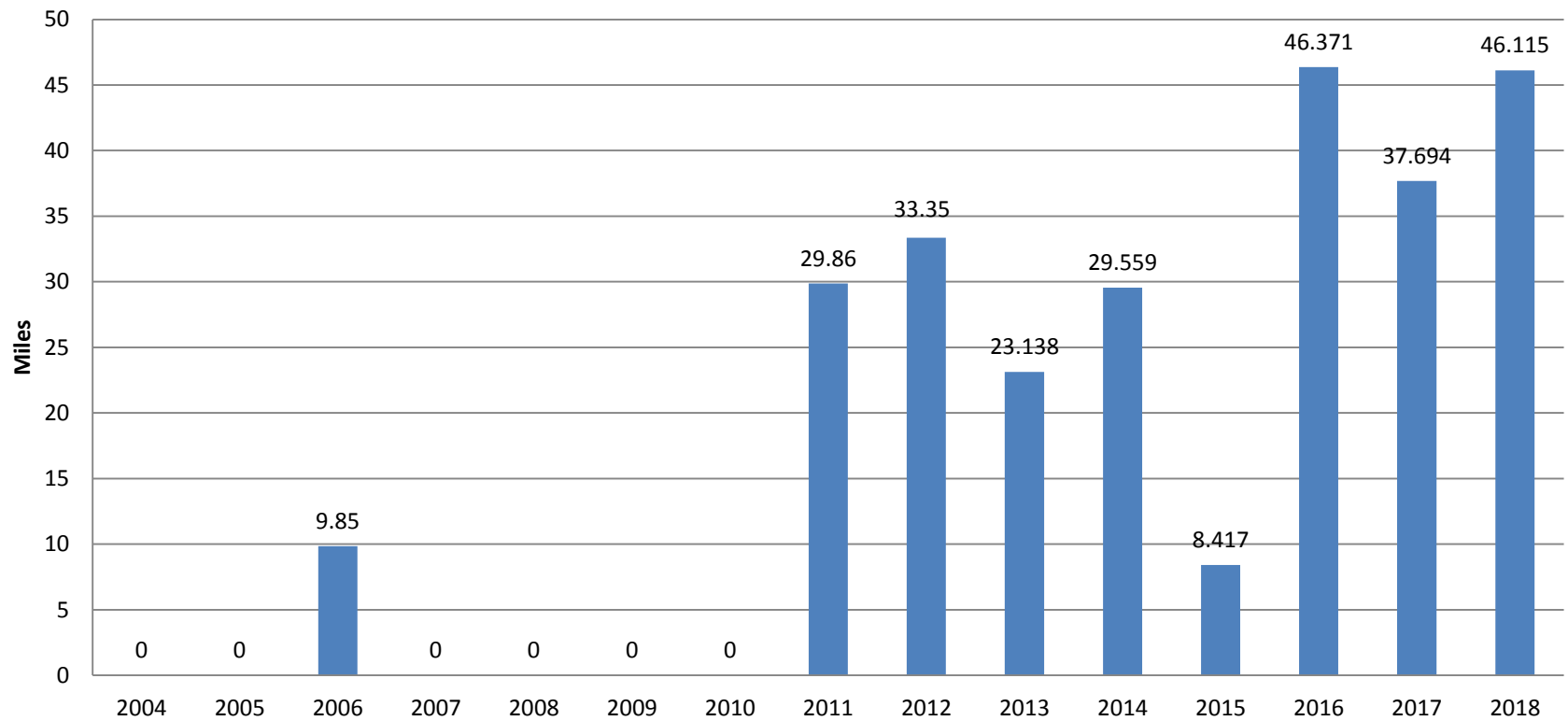
Integrity Management Results (TIMP)

- HCA Miles Assessed



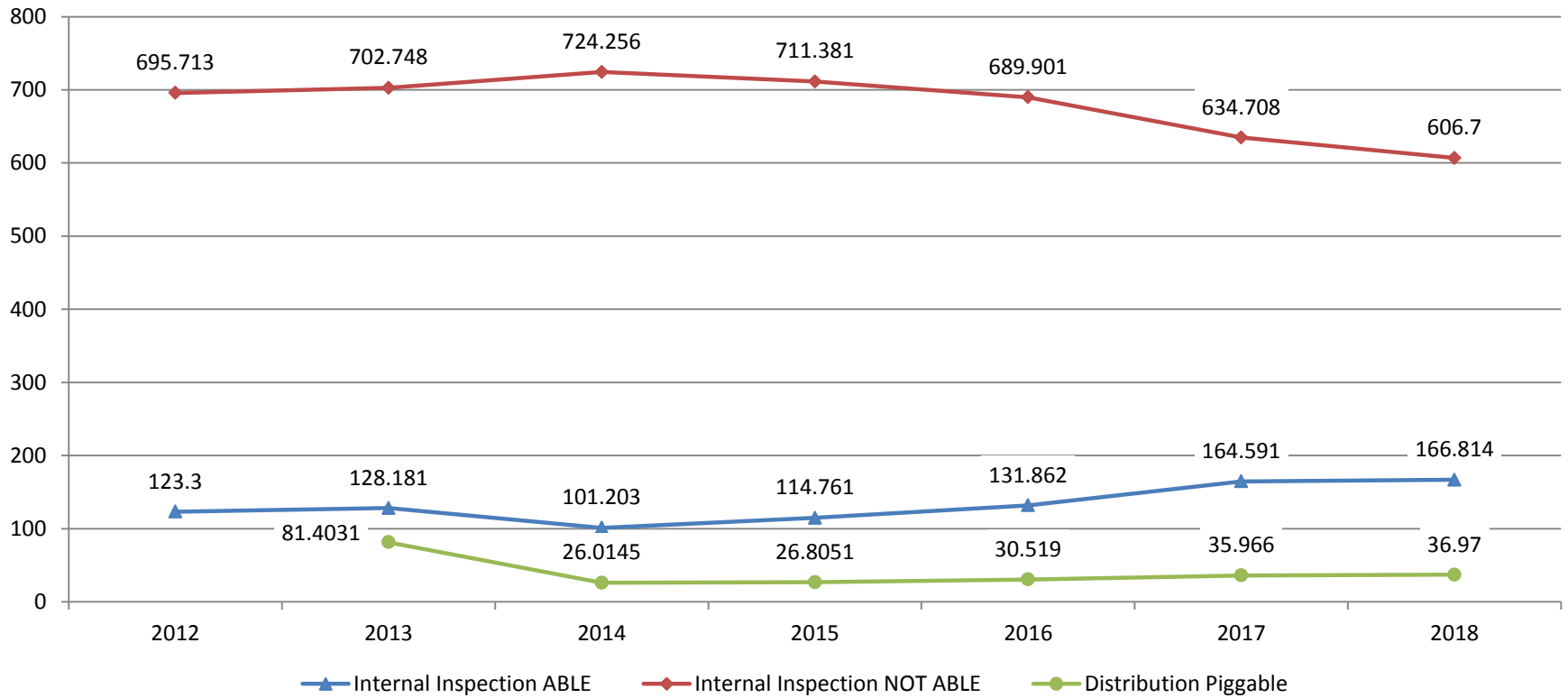
Integrity Management Results (TIMP)

- In line inspection Miles



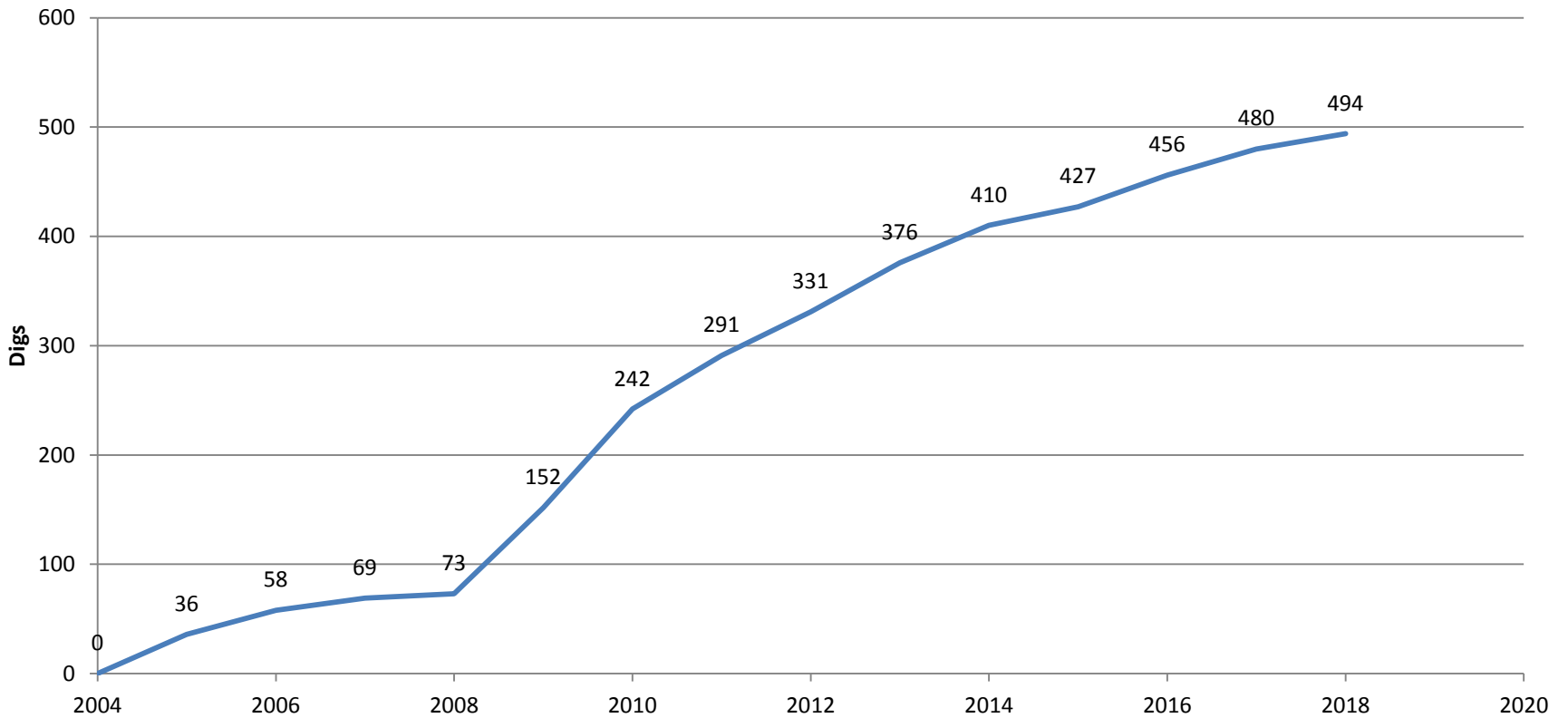
Integrity Management Results (TIMP)

■ Miles of Piggable FL



Integrity Management Results (TIMP)

- Direct Examinations (DEDRs)



Note: This does not include visual Span and Vault Assessments that IM completes each year.

Integrity Management Results (TIMP)

- 2018 Other Indirect Inspections
 - CIS was performed on all non HCA/CA sections of transmission pipe on lines assessed by ECDA
 - CIS was performed on the extents of all 2018 in-line inspections

Feeder Line	Miles of CIS
FL012	0.3
FL022	1.5
FL033	0.7
FL046	2.4
FL051	7.5
FL053	0.4
FL104	7.8
FL019	15.9
FL072	22.8
Total	59.3

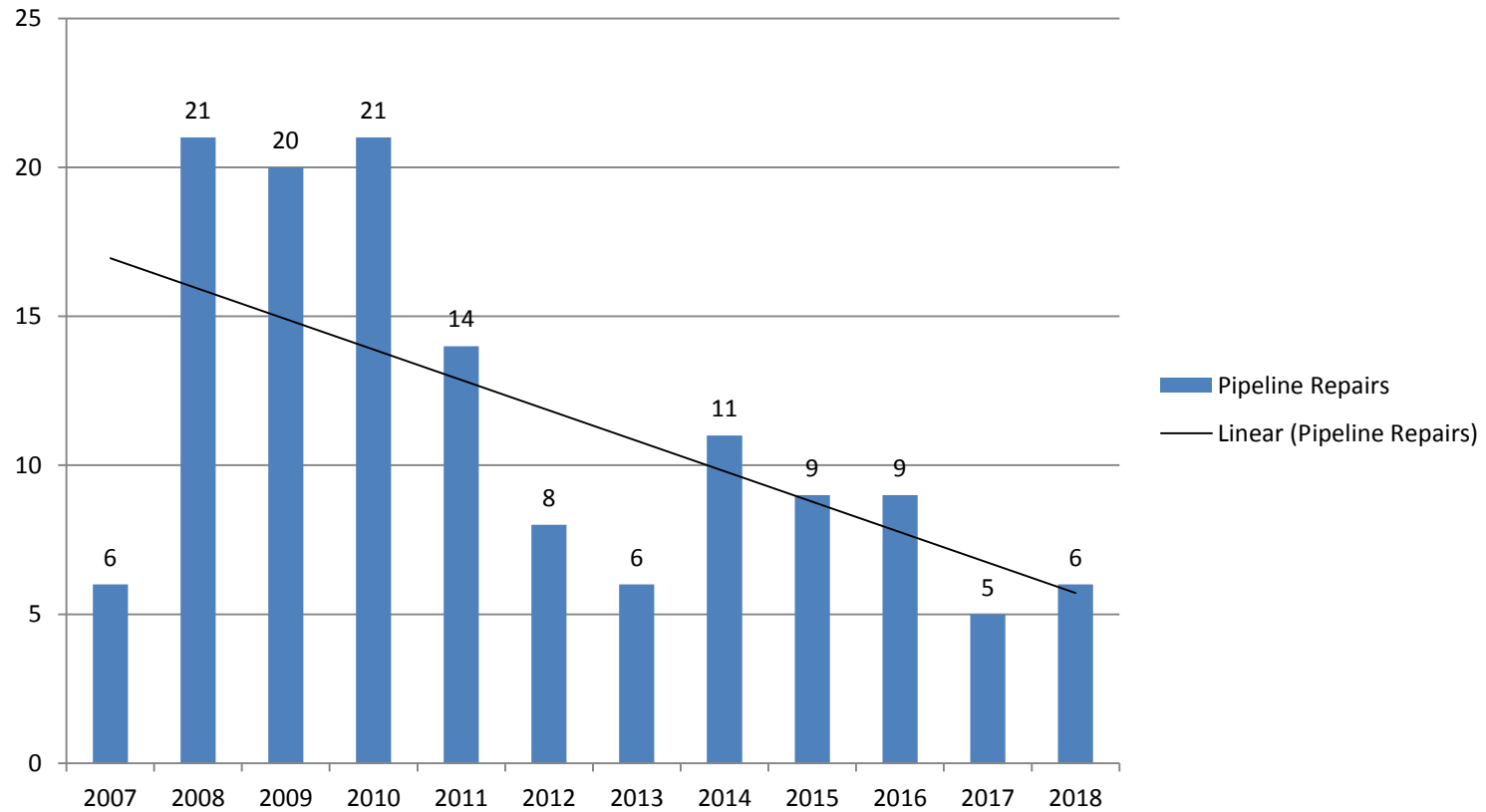
Integrity Management Results (TIMP)

- Threat Specific Performance Measures

9 Threat Categories	External Corrosion	Internal Corrosion	Stress Corrosion Cracking	Manufacturing	Construction	Equipment	Third Party Damage	Incorrect Operations	Weather Related and Outside Forces	Yearly Totals
2007				2	4					6
2008	3				8		9		1	21
2009	6			1	2		10		1	20
2010				1			18		2	21
2011	5			1	2		5		1	14
2012					3		4		1	8
2013	1				2		2		1	6
2014	2					1	6		2	11
2015	1				2		4		2	9
2016	1			2	1		5			9
2017					1		1		3	5
2018	1				1		2		2	6
YTD	20	0	0	7	26	1	66	0	16	136

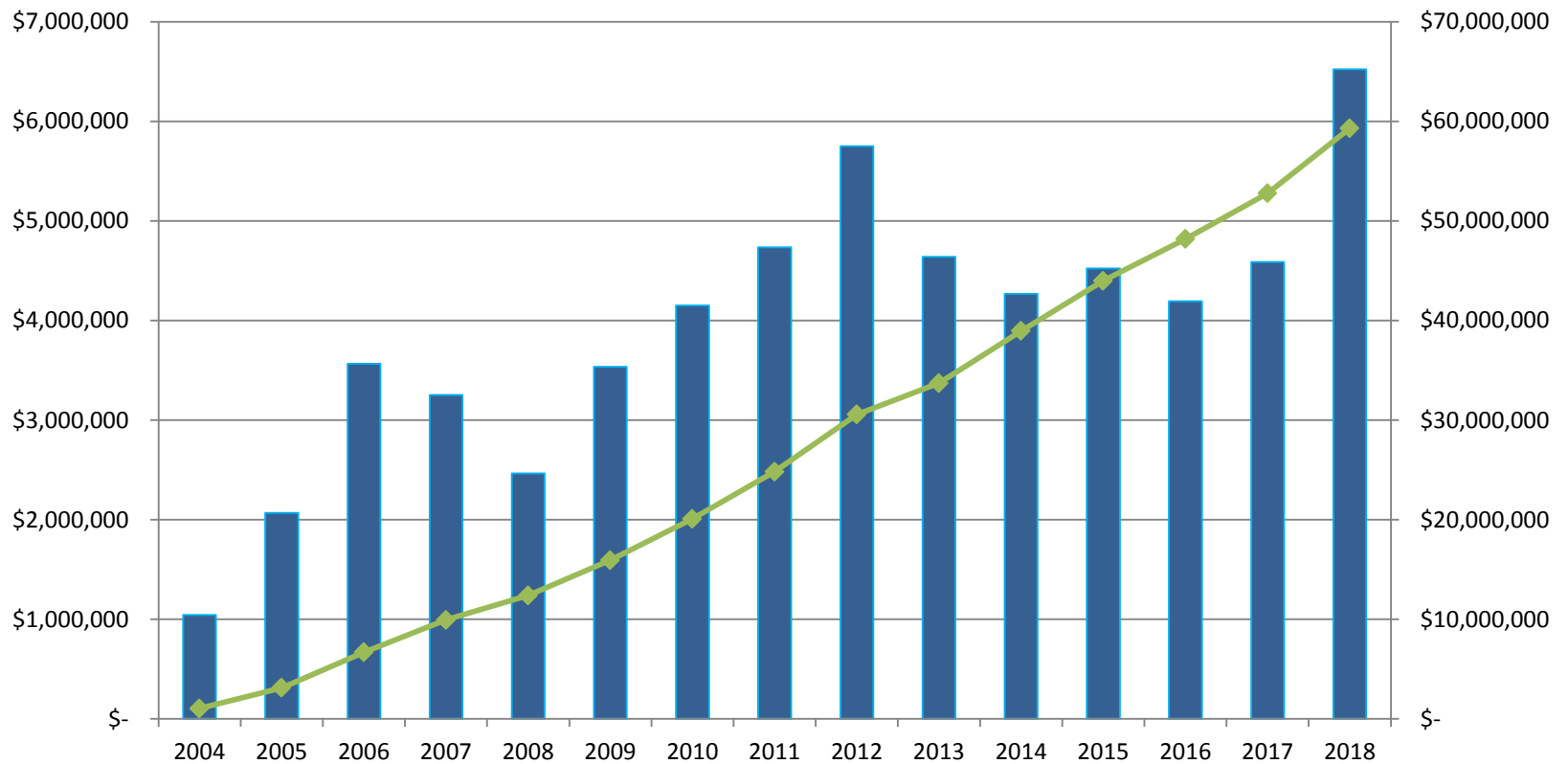
Integrity Management Results (TIMP)

Pipeline Repairs

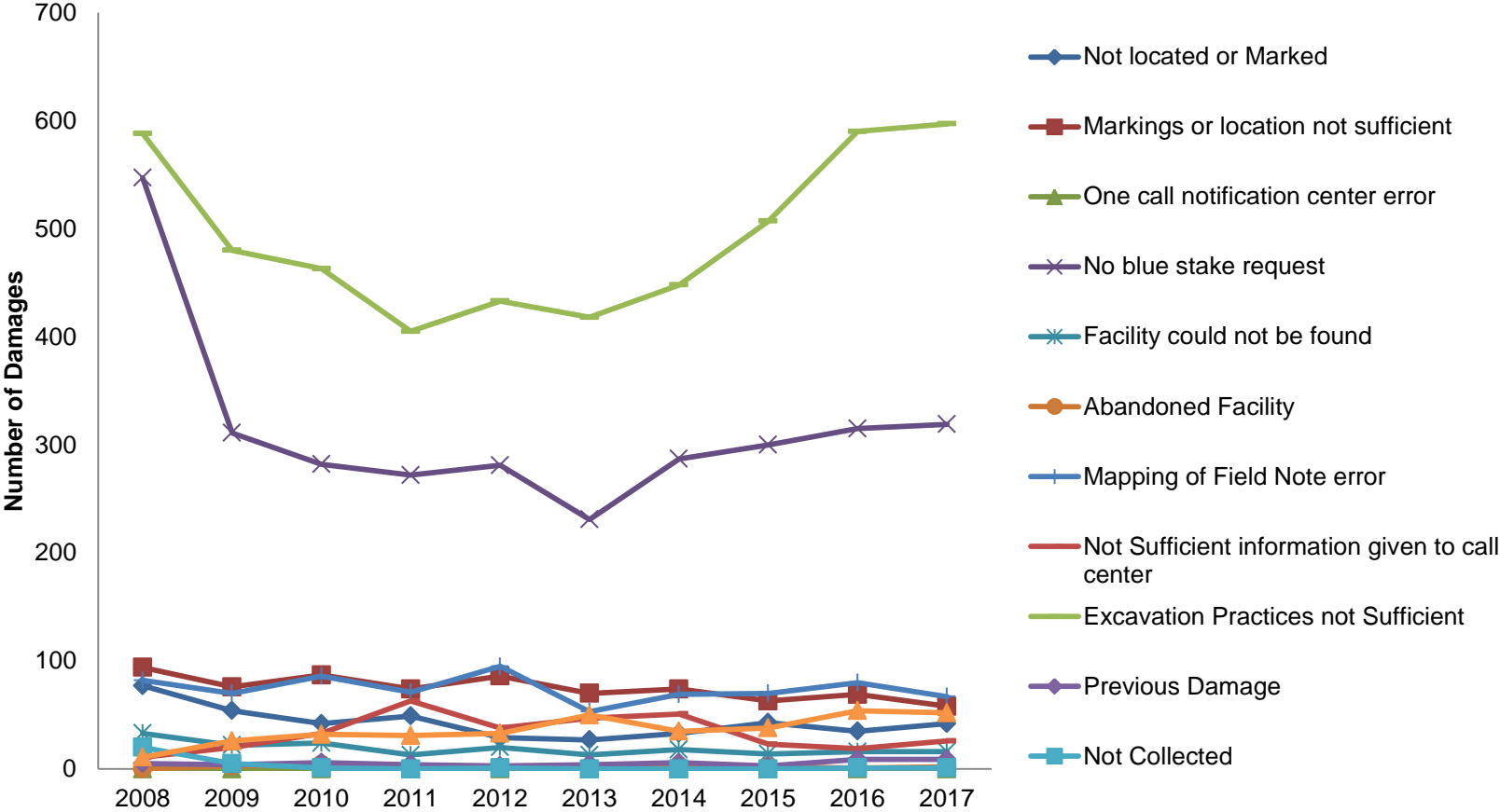


Integrity Management Results (TIMP)

- Cost of TIMP



Integrity Management Results (DIMP)

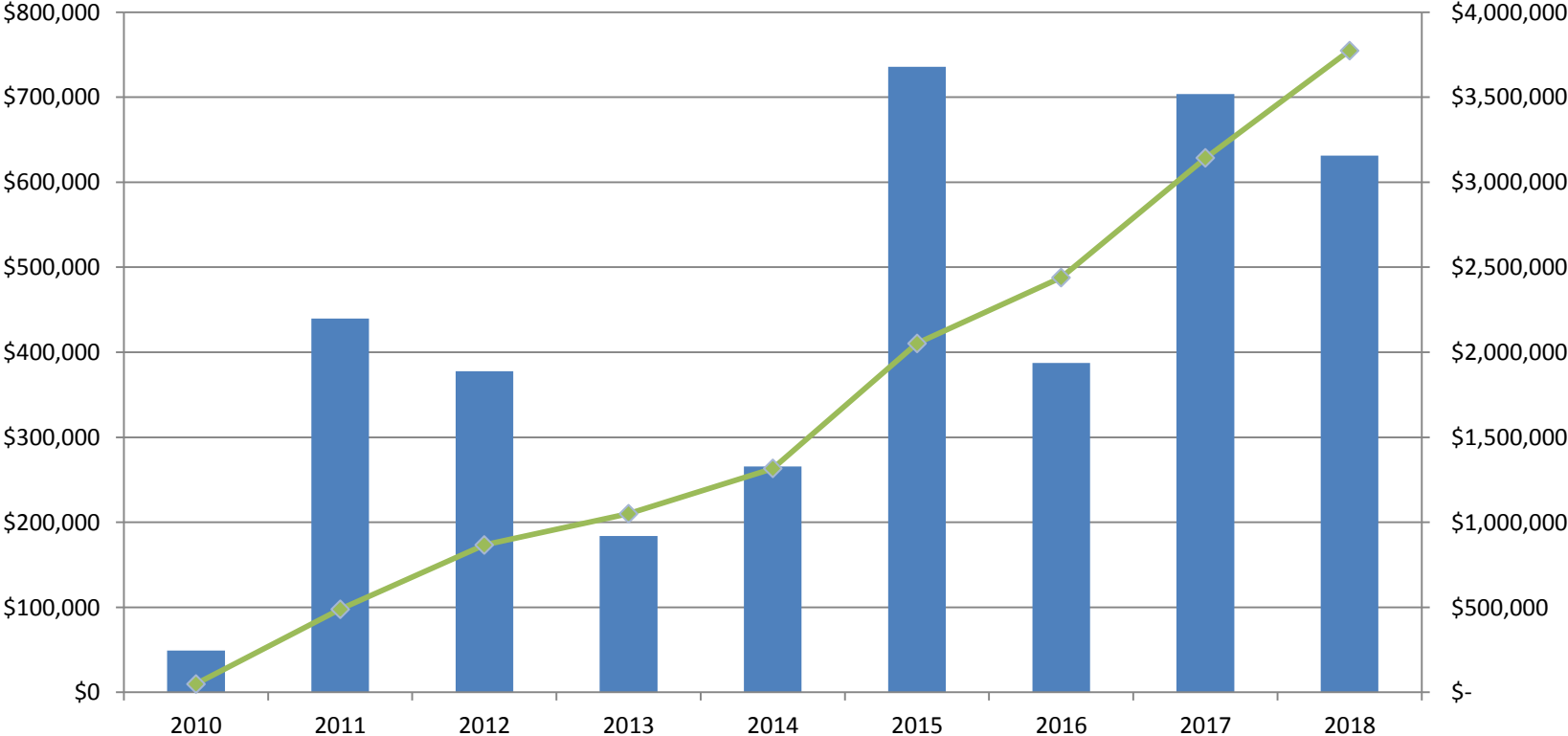


Integrity Management Results (DIMP)

- Highest Integrity Threat Damage Prevention
 - Lowest damage prevention rates
 - 2016
 - 3.05 damages/1,000 tickets
 - 2017
 - 2.83 damages/1,000 tickets
 - 2018
 - 2.75 damages/1,000 tickets

Integrity Management Results (DIMP)

- Cost of DIMP



Questions