414 Nicollet Mall
Minneapolis, MN 55401

January 13, 2017

Daniel P. Wolf **—Via Electronic Filing—**
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, Minnesota 55101

RE: SUPPLEMENT TO PETITION - METRICS PROPOSAL
2017 GAS UTILITY INFRASTRUCTURE COST RIDER
DOCKET NO. G002/M-16-891

Dear Mr. Wolf:

Northern States Power Company, doing business as Xcel Energy, submits to the Minnesota Public Utilities Commission the enclosed Supplement to the Company's 2017 Gas Utility Infrastructure Cost (GUIC) Rider Petition filed November 1, 2016 in the above-referenced docket. The Supplement discusses our proposal for developing metrics to measure the appropriateness of GUIC expenditures and is provided pursuant to Order Point 2 of the Commission's Order issued August 18, 2016 in Docket No. G002/M-15-808.

We have electronically filed this document with the Commission, and copies have been served on the parties on the attached service list.

If you have any questions regarding this filing, please contact me at (612) 330-6613 or amy.a.liberkowski@xcelenergy.com.

SINCERELY,

/s/

AMY A. LIBERKOWSKI
DIRECTOR, REGULATORY PRICING AND ANALYSIS

Enclosures
c: Service List

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

| | |
|---|---|
| Beverly Jones Heydinger | Chair |
| Nancy Lange | Commissioner |
| Dan Lipschultz | Commissioner |
| Matthew Schuerger | Commissioner |
| John Tuma | Commissioner |

| | |
|---|---|
| IN THE MATTER OF THE PETITION OF NORTHERN STATES POWER COMPANY FOR APPROVAL OF A GAS UTILITY INFRASTRUCTURE COST RIDER TRUE-UP REPORT FOR 2016, REVENUE REQUIREMENTS FOR 2017, AND REVISED ADJUSTMENT FACTORS | DOCKET NO. G002/M-16-891<br><br>**SUPPLEMENT AND COMPLIANCE METRICS PROPOSAL** |

## INTRODUCTION

Northern States Power Company, doing business as Xcel Energy, submits to the Minnesota Public Utilities Commission the enclosed Supplement to the Company's 2017 Gas Utility Infrastructure Cost (GUIC) Rider Petition filed November 1, 2016 in the above-referenced docket. This Supplement discusses our proposal for metrics to measure the appropriateness of GUIC expenditures and is provided pursuant to Order Point 2 of the Commission's August 18, 2016 Order in Docket No. G002/M-15-808.

In its Order approving our previous GUIC Petition, the Commission required Xcel Energy to develop, with stakeholder involvement, metrics to measure the appropriateness of GUIC expenditures. Each metric should include reconciliation to the pertinent Transmission Integrity Management Program (TIMP) or Distribution Integrity Management Program (DIMP) rules that it addresses, or other goals, benefits, or requirements.

The Company met on November 16, 2016 with stakeholders from the Commission, the Minnesota Department of Commerce (Department), the Minnesota Office of Pipeline Safety (MNOPS), and the Minnesota Office of Attorney General (OAG), collectively known at the "stakeholders", to present and discuss potential proposed metrics. Attachment A to this Supplement is the presentation shared with stakeholders at the in-person meeting. It was a productive meeting, and the Company provided additional information as requested by stakeholders following the meeting. Stakeholders were invited to submit any further feedback by email in the weeks following the November 16 meeting.

Some stakeholders highlighted a desire to learn more about performance metrics being implemented across the country and to identify opportunities to leverage best practices in the development of TIMP and DIMP program metrics. To that end, the Company also shared draft questions to be submitted to the American Gas Association (AGA) through its SOS Program[1] and is fielding stakeholder input currently on that survey. The Company's questions seek input from other gas utilities that may use cost-recovery mechanisms similar to the GUIC that have developed performance metrics to evaluate their TIMP and DIMP related activities. It is our hope that this survey instrument will provide useful context and samples of best practices in performance metrics from other gas utilities across the nation.

We provide the details of our proposed metrics as shared with stakeholders here, and we look forward to an ongoing discussion. We believe that review and discussion about these metrics can continue at any pace that is reasonable for the Commission and parties and need not hinder review of the other components of the Company's 2017 Petition.

## A. Summary of Program Expenditures, Relevant Rules and Guidelines, and Program Goals

Following is a summary of the metrics proposed by the Company as well as a discussion of associated rules, goals and benefits. The GUIC programs of work proposed for 2017 are summarized below in Table 1.

**Table 1**
**Summary of 2017 GUIC Project Expenditures**

| Program | Project | Capital ($ Millions) | O&M ($ Millions) |
|---|---|---|---|
| TIMP | Transmission Pipeline Assessments | $1.61 | $1.30 |
| | ASV/RCV | $0.90 | $0.00 |
| | Programmatic Replacement/MAOP Remediation | $2.91 | $0.00 |
| DIMP | Poor Performing Main Replacement | $11.03 | $0.24 |
| | Poor Performing Service Replacement | $6.90 | $0.04 |
| | Intermediate Pressure (IP) Line Assessments | $0.67 | $0.30 |
| | Distribution Valve Replacement | $0.72 | $0.00 |
| | Sewer & Gas Line Conflict Investigation | $0.00 | $3.50 |
| | Federal Code Mitigation | $0.20 | $0.47 |
| TOTAL | | $24.94 | $5.85 |

[1] According to www.aga.org, the AGA provides support to its members who seek industry information on a variety of issues. The SOS Program is a simple and effective resource for AGA members who need to better understand how others are addressing a particular issue or challenge.

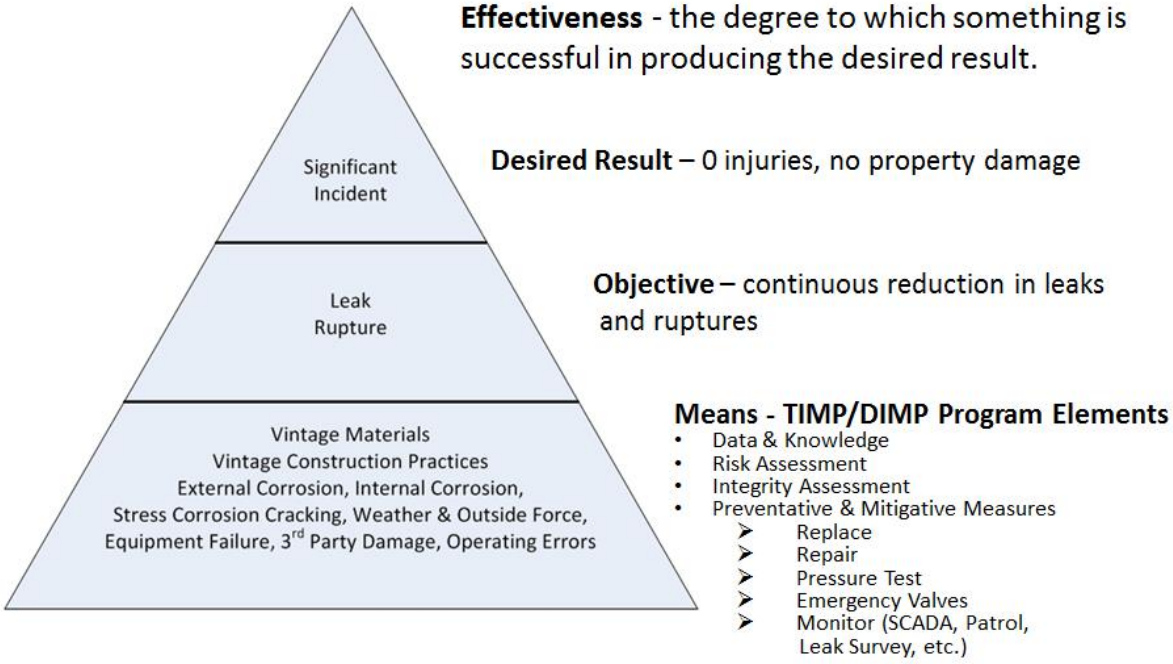
The GUIC projects proposed for 2017 fall into two broad categories, TIMP and DIMP. The related rules associated with each project are summarized below in Table 2 and discussed in more detail in our November 1, 2016 Petition.

**Table 2**
**Summary of TIMP/DIMP Rules and Regulatory Guidance**

| Program | Project | 49 CFR Part | PHMSA Advisory Bulletin or Other |
|---|---|---|---|
| TIMP | Transmission Pipeline Assessments | 192.937 | Gas Transmission & Gathering Notice of Proposed Rulemaking 192.710 |
| | ASV/RCV | 192.935(c) | NTSB PAR-11/01 |
| | Programmatic Replacement/MAOP Remediation | | PHMSA ADB-11-01<br>NTSB PAR-11/01<br>Gas Transmission & Gathering Notice of Proposed Rulemaking 192.624 |
| DIMP | Poor Performing Main Replacement | 192.1007(d) | PHMSA ADB-99-02<br>PHMSA ADB-08-02 |
| | Poor Performing Service Replacement | 192.1007(d) | PHMSA ADB-99-02<br>PHMSA ADB-08-02 |
| | Intermediate Pressure (IP) Line Assessments | 192.1007(d) | |
| | Distribution Valve Replacement | 192.1007(d) | |
| | Sewer & Gas Line Conflict Investigation | 192.1007(d) | |
| | Federal Code Mitigation | 192.1007(d) | |

The goals of the TIMP and DIMP are illustrated below in Figure 1.

**Figure 1**
**TIMP and DIMP Goals**




TIMP and DIMP are undertaken to reduce the likelihood of a significant gas incident that may result in injury to the public or damage to property. To achieve this objective, TIMP and DIMP projects enact preventative and mitigative measures to reduce the likelihood or severity of gas leaks and pipeline ruptures.

The Company's proposed Metrics are summarized in Table 3 below.

**Table 3**
**Proposed GUIC Metrics**

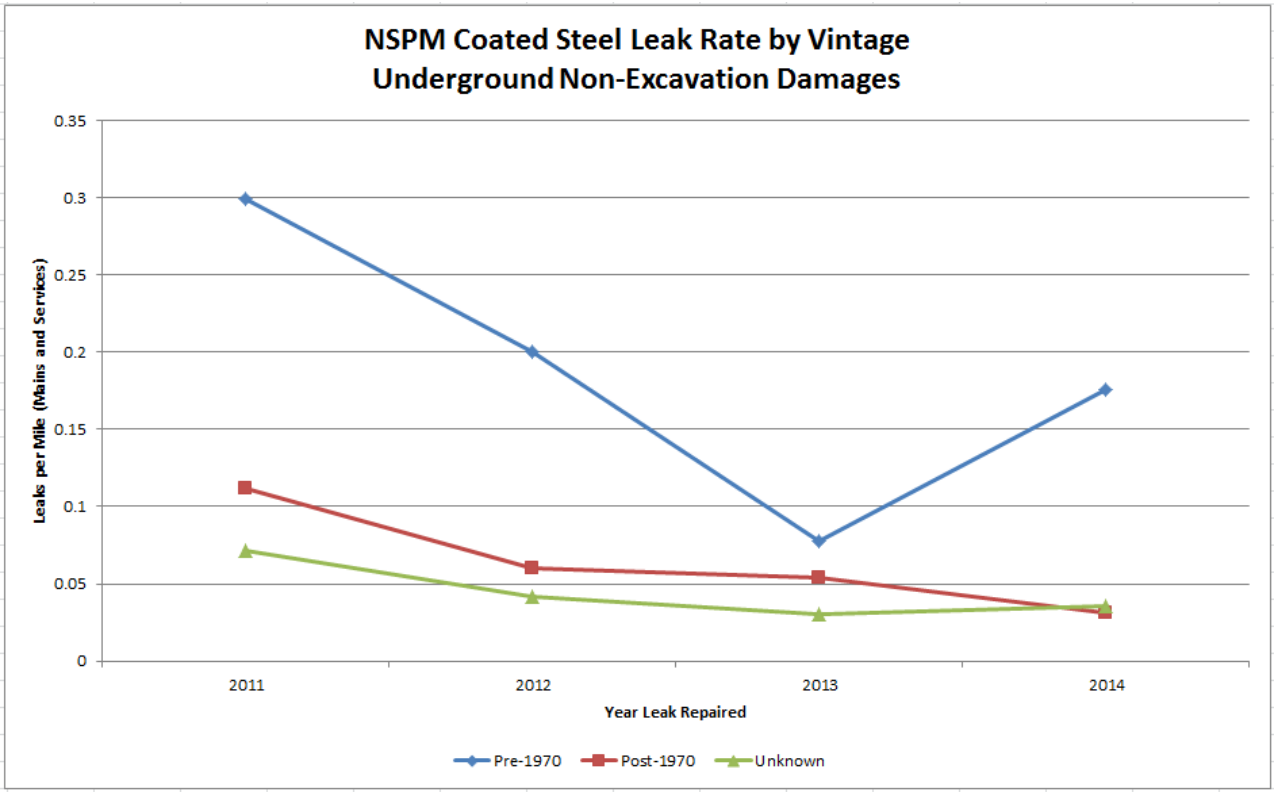
| Program | Metric | Benefit |
|---|---|---|
| DIMP | Leak Rate by Vintage and Pipe Type | Monitor the impact of renewal efforts on the leakage rates. Selection of higher-risk pipe segments will lower leakage rates over time. |
| | Poor Performing Main Replacements Unit Cost | Monitor unit costs greater than one standard deviation above the mean in order to ensure variances are understood and reasonable. |
| | Poor Performing Service Replacements Unit Cost | Monitor unit costs greater than one standard deviation above the mean in order to ensure variances are understood and reasonable. |
| TIMP | Gas Transmission Anomalies Repaired | Monitor the impact of pipeline assessment, repair and renewal efforts on the number of anomalies that require repair. Completion of appropriate repairs and renewal efforts will lower anomalies over time. |
| | Actual vs. Estimated Cost Variance Explanations for Capital Projects | Monitor cost variances in order to ensure variances are understood and reasonable. |

## B. DIMP Metrics

Though there are a number of DIMP projects proposed for 2017, 92 percent of the capital expenditures are associated with Poor Performing Main and Service Replacement projects. The Company therefore proposes that the most appropriate metric for DIMP be focused on Poor Performing Main and Service Replacement Projects.

49 CFR Part 192.1007(e) currently requires performance metrics for DIMP, including the total number of leaks either eliminated or repaired, categorized by cause. The Company proposes that the DIMP metrics include a similar metric focused on the leak rates over time as illustrated below in Figure 2.

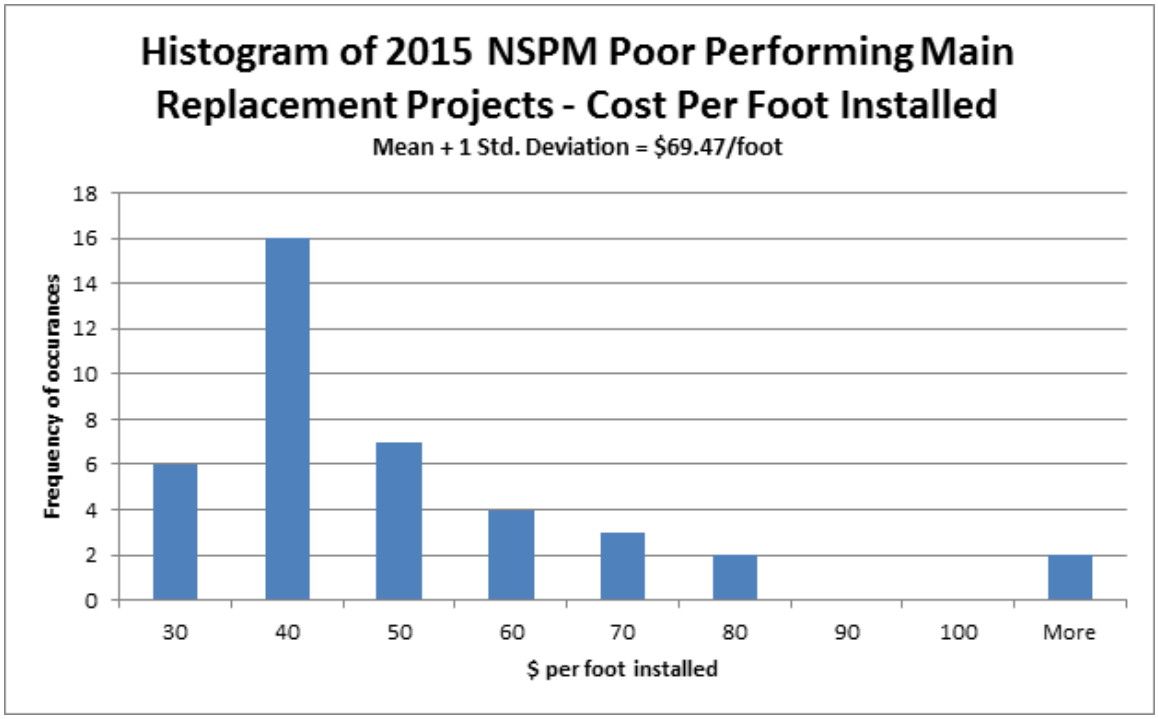
**Figure 2**
**Illustrative Example of Proposed DIMP Metric**




The metric shown in Figure 2 is Leaks per Mile (mains and services) for Coated Steel shown by year and by vintage of pipe. Only underground leakage not associated with excavation damage is included in order to evaluate the impact achieved by GUIC distribution pipe replacement efforts. As a measure of effectiveness we expect that the leak rates for the pre-1970 coated steel pipe will continue to decrease over time as problematic pipe is replaced. Because the majority of the Company's distribution system is on a three-year leak survey cycle and different parts of the system are being surveyed each year, some variation of leak rates from year to year is expected.

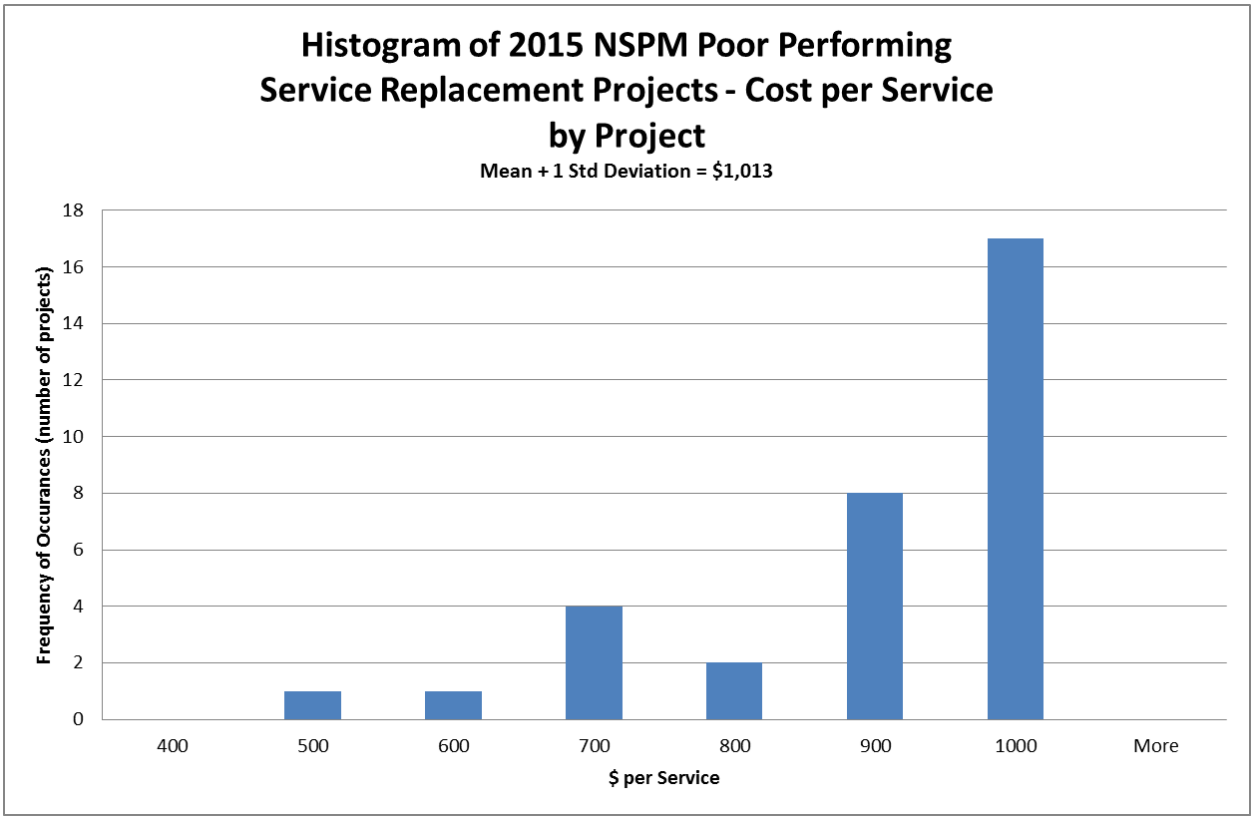
The other DIMP metrics proposed by the Company are associated with monitoring of costs for problematic main and service replacements with the objective of evaluating significant variances for costs (those greater than one standard deviation above the mean unit cost). Unit costs may vary for a number of reasons including differences in soil conditions, paving requirements, traffic control requirements and permit restrictions.

**Figure 3**
**Illustrative Example of Unit Costs for**
**Poor Performing Main Replacement Projects**




The illustrative cost metric shown in Figure 3 depicts the average cost per foot plus one standard deviation of $69.47 per foot. For those projects that cost in excess of this amount (seven in Figure 3) the Company will provide a detailed explanation of why those projects exceeded the performance metric of $69.47 per foot.

**Figure 4**
**Illustrative Example of Unit Costs for**
**Poor Performing Service Replacement Projects**

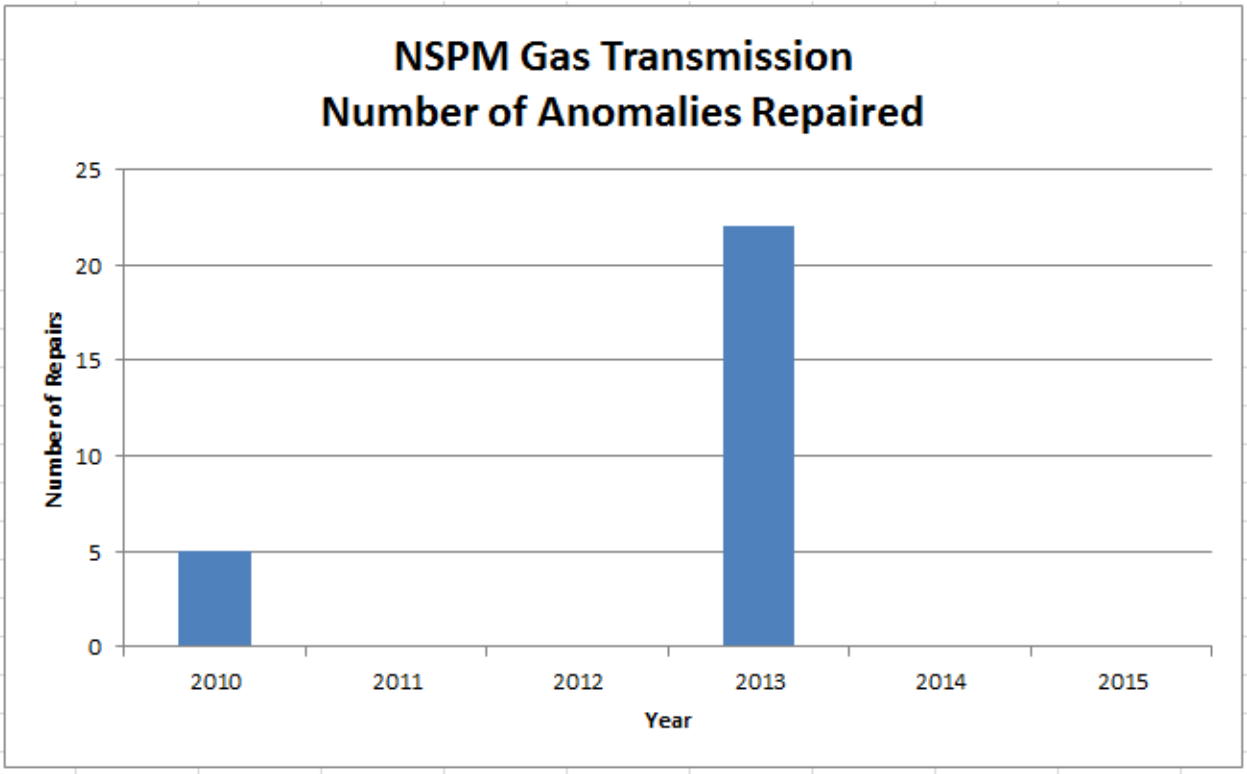



As shown in Figure 4, the average cost per gas service plus one standard deviation is $1,013 per service. For those projects that cost in excess of this amount (none shown in Figure 4), the Company will provide a detailed explanation of why those projects exceeded the performance metric of $1,013 per service.

## C. TIMP Metrics

The goal of projects under the Company's TIMP is to detect and repair pipe anomalies and to mitigate the consequence of a failure. The detection and repair of anomalies is achieved primarily through Pipeline Assessments, Replacement, and MAOP remediation. The potential consequences of a pipe failure are mitigated primarily by the installation of Remote Control Valves (RCVs). 84 percent of capital and O&M spend projected for 2017 is for projects that detect and repair pipe anomalies. The Company therefore proposes that the most appropriate metric for TIMP be focused on the number of anomalies repaired as illustrated below in Figure 5.

**Figure 5**
**Illustrative Example of Proposed TIMP Metric**




Anomaly repairs are expected to vary from year to year as different pipelines are inspected or assessed each year. However, as assessments continue and anomalies are repaired, the Company anticipates the number of repairs to ultimately reduce. The other TIMP metric proposed by the Company is associated with monitoring of actual versus estimated costs for capital replacement projects as illustrated below in Table 4.

**Table 4**
**Illustrative Example of TIMP Replacement Project Cost Monitoring**

| Project | Cost Estimate at Issue for Construction ($ Millions) | Actual Cost ($ Millions) | Variance Explanation |
|---|---|---|---|
| Baker Street, replace 1.9 miles of 16 inch pipeline. | $1.7 | $2.0 | Scope increased to 2.1 miles due to permit restrictions |

## CONCLUSION

We appreciate the opportunity to supplement our November 1, 2016 Petition with these proposed performance metrics. We believe these metrics may provide a useful tool to evaluate the Company's GUIC programs of work. Xcel Energy respectfully requests that the Commission approve our 2017 GUIC Rider Petition, including the performance metrics provided in this Supplement.

Dated: January 13, 2017

Northern States Power Company

# Stakeholder Meeting

## NSPM GUIC TIMP/DIMP Performance Metrics

**November 16, 2016**

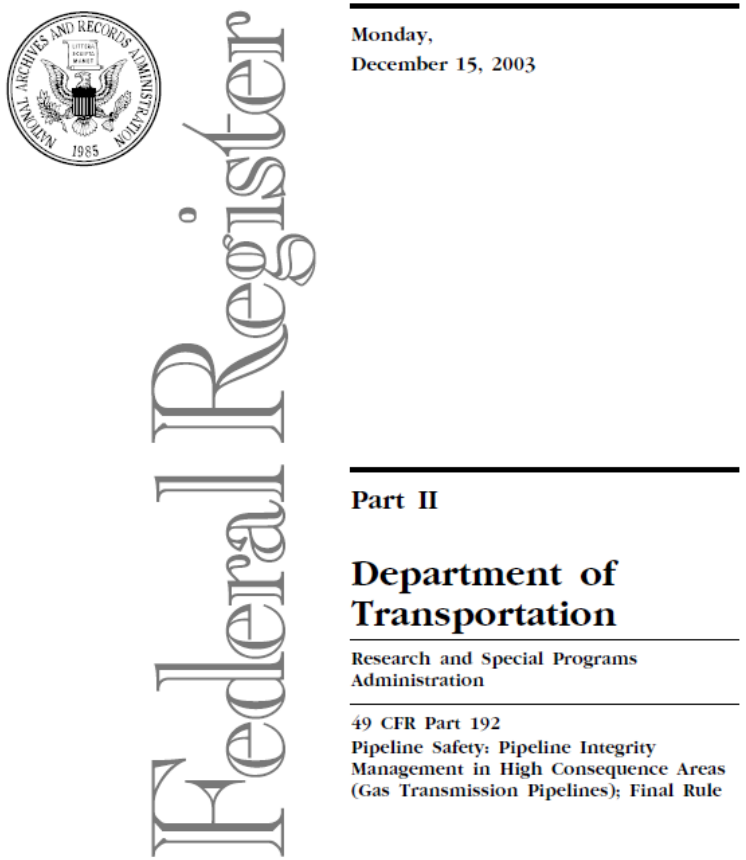
# Agenda

- Welcome & Introductions
- Regulatory History
- Overview of NSPM System
- GUIC Progress Report
- GUIC Financial Governance
- Risk Ranking Methodology
- Recommended Performance Metrics

# Regulatory History

# Transmission Integrity Regulations

- Effective in 2003
- Performance based
- Requires Operators:
  - ***Know your assets***
    - Gather asset data
    - Records/documentation
    - Integration of various records
  - ***Understand risks and threats***
    - Risk analysis
  - ***Be Proactive in mitigating threats***
    - Identify assessment methods
    - Develop and institute mitigation actions
- Evolution of technology


Federal Register

Monday,
December 15, 2003

Part II

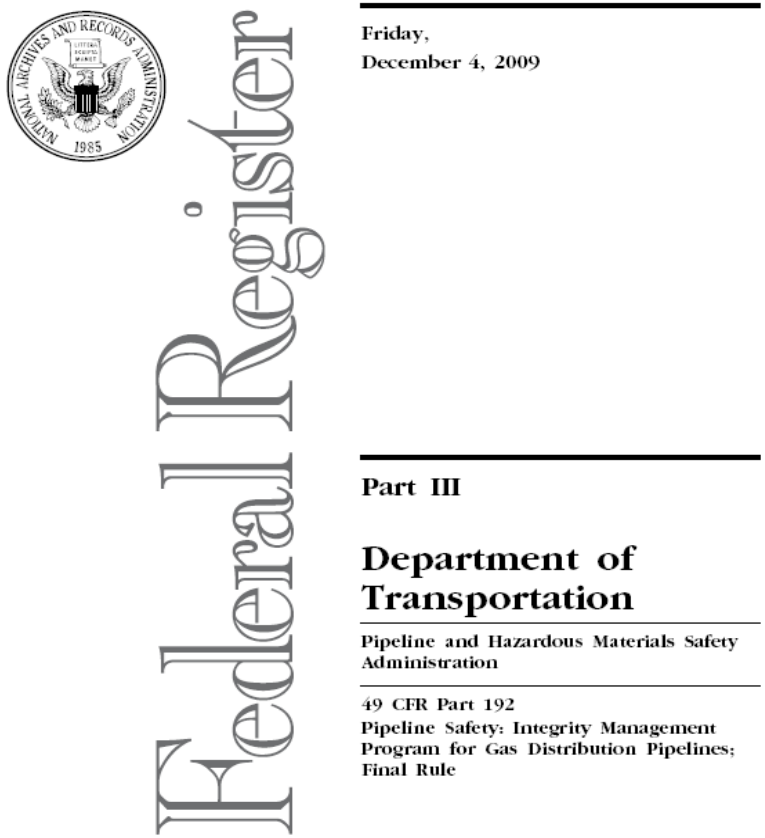
Department of Transportation

Research and Special Programs Administration

49 CFR Part 192
Pipeline Safety: Pipeline Integrity Management in High Consequence Areas (Gas Transmission Pipelines); Final Rule

# Distribution Integrity Regulations

- Effective August 2011
- Performance Based
- Requires operators:
  - **Know your assets**
  - **Identify risks & threats**
  - **Be proactive in mitigating threats**
- Expectations:
  - Continuous improvement
  - Learn and apply knowledge from other sources
    - Industry
    - Advisory Bulletins



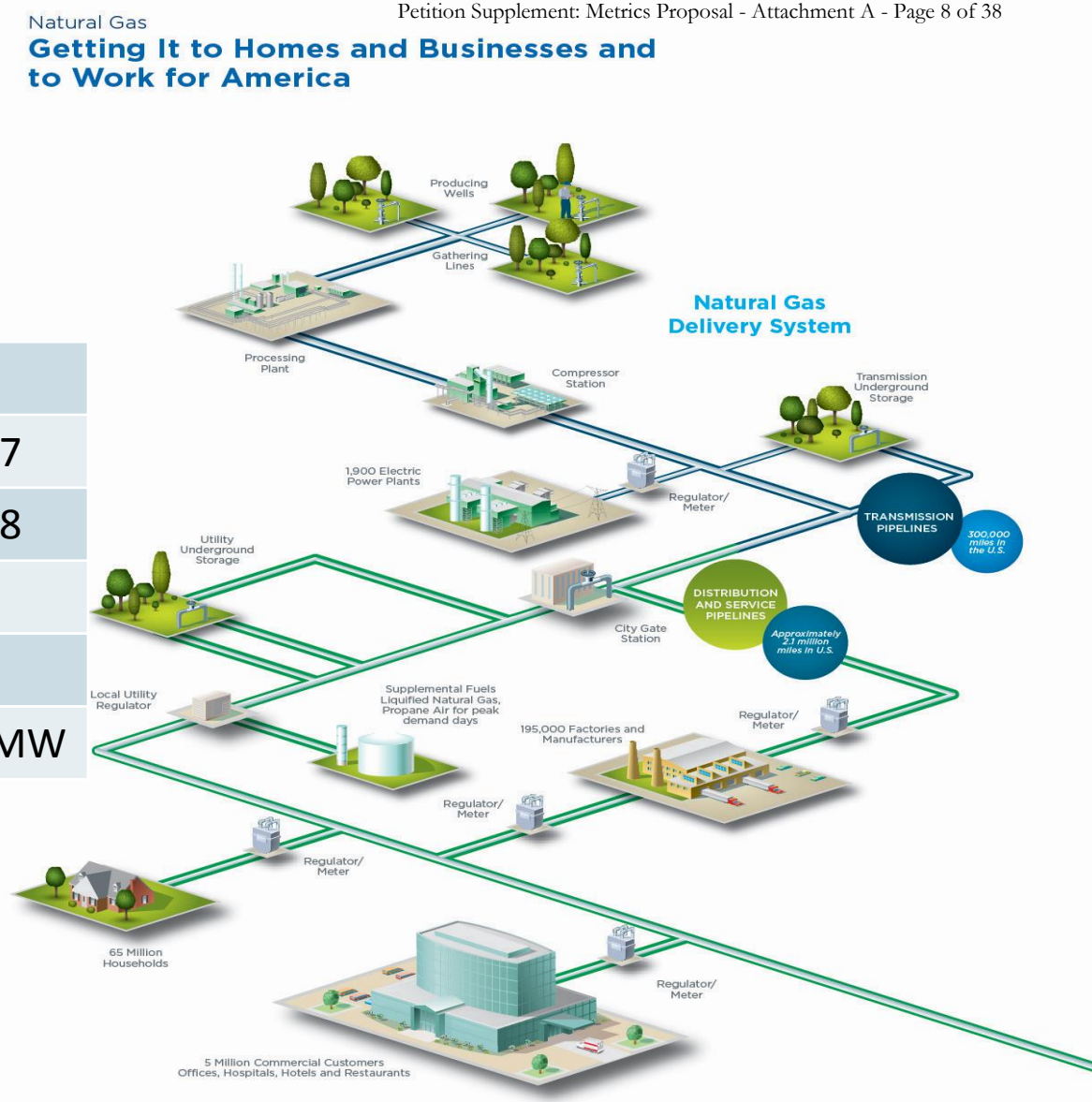
# Regulatory Actions Pending

- 42 Congressional Mandates remain outstanding
  - 2012 Pipeline Safety Reauthorization
- Safety of Gas Transmission & Gathering Lines Notice of Proposed Rulemaking (NPRM)
- Other rulemaking in progress:
  - Excess Flow Valves beyond Single Family Residences NPRM (final, effective April 2017)
  - Operator Qualification, Cost Recovery and other Pipeline Safety Proposed Changes NPRM
  - Plastic Pipe NPRM
  - National Pipeline Mapping System information request
  - Rupture Detection and Valve (ASV/RCV) Rule
  - Quality Management

# Overview of NSPM System

# By The Numbers

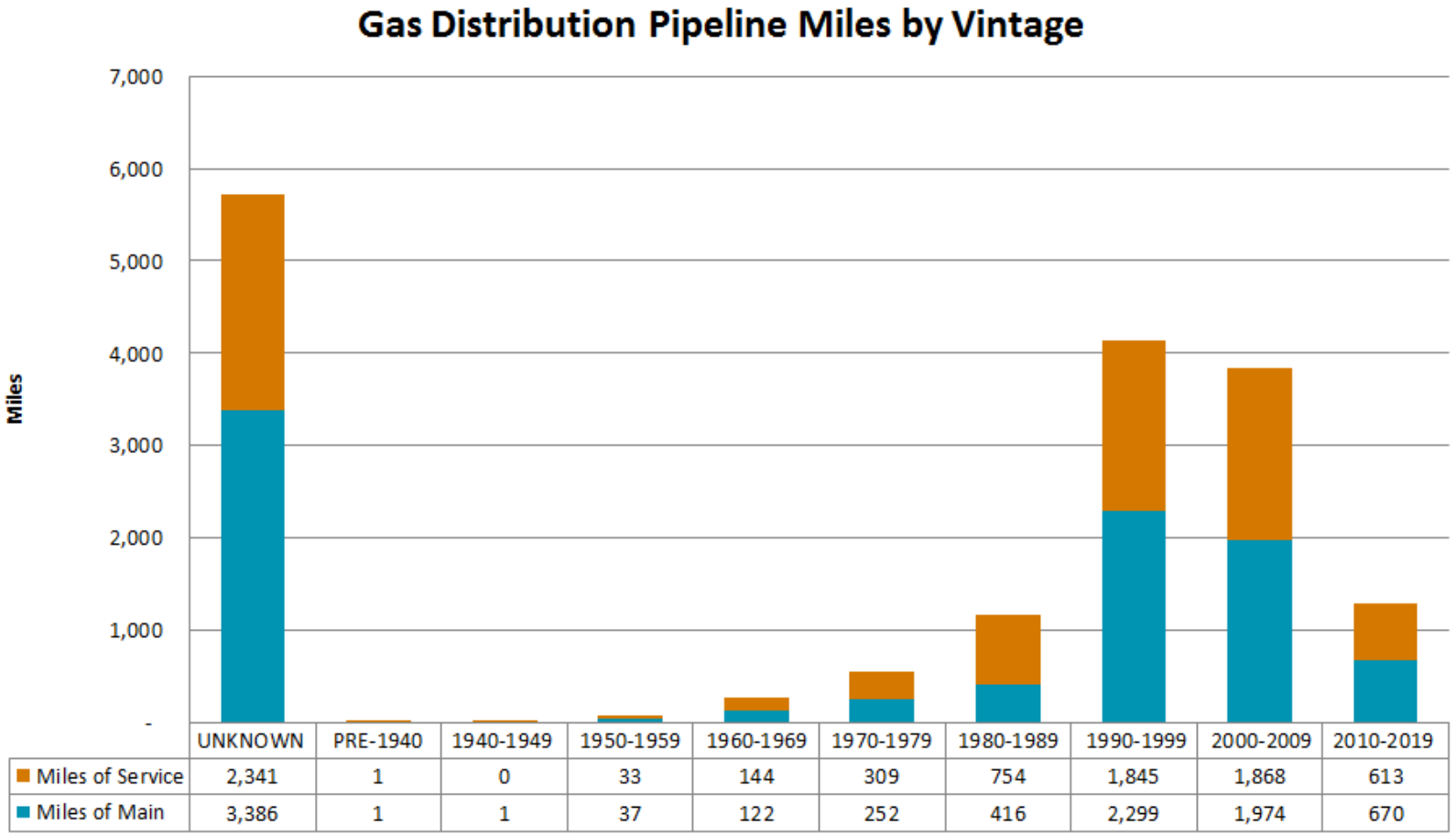
| | |
|---|---|
| Transmission Miles | 77 |
| Distribution Main Miles | 9,157 |
| Distribution Service Miles | 7,908 |
| LNG Plant | 1 |
| Propane-Air Plant | 2 |
| Gas Fired Generation | 1,400 MW |



# Distribution Material Types

| | Unprotected Steel | | Cathodically Protected Coated Steel | Plastic | Copper | Other |
|---|---|---|---|---|---|---|
| | Bare | Coated | | | | |
| Miles of Main | 0.7 | 185 | 785 | 8,125 | | 62 |
| Miles of Services | 0.8 | 75 | 116 | 7,426 | 13 | 277 |

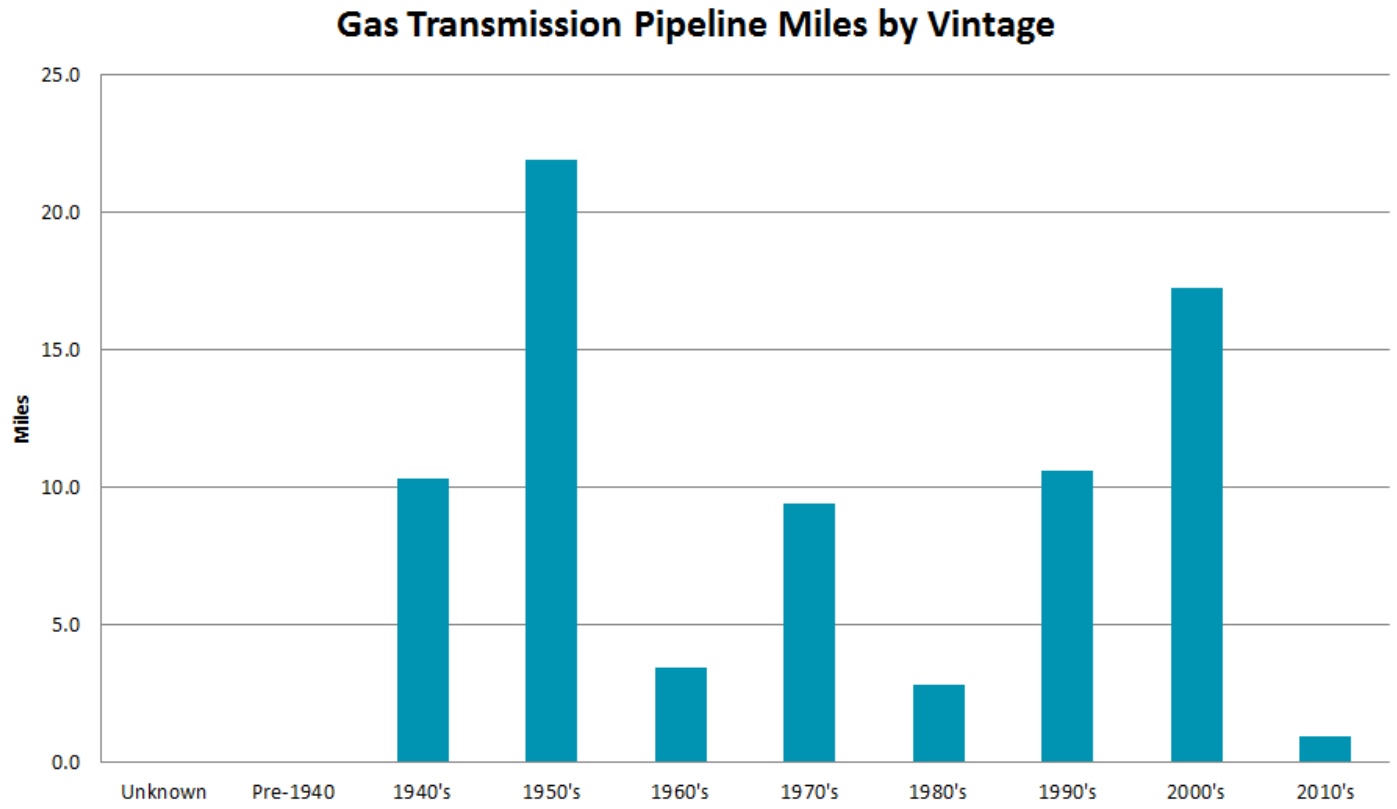
# Distribution Vintage




| | UNKNOWN | PRE-1940 | 1940-1949 | 1950-1959 | 1960-1969 | 1970-1979 | 1980-1989 | 1990-1999 | 2000-2009 | 2010-2019 |
|---|---|---|---|---|---|---|---|---|---|---|
| Miles of Service | 2,341 | 1 | 0 | 33 | 144 | 309 | 754 | 1,845 | 1,868 | 613 |
| Miles of Main | 3,386 | 1 | 1 | 37 | 122 | 252 | 416 | 2,299 | 1,974 | 670 |

Service Miles are estimated based on service count and average service length of 102 feet

# Transmission Vintage

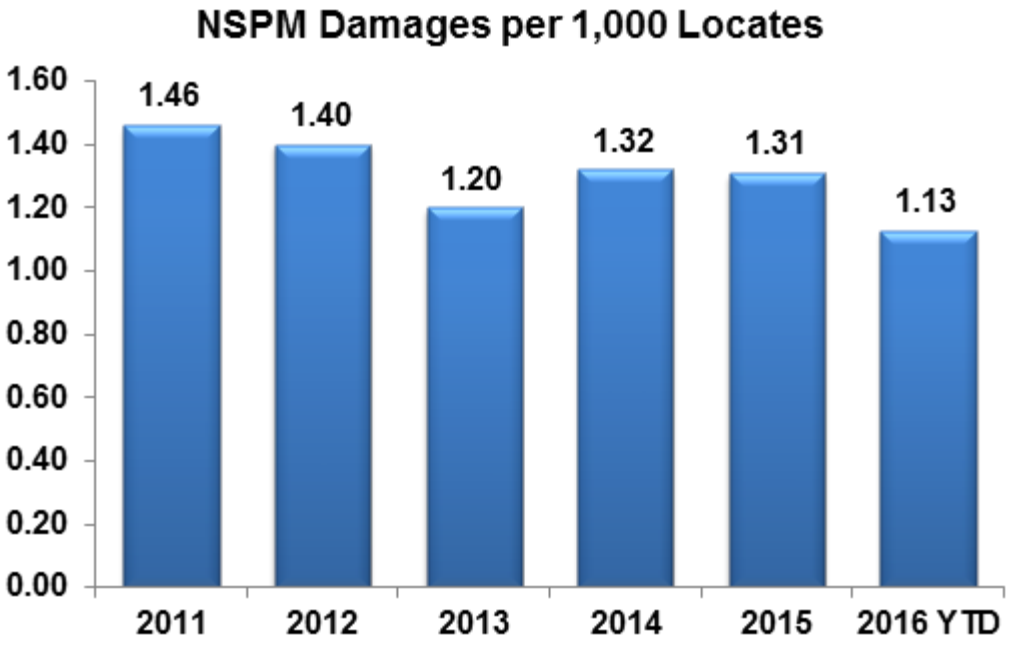


# Top System Threats

1. Excavation Damage

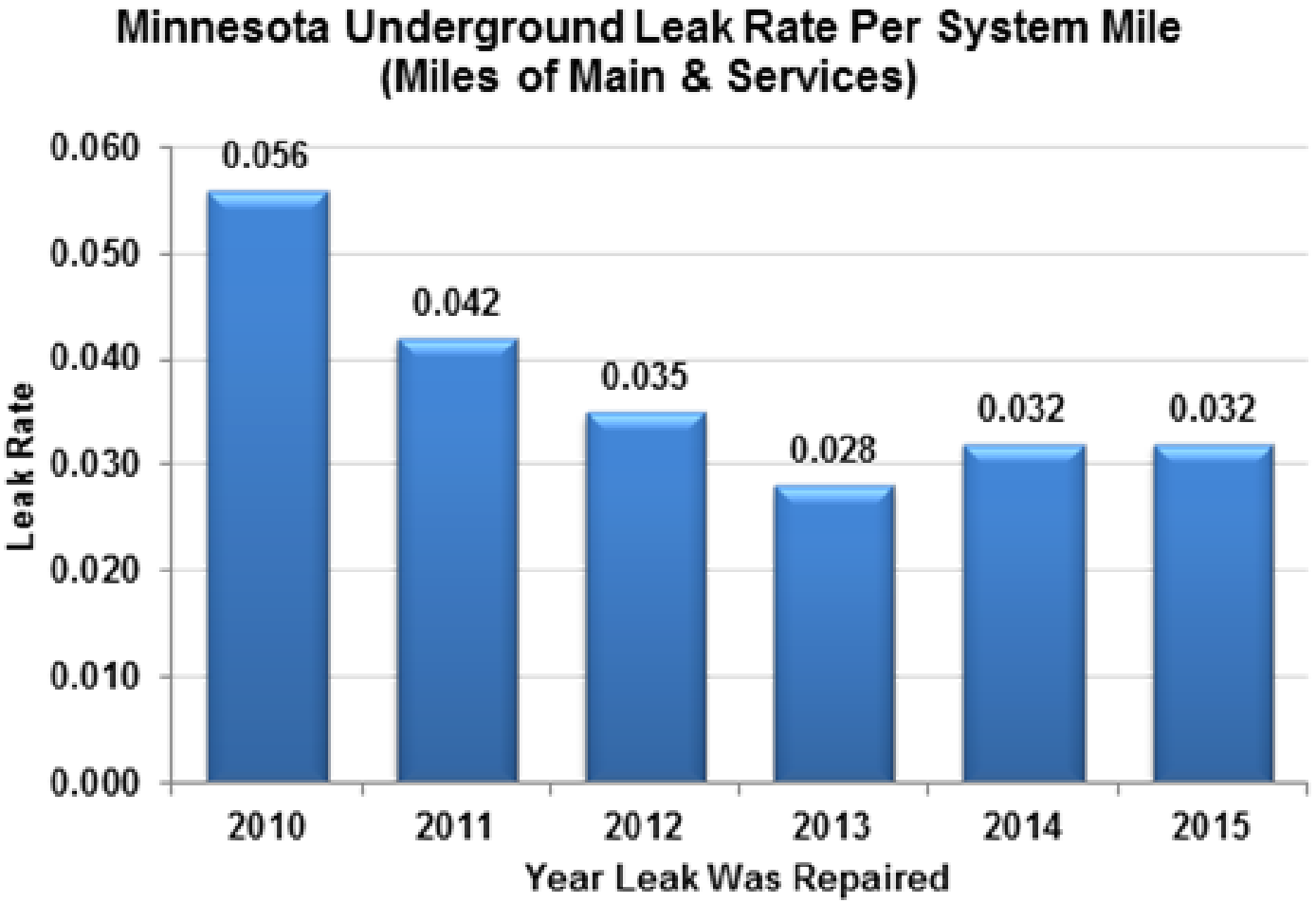
2. Leakage:
   - Vintage material
   - Vintage construction method
   - Vintage equipment

3. Corrosion



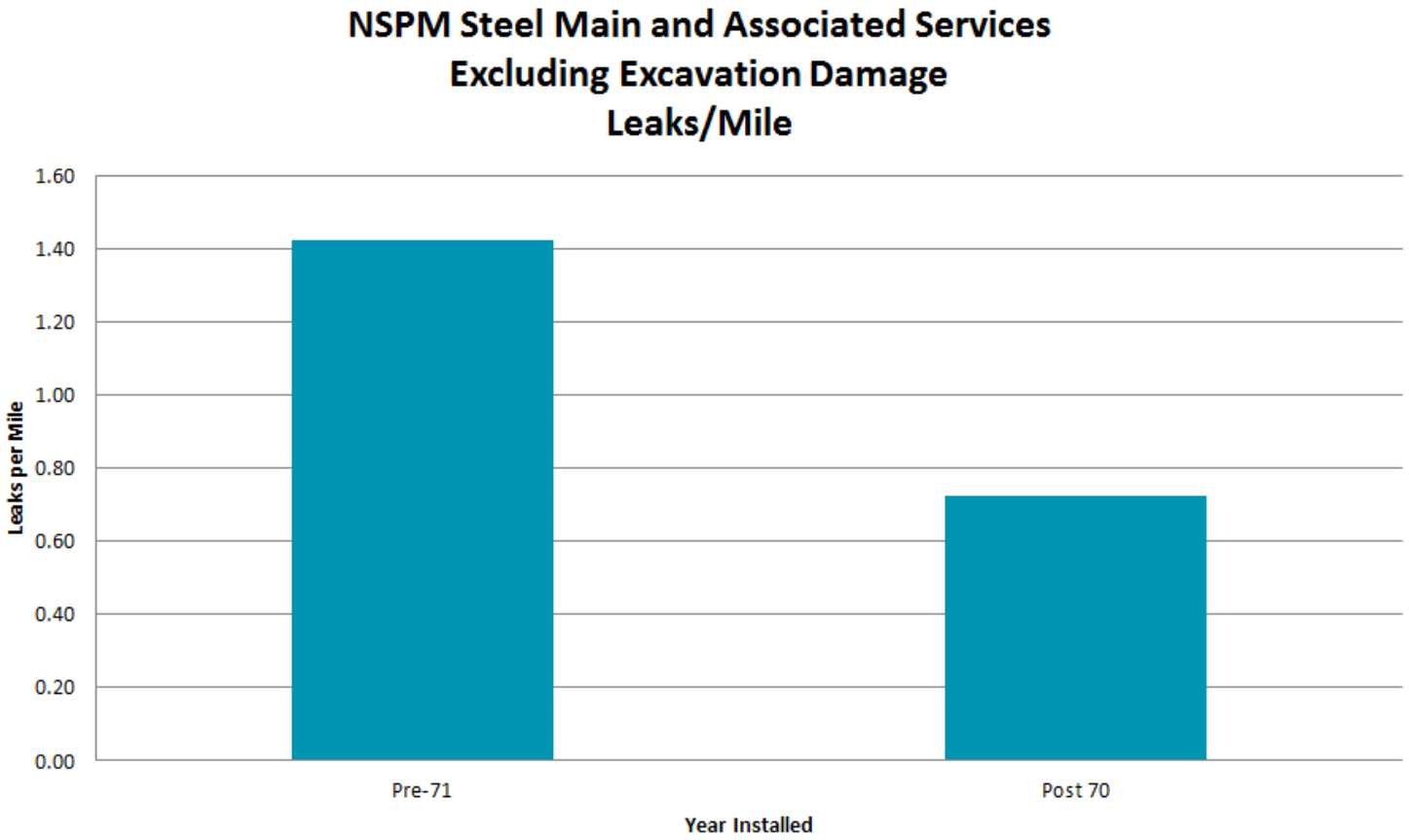

811 Know what's below. Call before you dig.

# Annual Leak Repair: Distribution



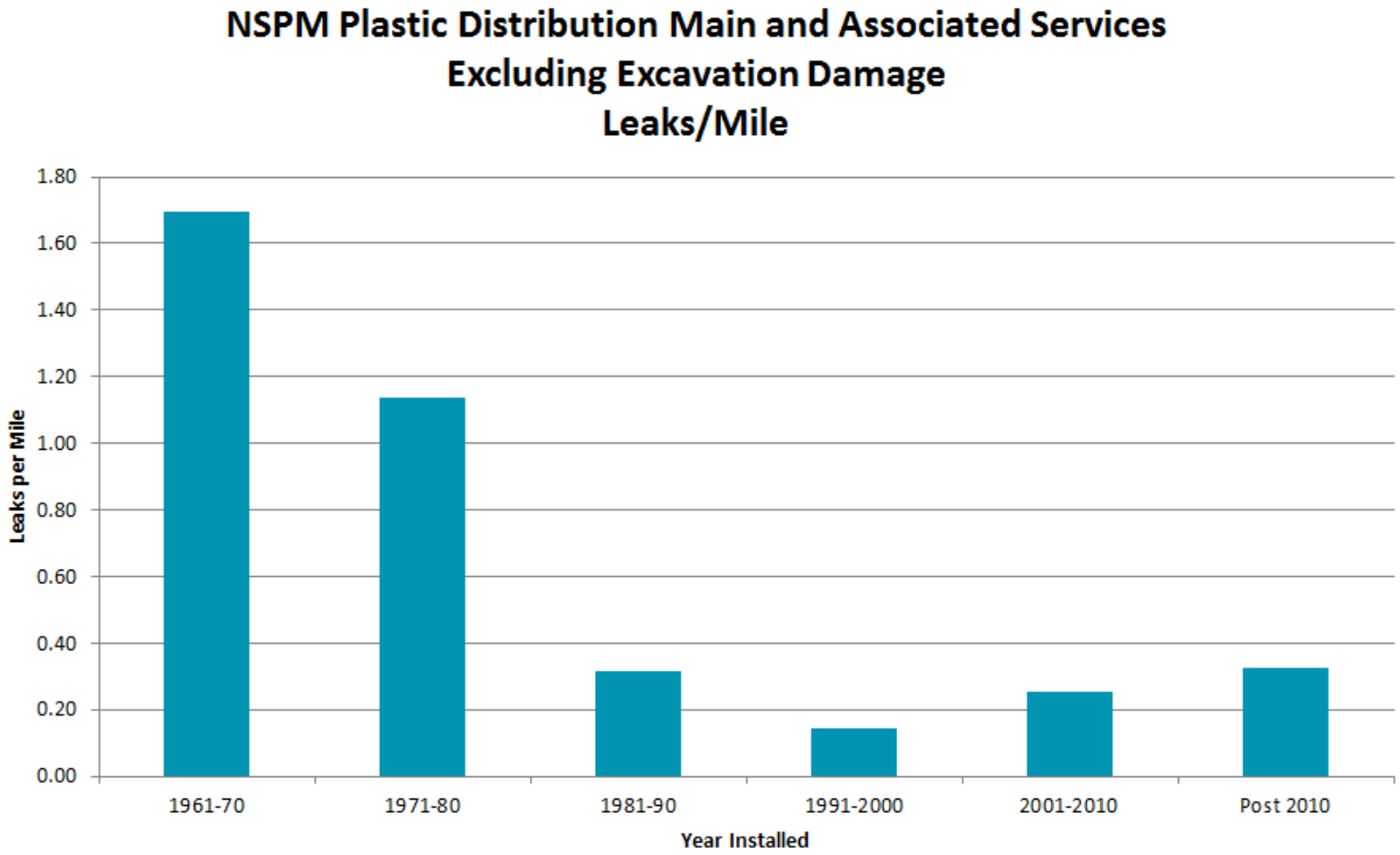

Service Miles are estimated based on service count and average service length of 102 feet

# Leak Rates: Steel Distribution by Year Installed



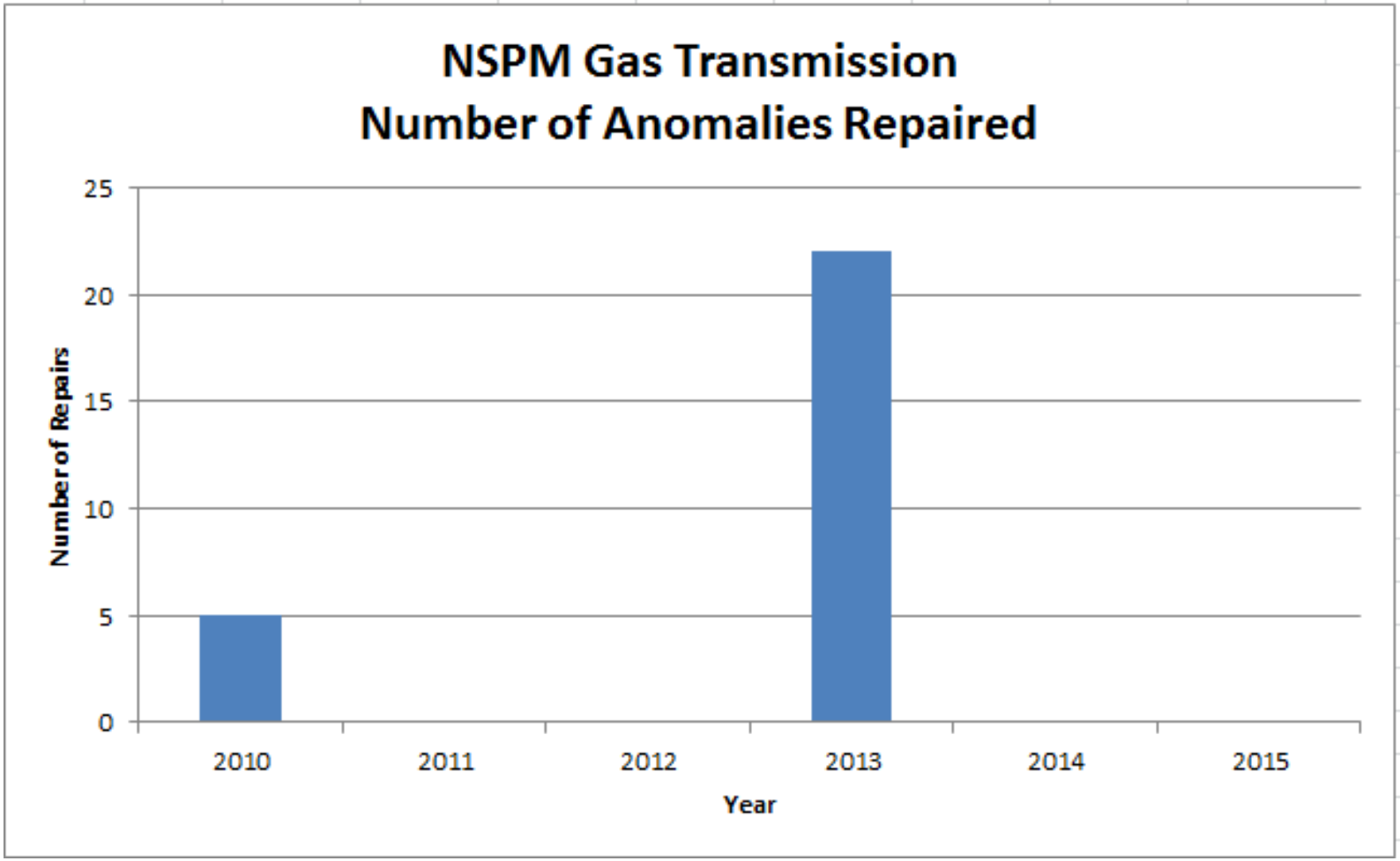

- Service Miles are estimated based on service count and average service length of 102 feet
- Leak Data from all available leak records

# Leak Rates: Plastic Distribution by Year Installed



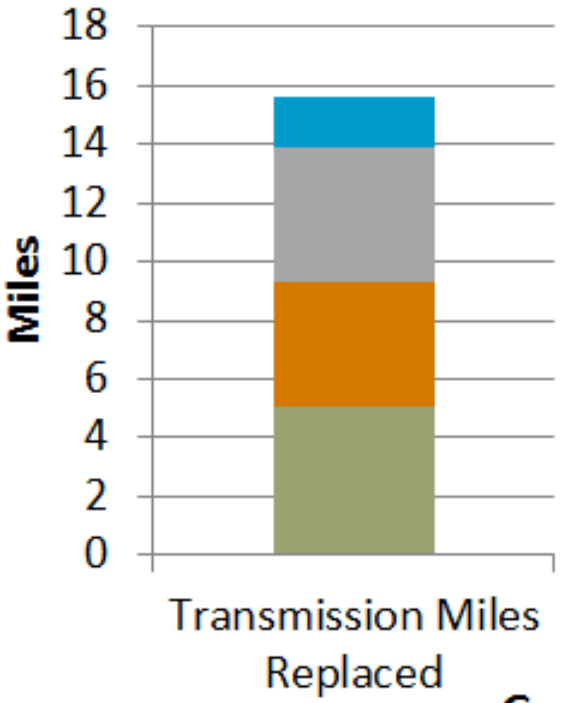

- Service Miles are estimated based on service count and average service length of 102 feet
- Leak Data from all available leak records

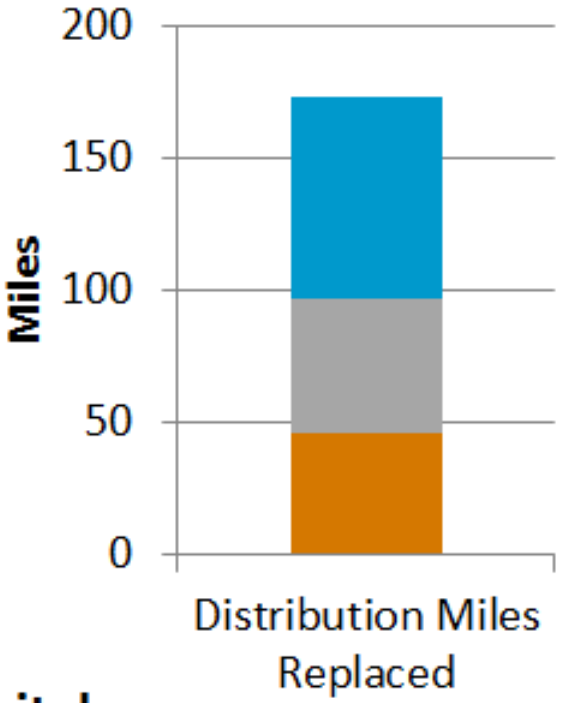
# Annual Anomalies Repaired: Transmission

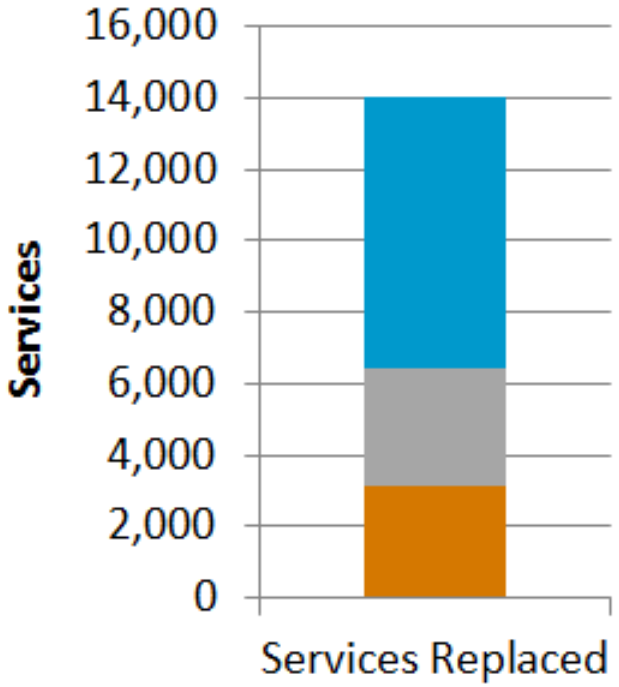


# GUIC Progress Report

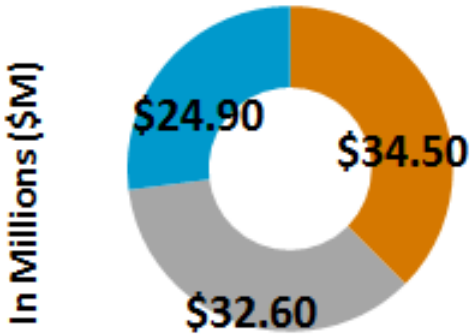
# Renewal Progress To Date



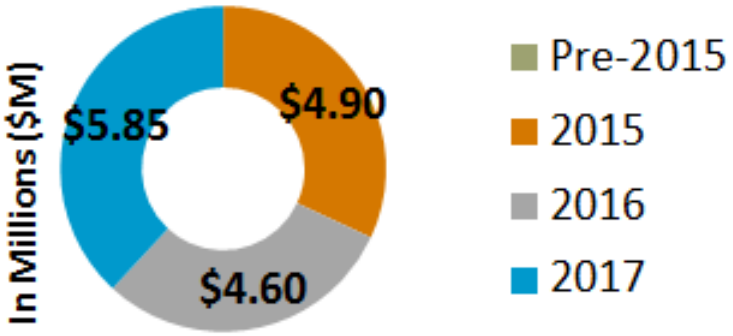



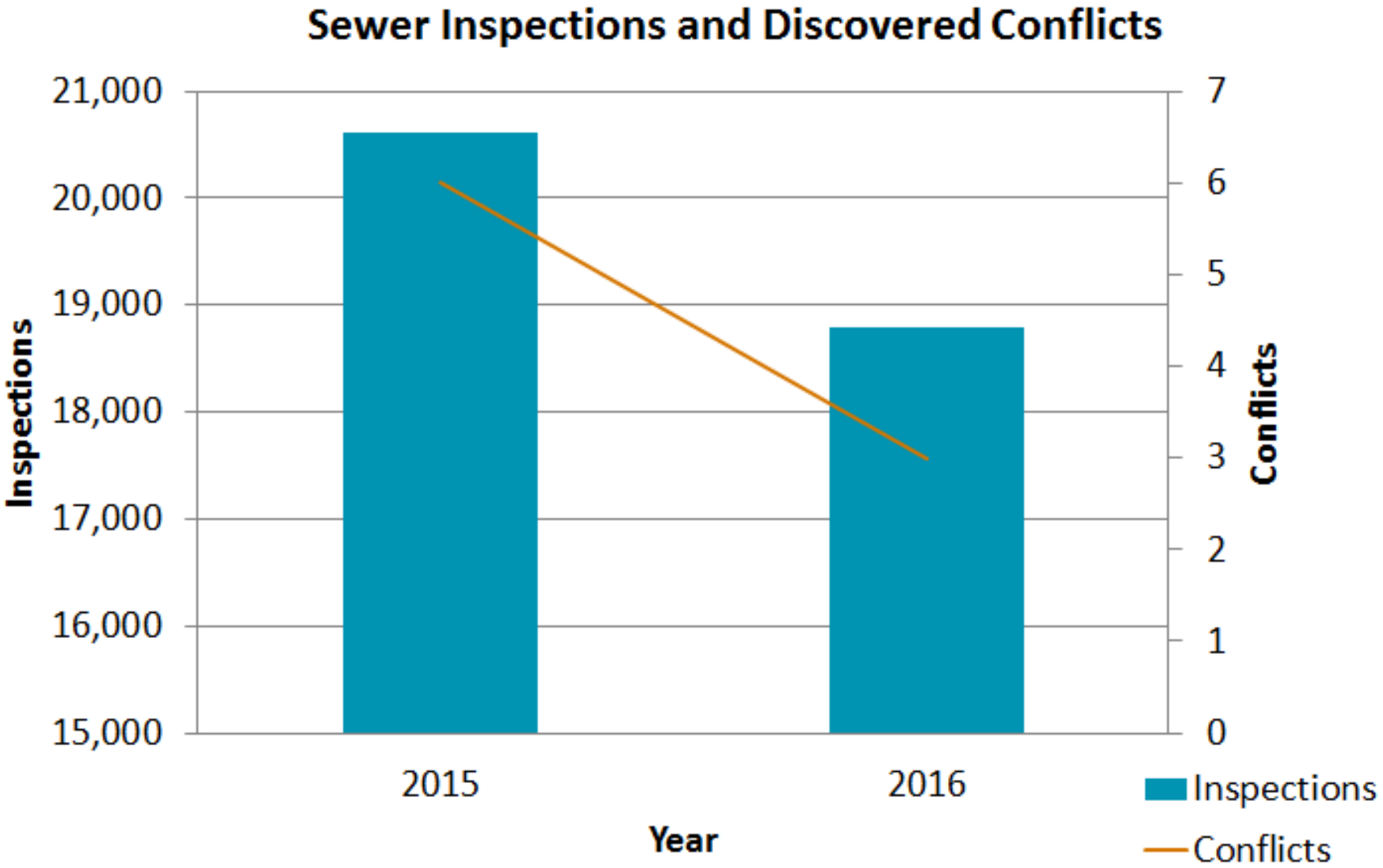

**Capital**



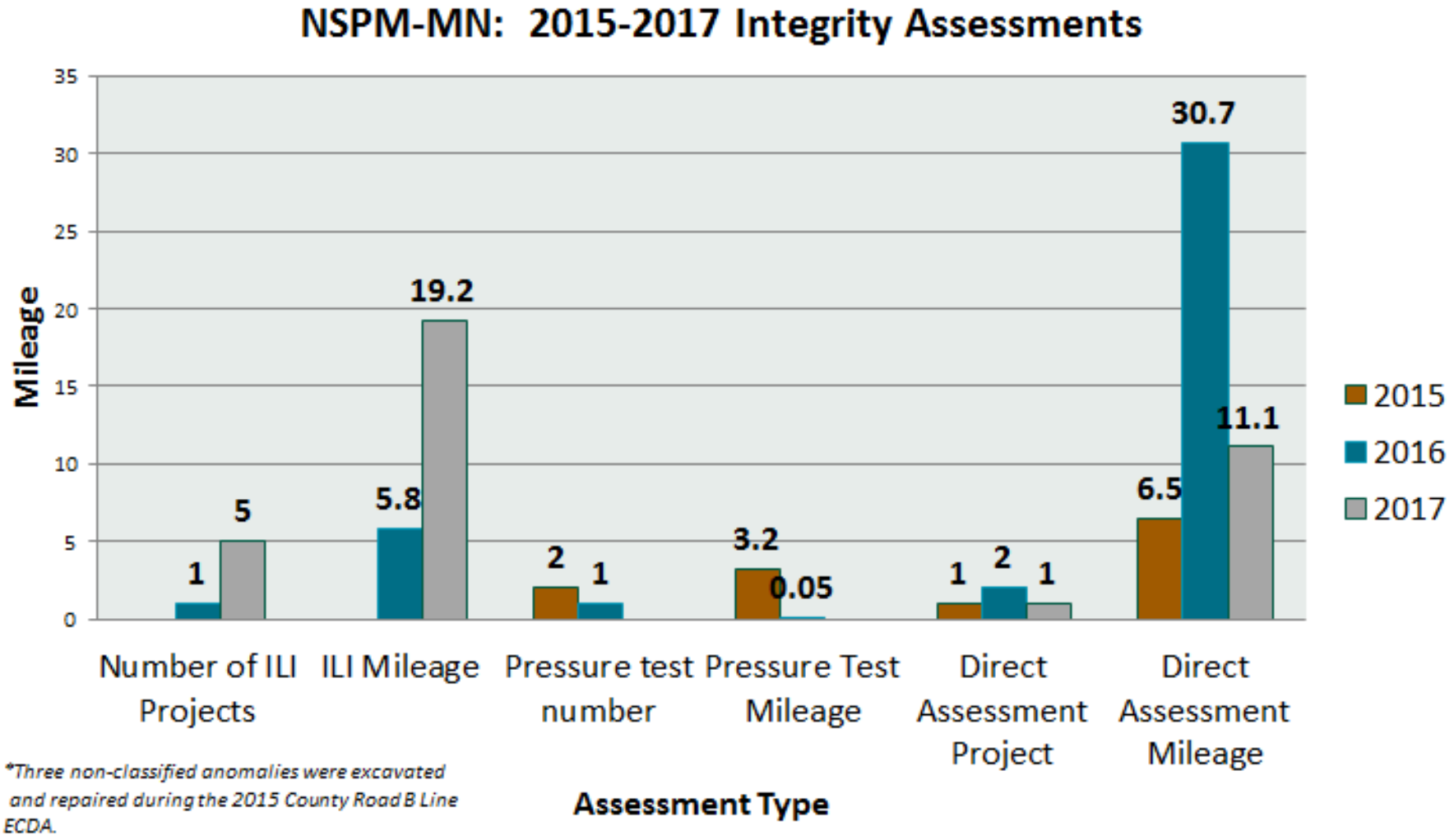

**O&M**



# Sewer Inspections



# Transmission Integrity Assessments




*Three non-classified anomalies were excavated and repaired during the 2015 County Road B Line ECDA.

# GUIC Financial Governance

# Governance process

- Focus on prudent management and customer value
  - Budget process (Capital and O&M)
    - Corporate Governance Process
    - Board of Directors
  - Competitive Bidding Process
    - Master Contracts
    - Change Orders
  - Capital Projects > $3M managed by Gas Project Management Department

# Oversight

- Monthly meeting: budget vs. actual results
  - Gas Leadership team, SVP Gas
- Rider Review Committee (RRC)
  - Additional governance process
  - Monitors types of projects in rider
  - No betterment
  - Members
    - SVP Gas
    - Senior Director, Gas Governance
    - Senior Director, Finance
    - Regional VP, Regulatory Affairs

# Risk Ranking Methodology

# Risk Ranking / Prioritization

- Goal of integrity programs: protect public, property and environment from pipeline failures
- Objective is to select the most impactful projects to improve pipeline safety
- Evaluates unwanted consequences and the likelihood of consequence occurring
- Risk ranking methodology
  - Quantitative risk score
  - Assign risk category (high, medium, low)
- Assigns numeric values to likelihood and consequence
  - Data (leaks, vintage material, etc.)
  - Assessment results
  - Subject Matter Expert (SME) input

# Risk = Likelihood x Consequence

Example – High Pressure Line Assessments

| Likelihood of Failure | | | Consequence: Class 1 (1) | Class 2 (2) | Class 3 (3) | Class 4 (4) |
|---|---|---|---|---|---|---|
| | Last Assessment > 35 years prior or no previous assessment | **3** | 3 | 6 | 9 | 12 |
| | 20 years ≤ Last Assessment < 35 years prior | **2** | 2 | 4 | 6 | 8 |
| | 10 years ≤ Last Assessment < 20 years prior | **1.5** | 1.5 | 3 | 4.5 | 6 |
| | Last Assessment < 10 years prior | **0.5** | 0.5 | 1 | 1.5 | 2 |

High Risk, Risk Score ≥ 8
Medium Risk, 4 ≤ Risk Score < 8
Low Risk, Risk < 4

# Recommended Performance Metrics

# 2017 NSPM GUIC Programs

| Program | Project | Capital ($ Millions) | O&M ($ Millions) |
|---|---|---|---|
| TIMP | East Metro Pipeline Replacement | $0.00 | $0.00 |
| | Transmission Pipeline Assessments | $1.61 | $1.30 |
| | ASV/RCV | $0.90 | $0.00 |
| | Programmatic Replacement/MAOP Remediation | $2.91 | $0.00 |
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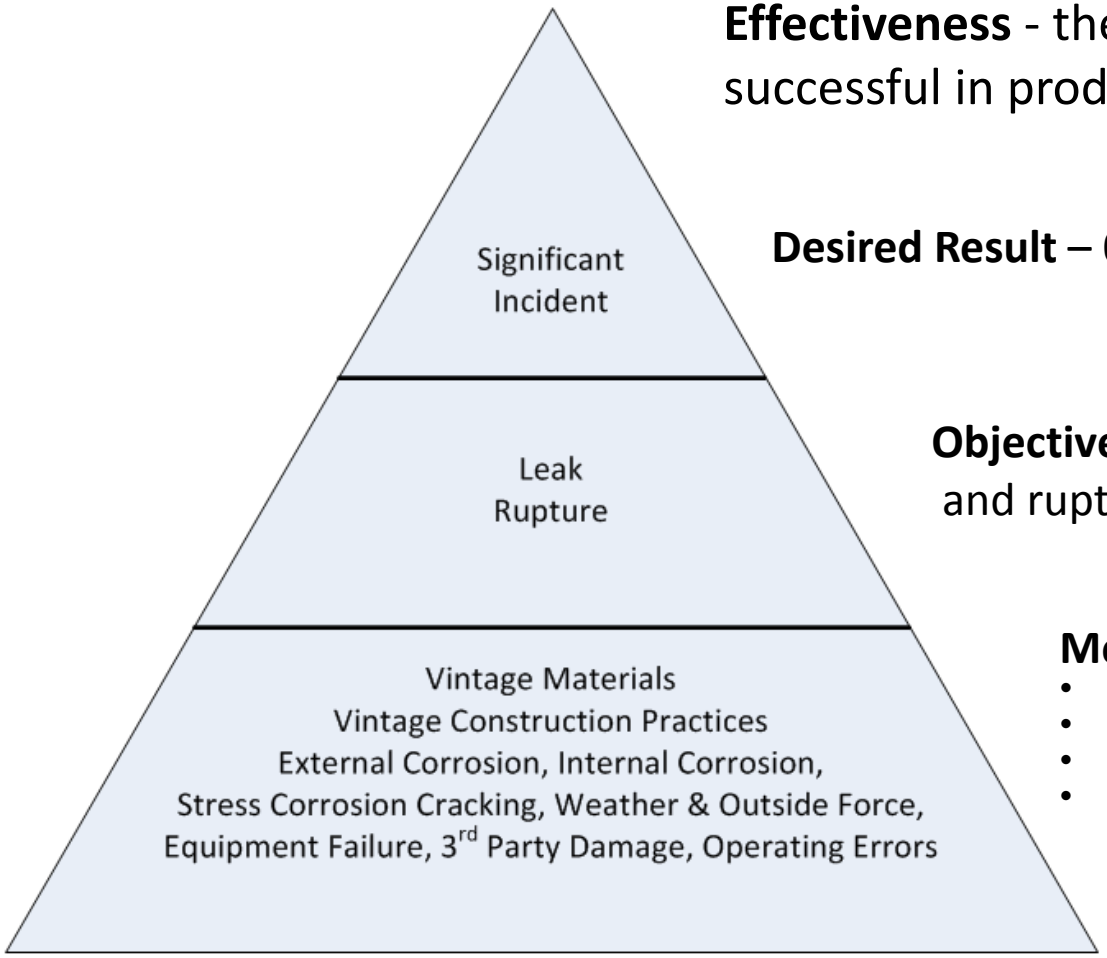
| | Federal Code Mitigation | $0.20 | $0.47 |
| TOTAL | | $24.94 | $5.85 |

- Over 83% of capital costs associated with pipe replacement programs
- Over 87% of O&M expenditures associated with inspections

# TIMP/DIMP Program Effectiveness




**Effectiveness** - the degree to which something is successful in producing the desired result.

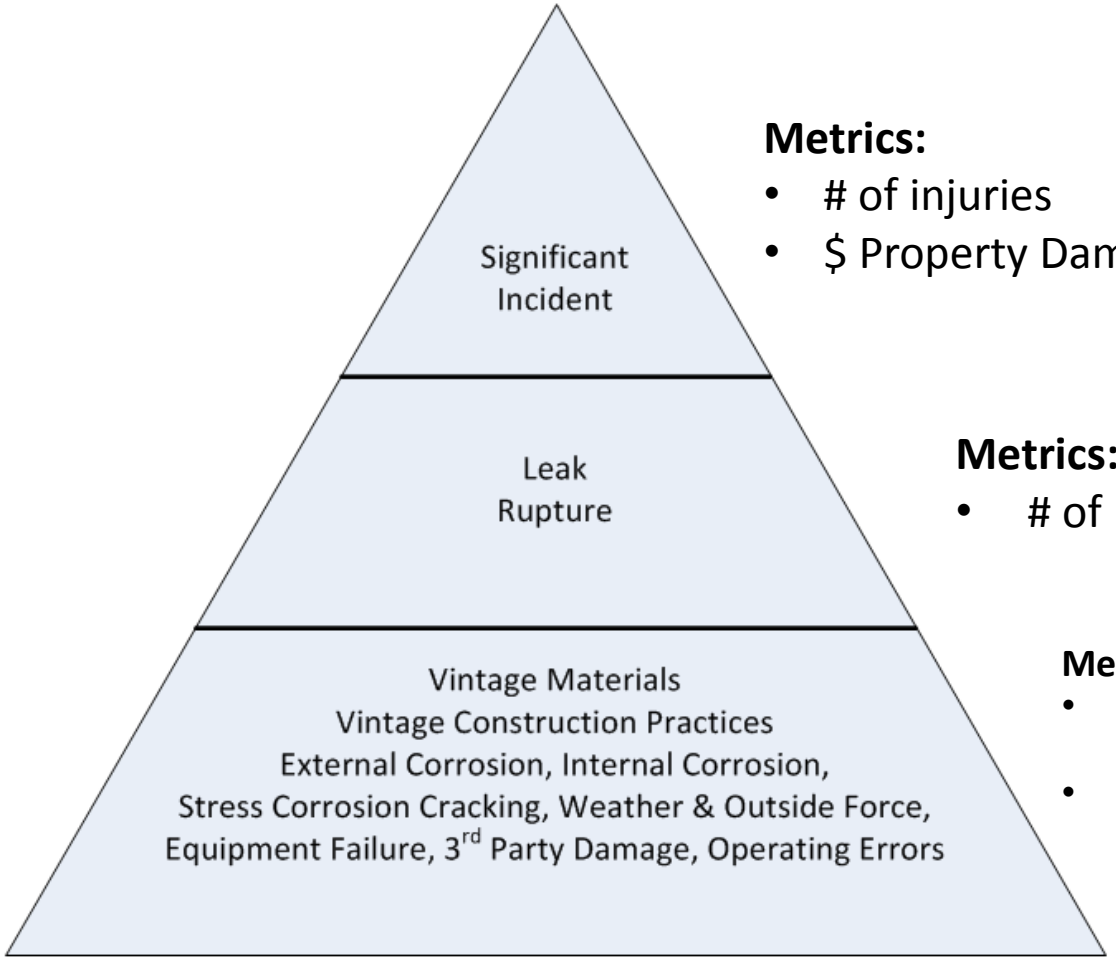
**Desired Result** – 0 injuries, no property damage

**Objective** – continuous reduction in leaks and ruptures

**Means - TIMP/DIMP Program Elements**

- Data & Knowledge
- Risk Assessment
- Integrity Assessment
- Preventative & Mitigative Measures
  - Replace
  - Repair
  - Pressure Test
  - Emergency Valves
  - Monitor (SCADA, Patrol, Leak Survey, etc.)

# TIMP/DIMP Performance Metrics




**Metrics:**
- # of injuries
- $ Property Damage

**Metrics:**
- # of Leaks/Ruptures

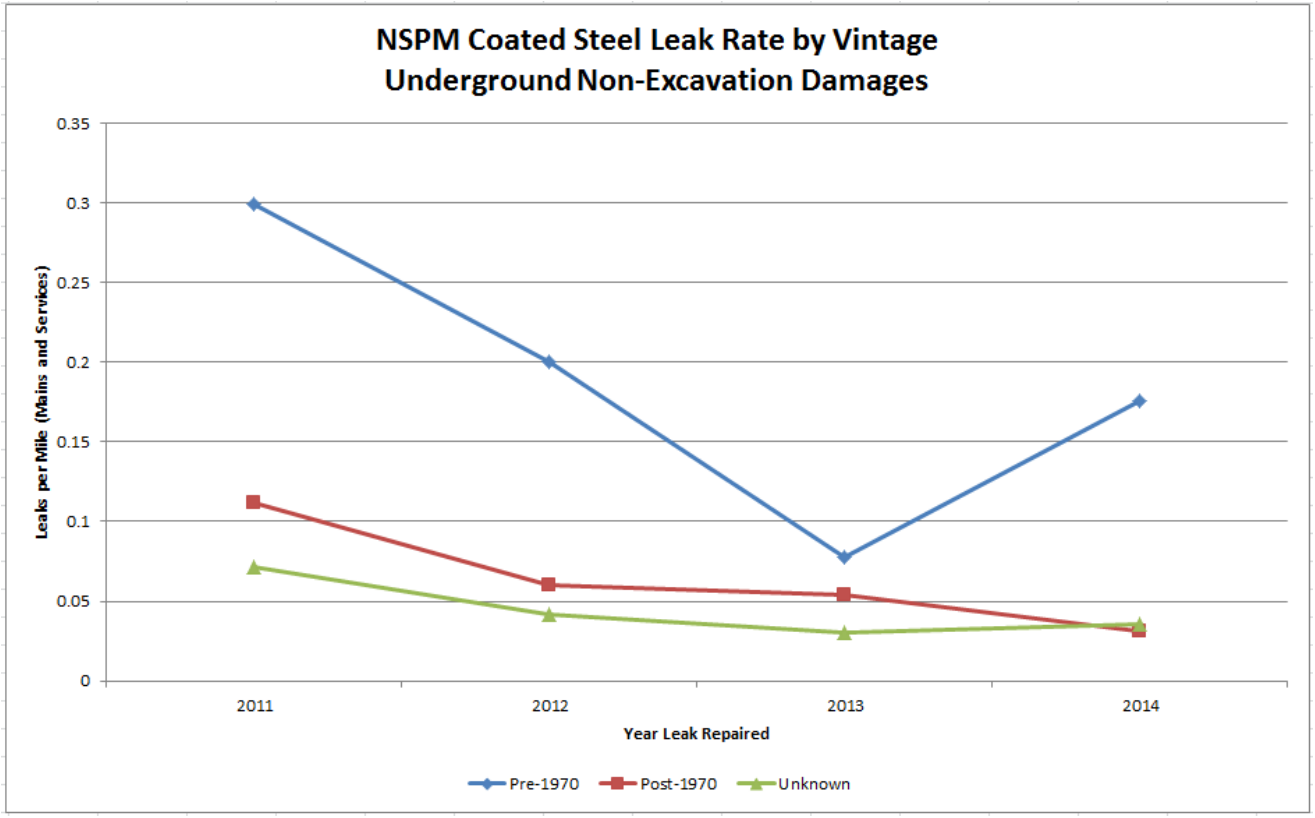
**Metrics:**
- 32 metrics specified in 49CFR 192.945
  - 4 reported annually
- 21 metrics specified in 49CFR 192. 1007(e)
  - 11 reported annually
  - Others as warranted

# DIMP Proposed Performance Metrics – Program Effectiveness

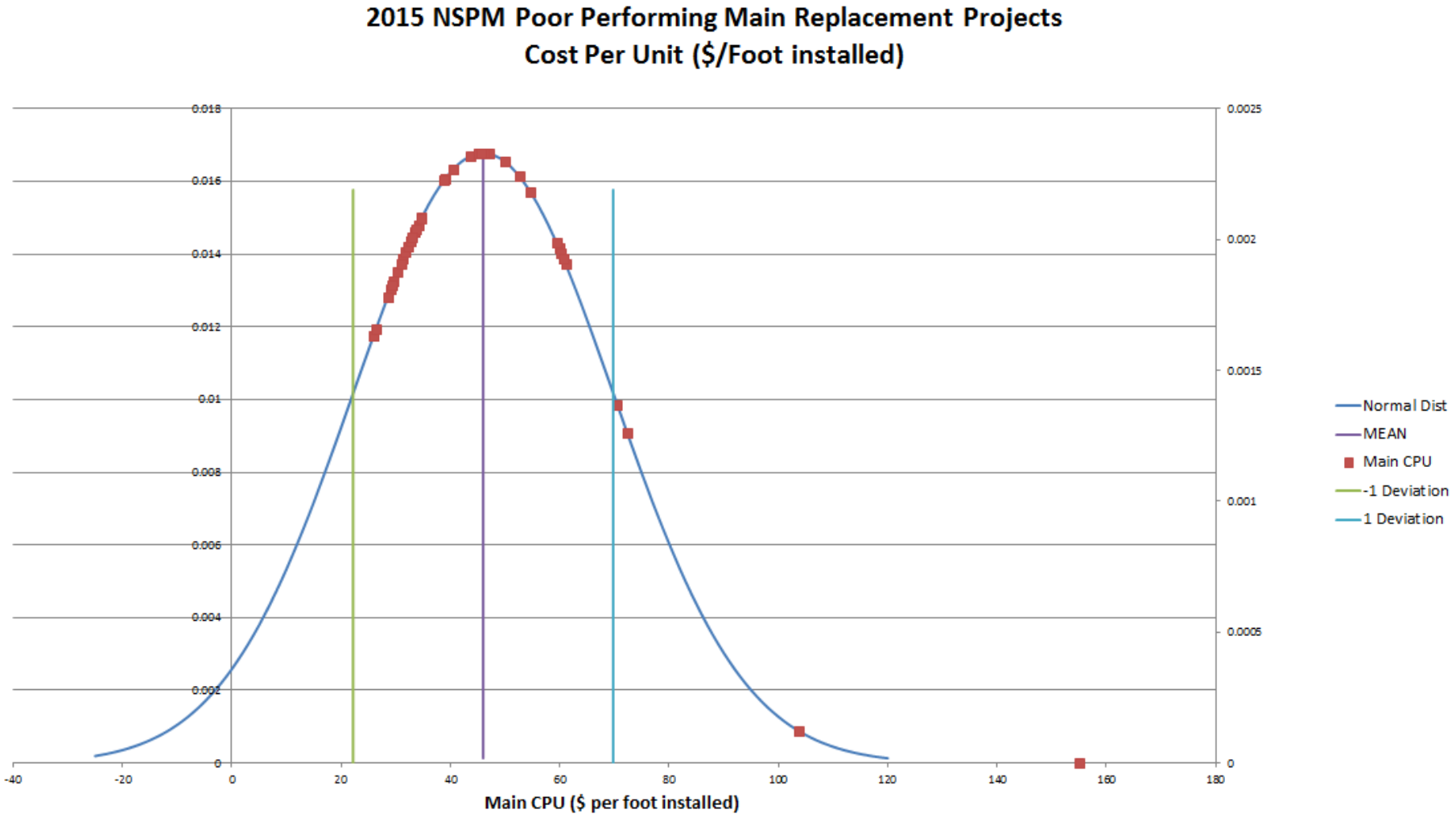
- **Metrics Focused on Largest Expenditures**
  - Pipe Replacement
- **DIMP Program Effectiveness**
  - Non-excavation damages leaks per mile
- **DIMP Program Efficiency**
  - Cost per foot (mains and services)
  - Variance explanation for projects exceed one standard deviation

# DIMP Program Effectiveness

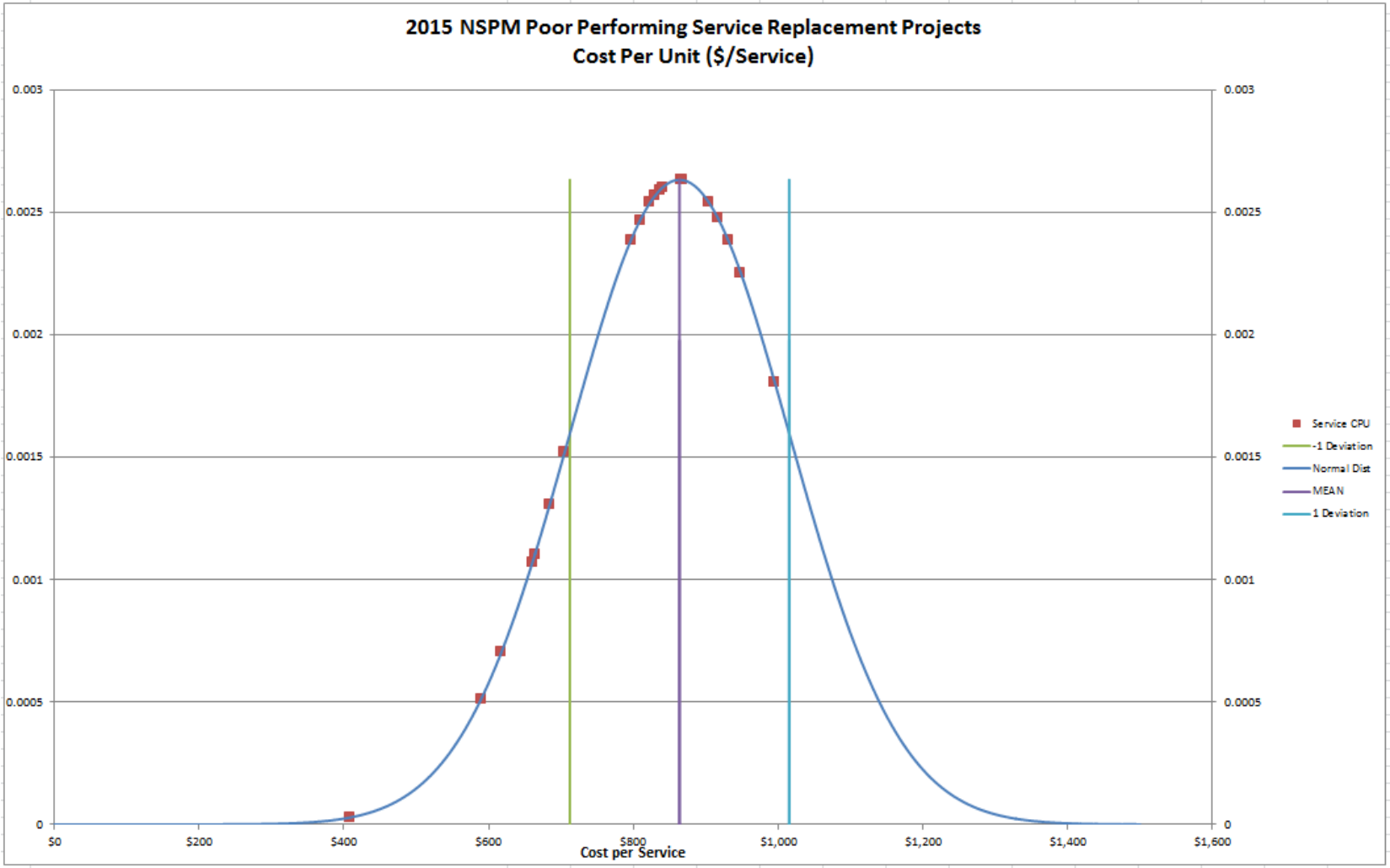
- Effectiveness Metric(s) specifically required by 49 CFR 192.1007(e) include:
  - Total number of leaks either eliminated or repaired, categorized by cause (e.g., Below ground leaks that are not Excavation Damage)



# DIMP Program Efficiency – Main Cost per Foot



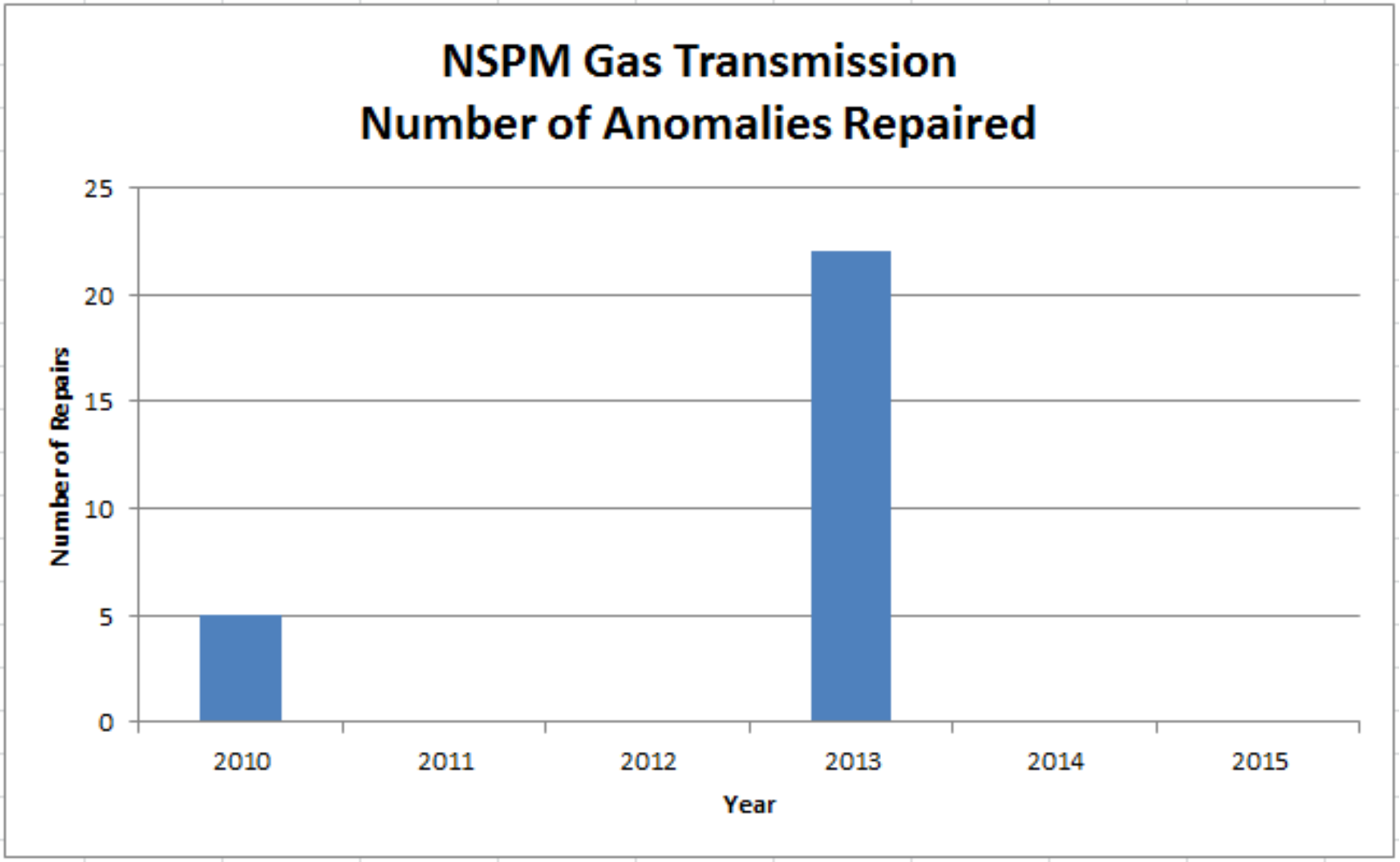
# DIMP Program Efficiency – Service Cost per Service



# TIMP Proposed Performance Metrics – Program Effectiveness

- **Metric Focused on Largest Expenditures**
  - Assessments, and
  - Pipe Replacement
- **TIMP Program Effectiveness**
  - Number of anomalies repaired
- **TIMP Program Efficiency**
  - Actual vs. Estimated Cost with Variance explanation

# TIMP Anomalies Repaired



# 2017 TIMP Projects

- TIMP Assessments

| Line/Loop | Type | Project Length (mi) | Project Type |
|---|---|---|---|
| Wescott 8" Line | ILI | 1.6 | Capital |
| Rosemount Line | ILI | 7.9 | O&M |
| Island Line (South of River) | ILI* | 1.9 | Capital |
| Inver Hills Lateral | ILI* | 2.0 | Capital |
| Lake Elmo Line | ILI* | 5.8 | Capital |
| Montreal Line North | TBD | 0.3 | Capital |

*Island Line S and Inver Hills Lateral are being made piggable in 2016, ILI runs to be completed in 2017

- TIMP Pipe Replacements

| Line/Loop | Type | Project Length (mi) | Project Type |
|---|---|---|---|
| Montreal Line South | Replacement | 0.2 | Capital |
| Island Line South | Replacement | 1.5 | Capital |
| East County Line Renewal – S.St. Paul Station to RR Tracks | Design & Engineering/Easement Acquisition | 0.5 | Capital |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## CERTIFICATE OF SERVICE

I, Lynnette Sweet, hereby certify that I have this day served copies or summaries of the foregoing documents on the attached list(s) of persons.

xx by depositing a true and correct copy thereof, properly enveloped with postage paid in the United States Mail at Minneapolis, Minnesota

xx electronic filing

**Docket No. G002/M-16-891**

Dated this 13th day of January 2017

/s/

_____

Lynnette Sweet
Regulatory Administrator

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| Daniel P | Wolf | dan.wolf@state.mn.us | Public Utilities Commission | 121 7th Place East<br>Suite 350<br>St. Paul,<br>MN<br>551012147 | Electronic Service | Yes | OFF_SL_16-891_M-16-891 |