

WELCOME

» LARGE EFV TEAM

MIKE ISRANI

**SENIOR TECHNICAL ADVISOR
MANAGER: NATIONAL STANDARDS
PHMSA**

June 23, 2009

WHY ARE WE HERE?

- ▶ Consider NTSB Recommendation P-01-2
 - Forum for stakeholder views
 - Share current EFV technology
 - Identify customers that will be affected
 - Review incidents subject to mitigation
 - Review EFV utilization data
 - Discuss performance standards for large EFVs

ORGANIZATIONS REPRESENTED

- ▶ Pipeline Regulatory Agencies
 - PHMSA – OPS
 - NAPS R

ORGANIZATIONS REPRESENTED

▶ Public and Municipal Utilities

- AGA
- APGA

▶ Vendors

- UMAC
- Dresser
- RW Lyall & Company

AGENDA OVERVIEW

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BACKGROUND

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BACKGROUND

- ▶ PHMSA's role
 - Assure that pipelines are safe, reliable, and responsive to environmental issues
- ▶ This team's role
 - Provide input to inform PHMSA's response to NTSB Recommendation P-01-2

BACKGROUND

- ▶ PHMSA's approach
 - Assure opportunity for input from stakeholders
 - Data driven
 - Cost effective

PHMSA'S OBJECTIVES FOR TODAY'S MEETING

- ▶ Receive input from participating stakeholders
- ▶ Identify
 - Technical issues applicable to EFVs in services other than single unit residences
 - Issues that would need to be addressed in EFV performance standards
 - Additional data that would better inform the approach for addressing P-01-2

EFV REGULATIONS PRIOR TO PIPES ACT OF 2006

- ▶ Rules effective February 3, 1999 regulated EFVs installed on single unit residence service lines
 - *49 CFR 192.381* Performance Criteria
 - *49 CFR 192.383* EFV customer notification

EFV INSTALLATIONS PRIOR TO PIPES ACT OF 2006

- ▶ EFVs installed on 7% of respondent services
- ▶ 40% of gas operators had zero EFV installations
- ▶ 69% of operators installed EFV only if requested by customer
- ▶ < 2% of customers requested EFV installation
- ▶ Within individual states gas operators had dissimilar installation policies

PIPES ACT OF 2006

- ▶ Section 9 mandated that PHMSA require EFV installation on new and replacement single family residential service lines operating at ≥ 10 psig continuously throughout the year

PIPES ACT OF 2006

- ▶ LPG and master meter operators excluded
- ▶ Exceptions to the rule: EFV not required
 - If operator has prior experience with gas contaminants that would cause EFV to malfunction
 - If EFV would result in loss of service or interfere with maintenance activities
 - If EFV meeting performance standards not commercially available

IMPLEMENTATION OF PIPES ACT of 2006

- ▶ Advisory Bulletin ADB-08-04
 - Advised gas distribution operators that EFV mandate went into effect June 1, 2008
- ▶ NPRM for DIMP
 - Proposed repeal of *49 CFR 192.383*, EFV notification requirement
 - Proposed *49 CFR Section 192.1011* which documents EFV requirements of PIPES Act
 - Requires operators of natural gas service lines to report annually the number of EFVs installed

NTSB RECOMMENDATION P-01-2

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NATIONAL TRANSPORTATION SAFETY BOARD

The National Transportation Safety Board investigates serious pipeline accidents, including those that occur on gas distribution systems. To improve gas distribution safety, NTSB has recommended the use of EFVs in all new construction and replacement gas distribution service lines.

NTSB EFV RECOMMENDATIONS HISTORY

▶ 1980's

NTSB advocated use of EFVs on

- Service lines to schools and other buildings in which large numbers of people gather
- New and renewed residential service lines

NTSB EFV RECOMMENDATIONS HISTORY

- ▶ 1990's
 - Use of EFVs on 1990 NTSB list of *Most Wanted Safety Improvements*
 - September 26, 1990 NTSB Recommendation P-90-12 issued. Required installation of EFVs on new and renewed single family residential services where conditions permitted
 - September 28, 1995 NTSB closed P-90-12 with designation *Closed-Unacceptable Action*

NTSB EFV RECOMMENDATION HISTORY

► 1990's

March 6, 1996 2 recommendations issued

- P-96-2 to RSPA All gas customers should be notified that EFV available if conditions permitted
- P-96-3 to US Governors Gas distribution operators required to install EFVs in all new or replaced services where conditions permitted

NTSB EFV RECOMMENDATION HISTORY

▶ 1990's

February 3, 1998 RSPA issued EFV final rule

- Mandated installation of EFVs on new or replaced single family residence services expected to operate continuously at ≥ 10 psig or
- Notification to single family residence customers of benefits and availability of EFV with installation provided if customer paid

NTSB EFV RECOMMENDATION HISTORY

▶ 1990's

October 6, 1998 NTSB closed P-96-2 with designation *Closed-Unacceptable Action*

▶ 2000's

➤ May 3, 2000 NTSB removed EFV recommendations from *Most Wanted List*

➤ October 3, 2000 NTSB closed P-96-3 with designation *Closed-Acceptable Alternate Action*

NTSB EFV RECOMMENDATION HISTORY

▶ 2000's

June 22, 2001

NTSB issued Recommendation P-01-2

- PHMSA should require operators to install EFVs on all new and replacement service lines
- All customer classifications with suitable gas service conditions included

BACKGROUND DATA

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DATA ANALYSIS GOALS

- ▶ Identify the in-place service line population subject to NTSB P-01-2
- ▶ Identify incidents that could have been mitigated by EFVs
- ▶ Review NRRI survey of EFV utilization
 - How many EFVs are being installed?
 - Are EFVs mitigating incidents?
 - Are there performance issues?
 - What are the costs?

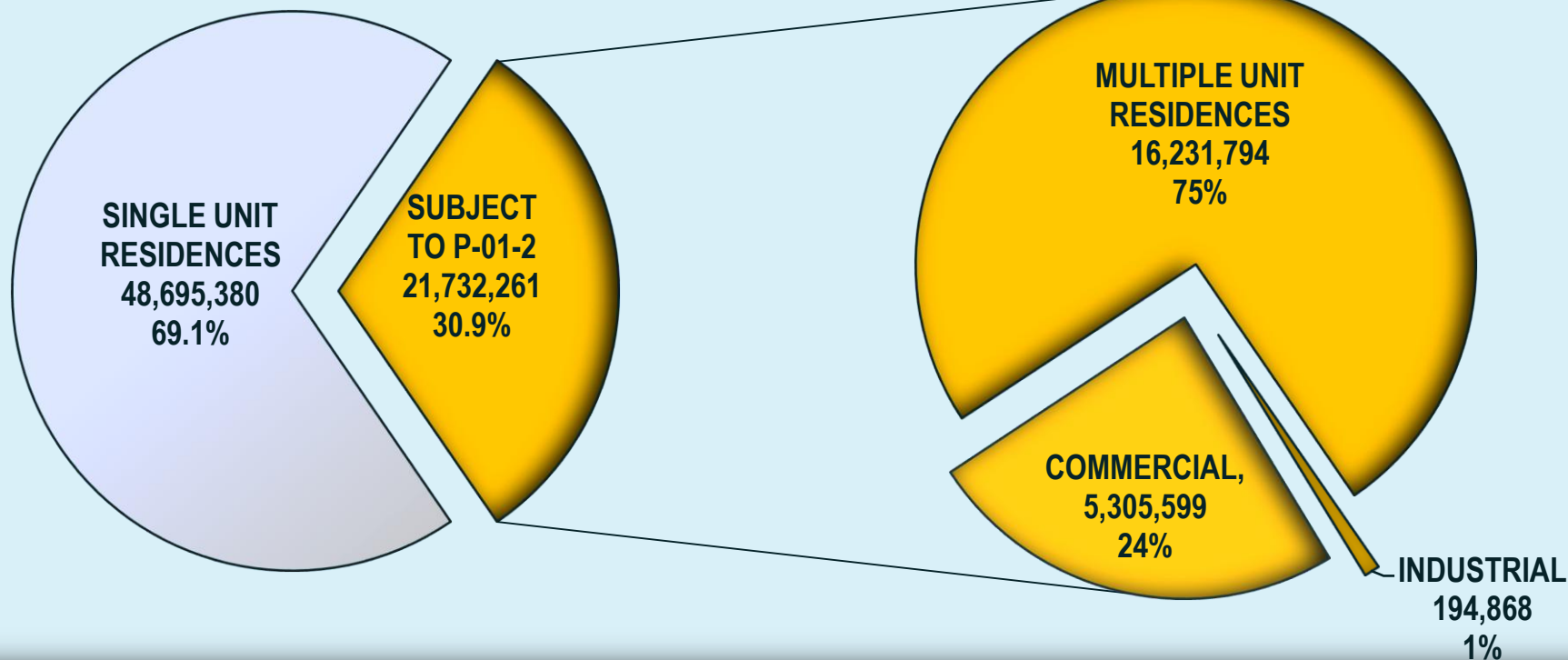
IDENTIFICATION OF IN-PLACE GAS SERVICES SUBJECT TO NTSB RECOMMENDATION P-01-2

IN PLACE GAS SERVICES SUBJECT TO NTSB RECOMMENDATION

GAS DISTRIBUTION END USERS

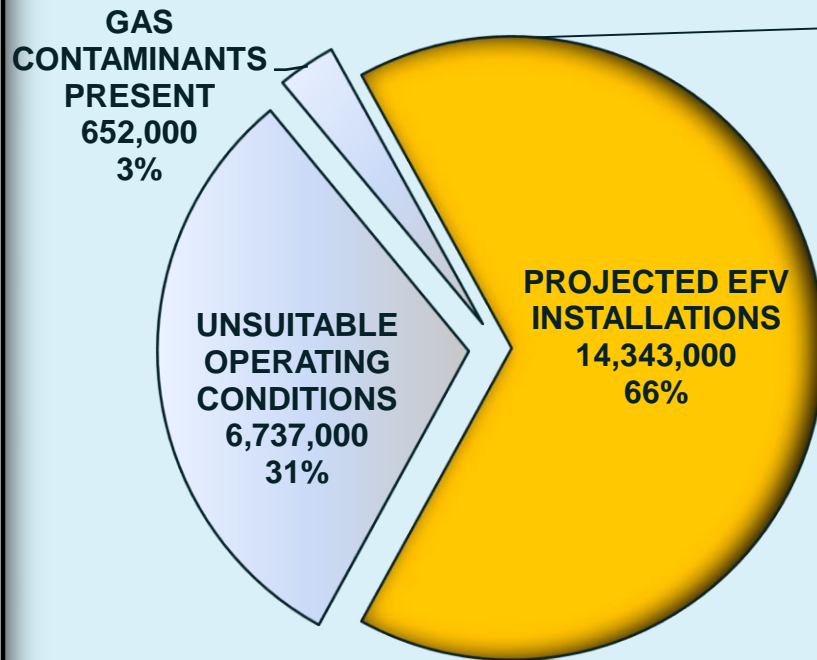
70,427,641
AGA 2007 TOTAL

21,732,261
SUBJECT TO NTSB P-01-2

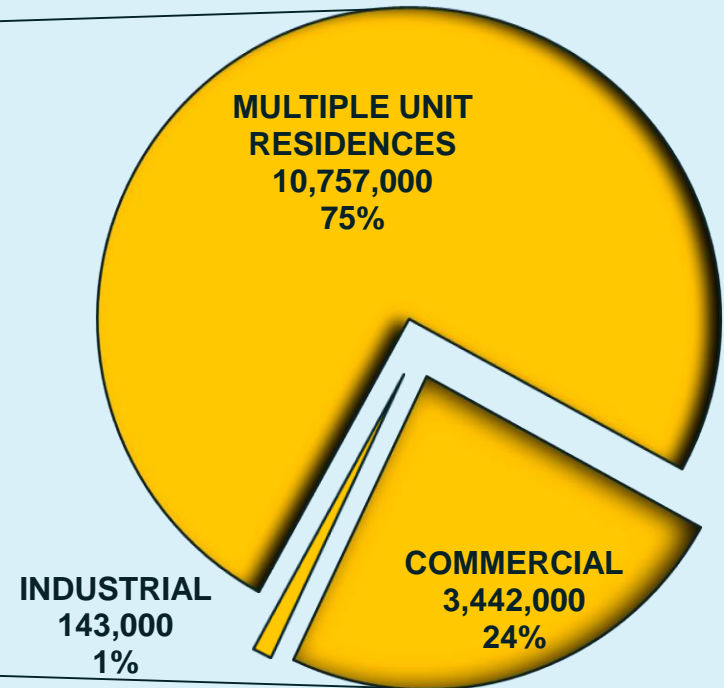


IN PLACE GAS SERVICES SUBJECT TO NTSB RECOMMENDATION

21,732,000
SERVICES
SUBJECT TO P-01-2



14,343,000
SERVICES THAT WOULD
REQUIRE EFV WHEN REPLACED



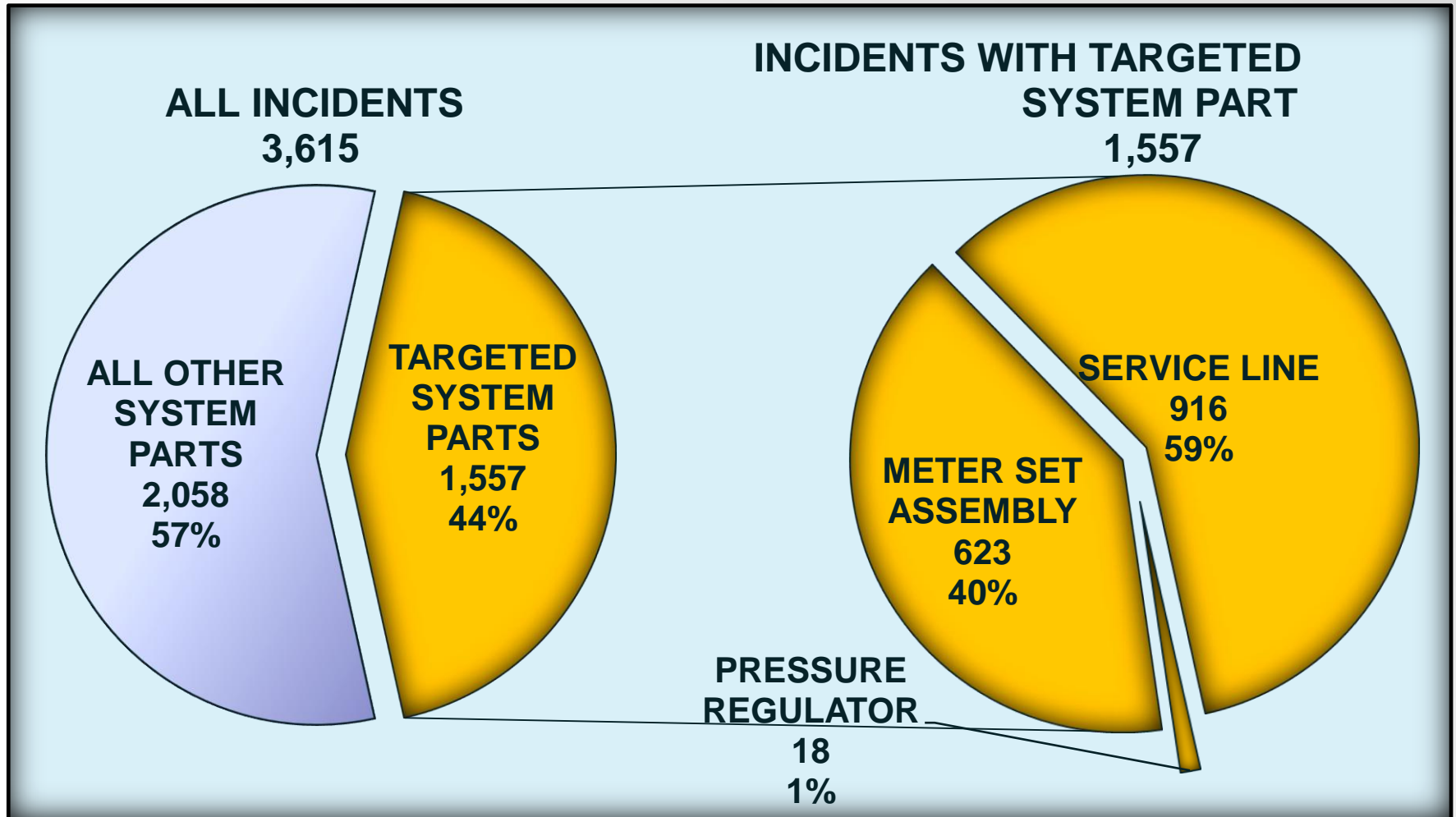
Pipeline and Hazardous
Materials Safety Administration

INCIDENT CANDIDATES FOR EFV MITIGATION

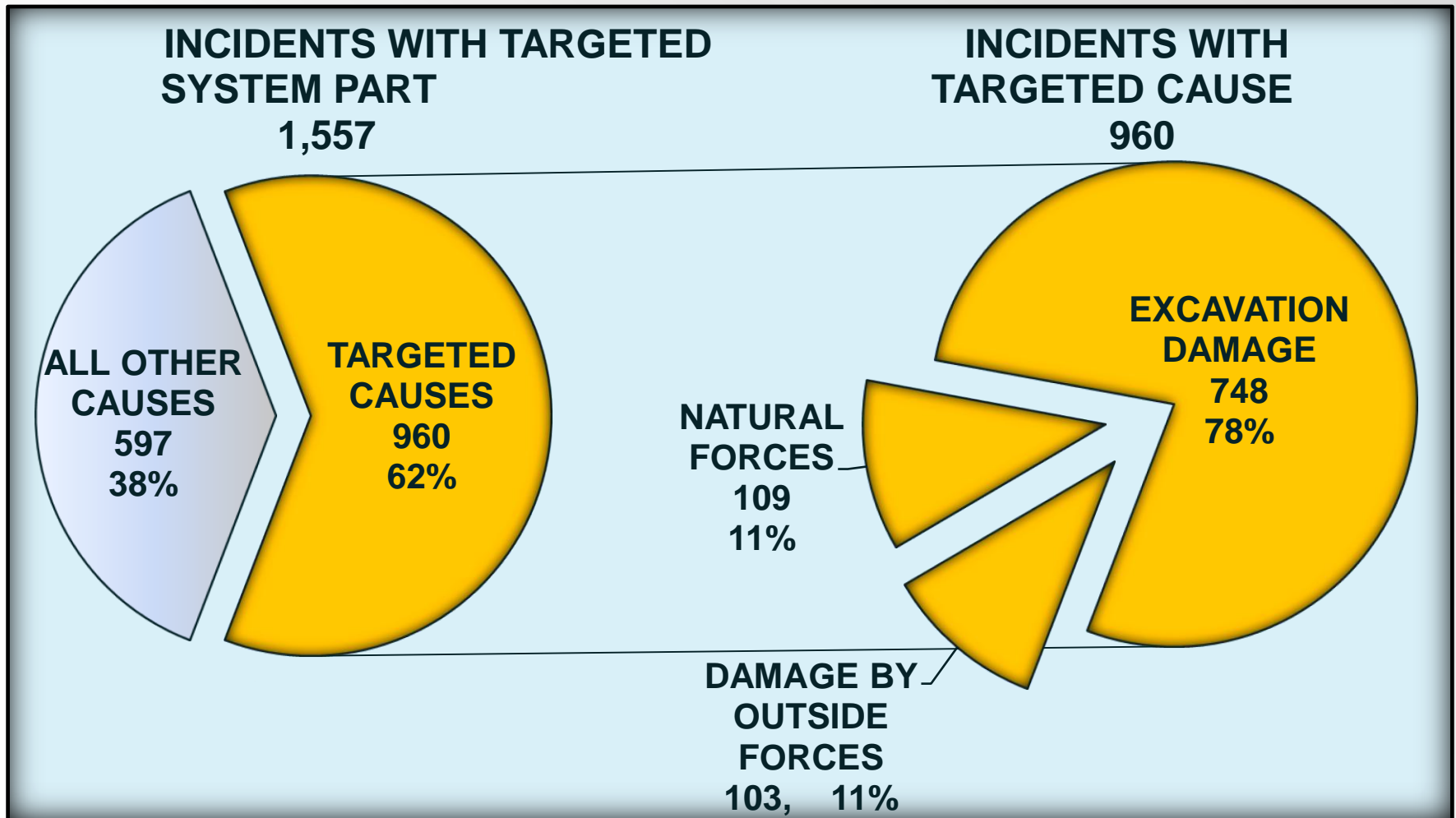
INCIDENT CANDIDATES FOR EFV MITIGATION

- ▶ Applied **filters** to 1984-2009 data in PHMSA gas distribution incident database. Identified incidents that occurred on lines meeting the following criteria:
 - **Targeted system parts**
Service line, meter assembly set, pressure regulator
 - **Targeted cause**
Excavation damage, natural force, or outside force
 - **Targeted system pressure**
 $5 \leq P < 10$ psig, or $P \geq 10$ psig
 - **Non-single family residential service**
Commercial, industrial, multi-family residential

IDENTIFICATION OF CANDIDATE INCIDENTS SYSTEM PART

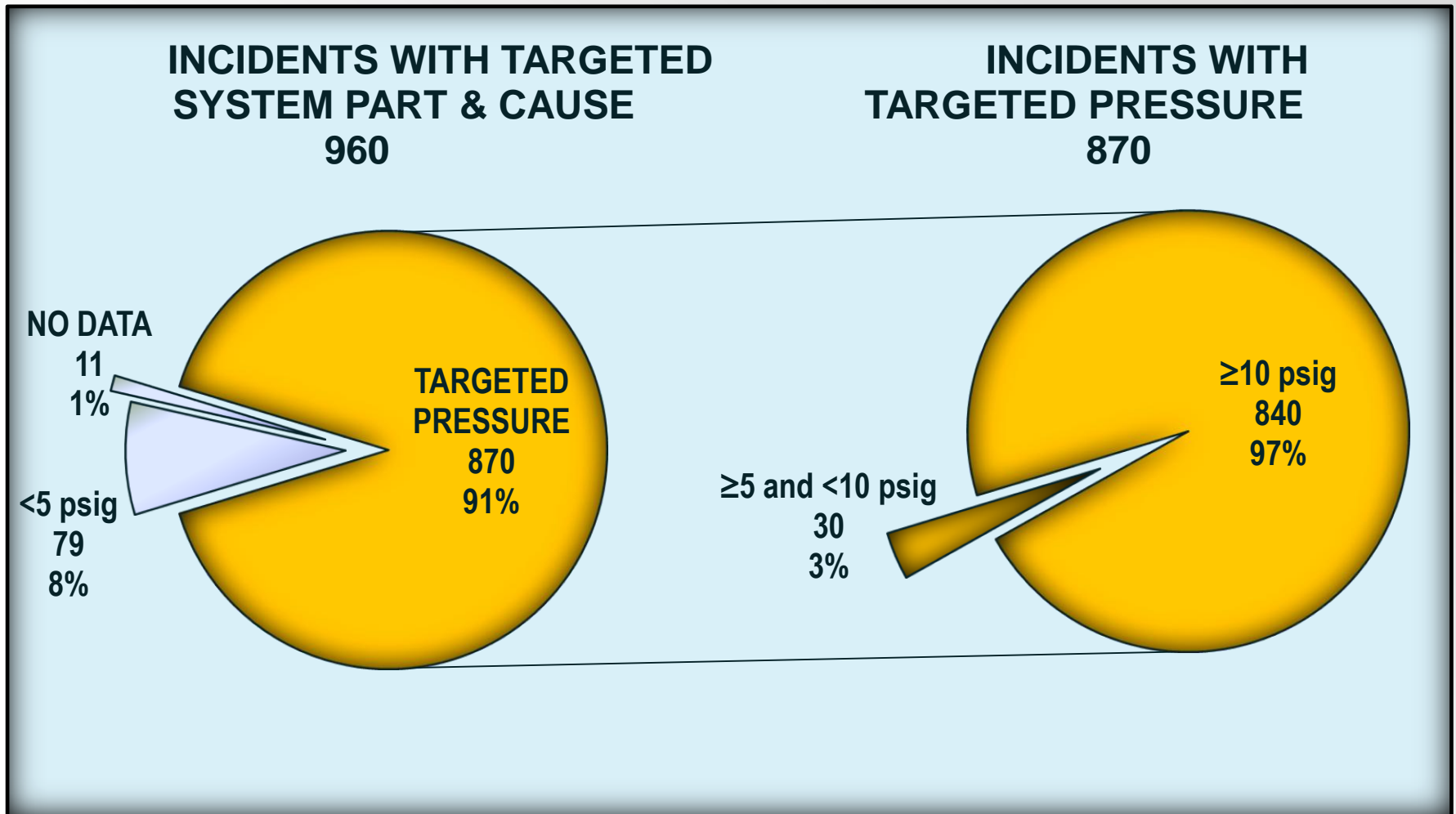


IDENTIFICATION OF CANDIDATE INCIDENTS CAUSE



IDENTIFICATION OF CANDIDATE INCIDENTS

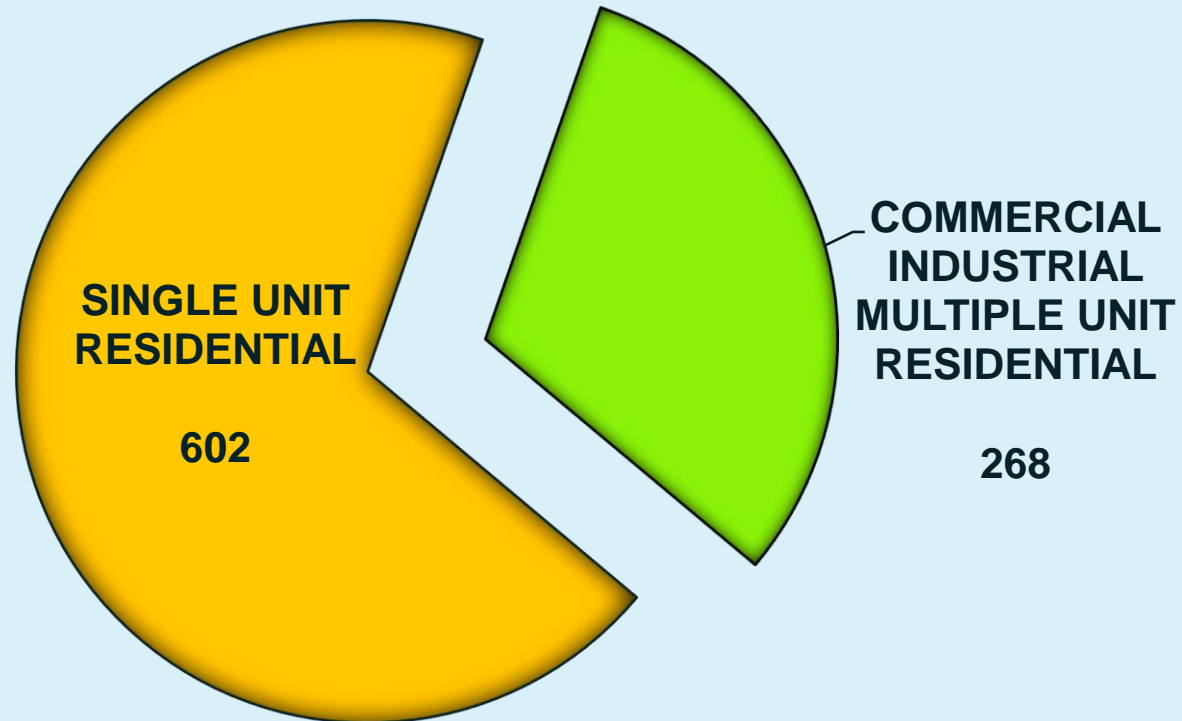
LINE PRESSURE



EFV MITIGATION CANDIDATE INCIDENTS

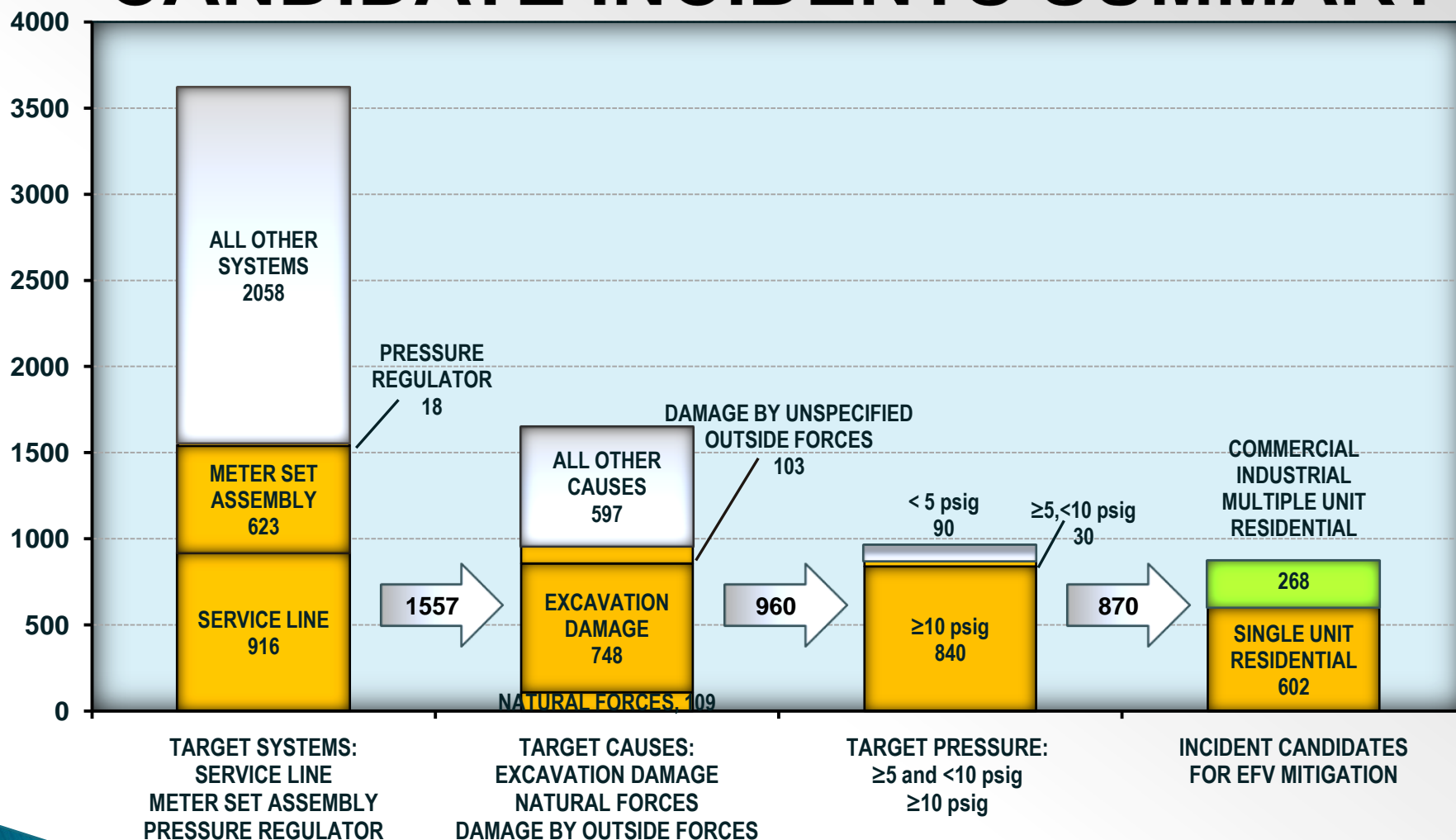
**INCIDENTS SUBJECT TO
CURRENT EFV REGULATIONS**

**INCIDENTS SUBJECT
TO NTSB P-01-2**



Pipeline and Hazardous
Materials Safety Administration

EFV MITIGATION CANDIDATE INCIDENTS SUMMARY

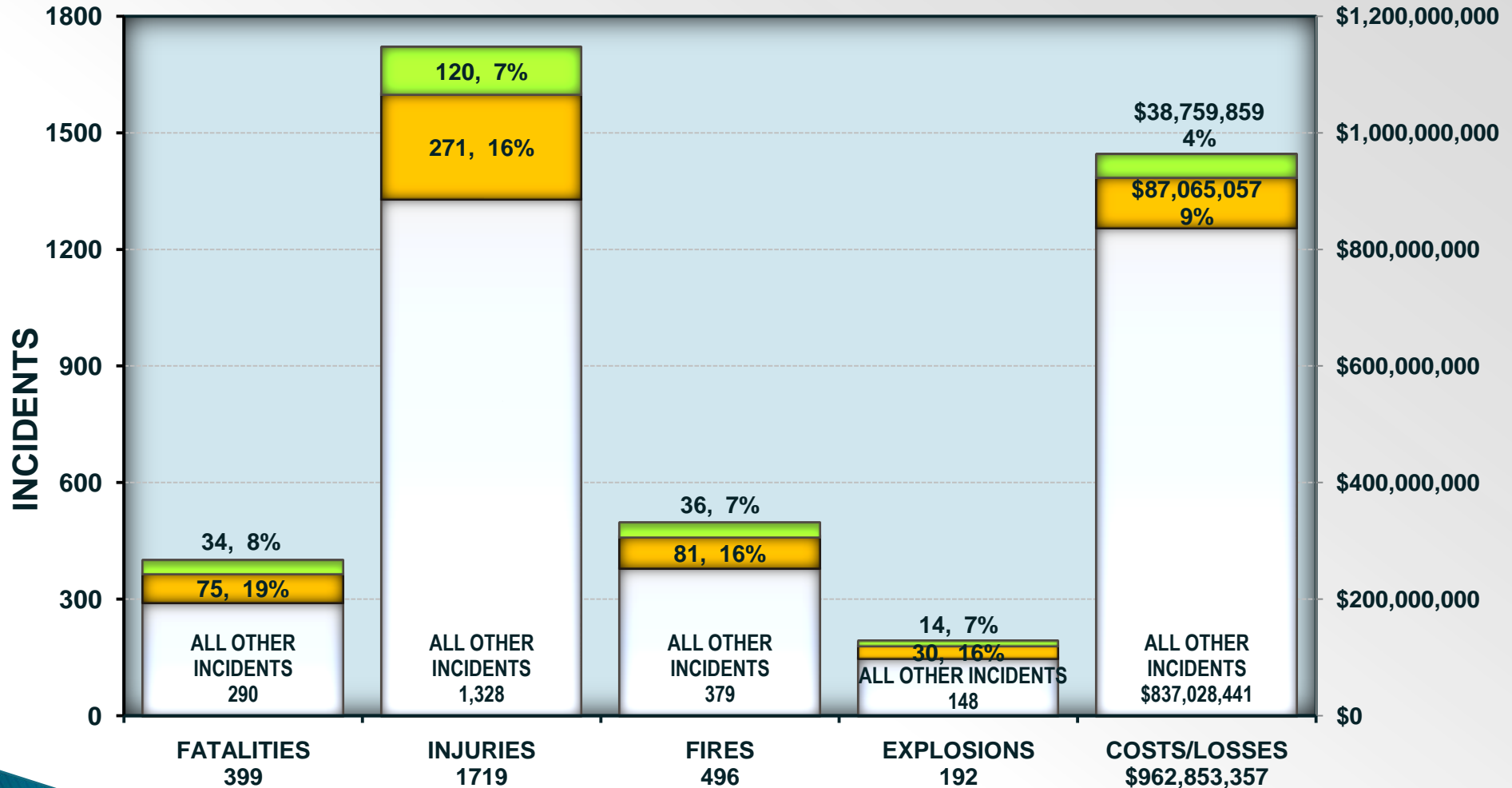


CANDIDATE INCIDENTS

CONSEQUENCES

- ▶ Breakdown of all distribution incidents in PHMSA incident database for each of the following:
 - Fatalities
 - Injuries
 - Fires
 - Explosions
 - Costs/Losses

CONSEQUENCES CANDIDATE INCIDENTS



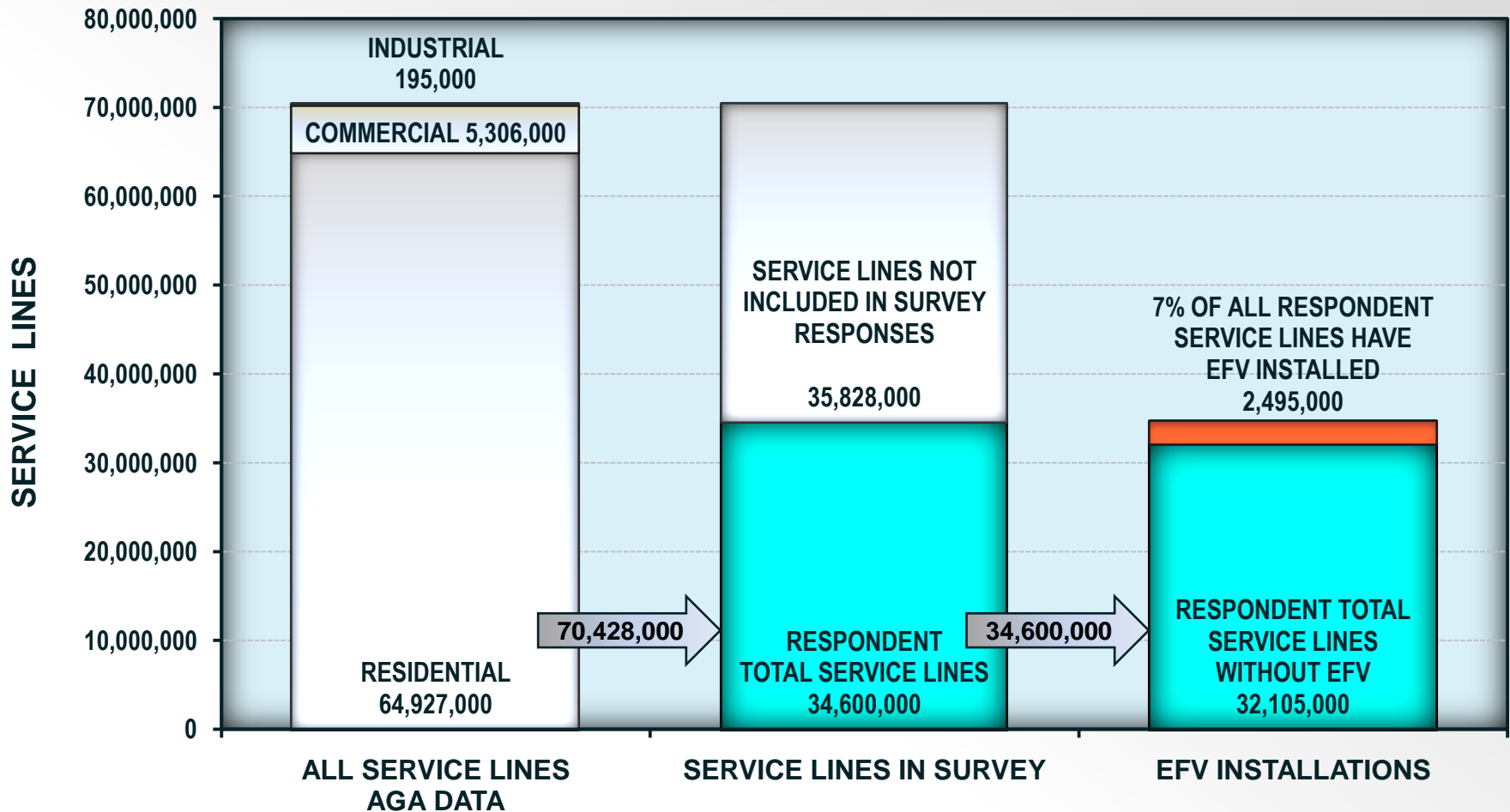
NATIONAL REGULATORY RESEARCH INSTITUTE

SURVEY ON EXCESS FLOW VALVES INSTALLATIONS, COST, OPERATING PERFORMANCE, AND GAS OPERATOR POLICY

MARCH 2007

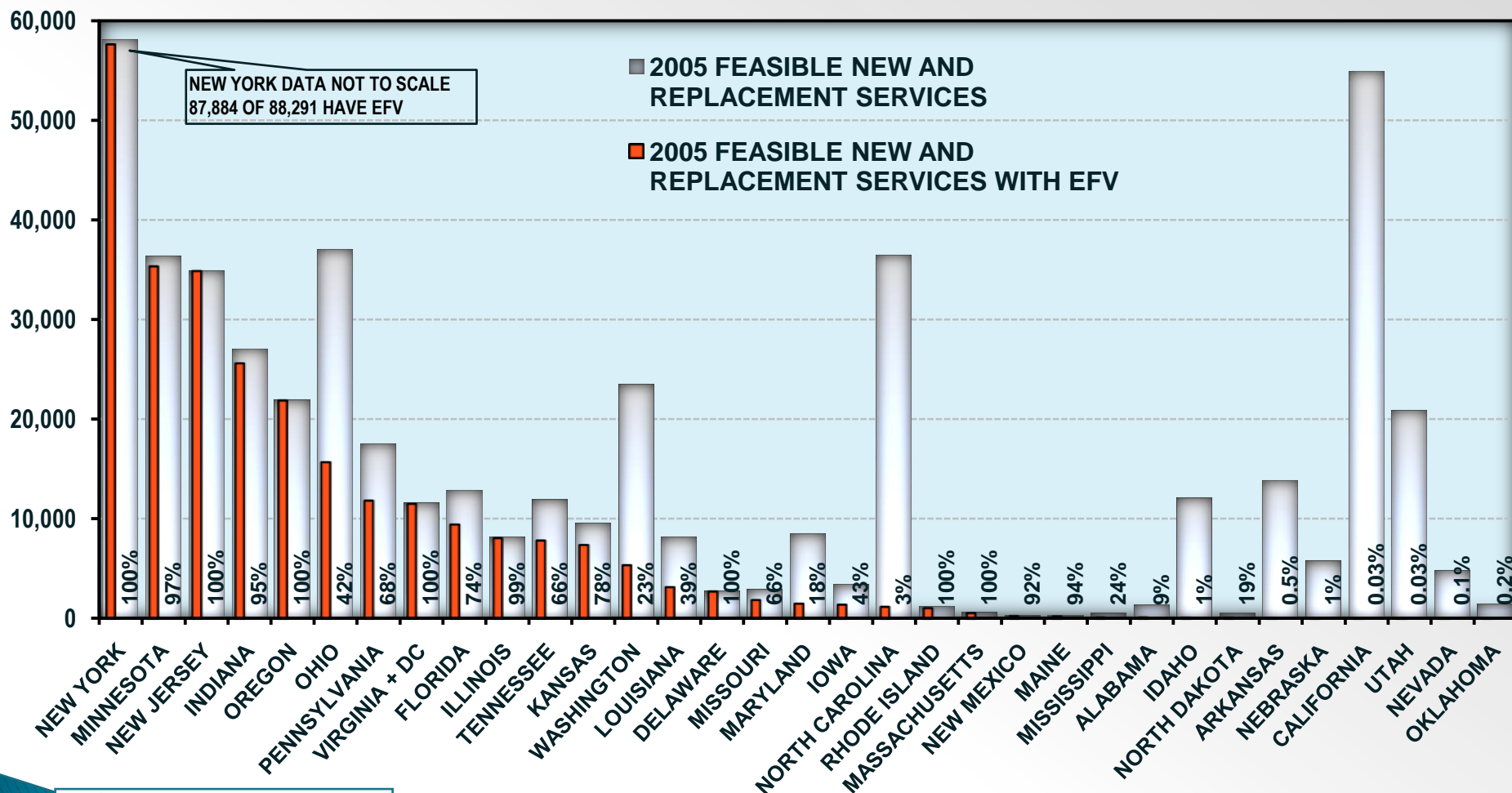
NRRI SURVEY

EFV INSTALLATIONS REPORTED FOR 2005



NRRI SURVEY

2005 EFV FEASIBLE NEW AND REPLACEMENT SERVICES EFV INSTALLATIONS AS PERCENT OF FEASIBLE



NRRI SURVEY

2005 EFV ACTUATIONS

- ▶ Operators reported 1,108 successful gas flow terminations in response to a severe line break
 - Actuations as % of installed EFVs was .044%
- ▶ EFVs seldom close inadvertently
 - False closures as % of EFVs was 0.0089%
- ▶ Failure to close occurred infrequently
 - Of all EFVs on gas lines that ruptured, 2% failed to function properly
 - Of the 497 respondents, 3 experienced failed closures

NRRI SURVEY

SUMMARY AND CONCLUSIONS

- ▶ Prior to PIPES Act of 2006
 - EFVs were installed on 7% of service lines
 - 96% of EFV installed voluntarily by operator
 - 40% of gas operators had zero EFVs installed
- ▶ In 2005, 1108 successful EFV actuations
- ▶ False closures and failures occur infrequently

NAPSR PERSPECTIVE

» **RALPH GRAESER**
PENNSYLVANIA PSC

EFV MANUFACTURER'S PERSPECTIVE

» **JOHN McGOWAN**
UMAC

» **DAN MANION**
DRESSER

» **GREG GOBLE**
R.W. LYALL & COMPANY

INDUSTRY PERSPECTIVE

» **PHIL BENNETT**

AGA

» **JOHN ERICKSON**

APGA

INDUSTRY PERSPECTIVE

» **BRUCE PASKETT**

NW Natural

» **DONALD LEE REYNOLDS**

NiSource

DISCUSSION

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DISCUSSION

- ▶ Topics we have thought about and would like to discuss with you
 - Technical Challenges
 - Performance Standards
 - Performance Metrics and Data
 - Cost of Implementation

TECHNICAL CHALLENGES

- ▶ Gas usage patterns
- ▶ Snaploads
- ▶ Gas quality
- ▶ System configuration
- ▶ Temperature ranges
- ▶ Pressure ratings
- ▶ Other

TECHNICAL CHALLENGES

- ▶ On which service types will EFVs be most effective?
 - Multiple unit residential
 - Commercial
 - Industrial

TECHNICAL CHALLENGES

- ▶ Design and operation
 - Line diameter
 - Availability of suitable EFV
 - EFVB or EFVNB
 - Are *smart* EFVs being developed?
 - Accommodate fluctuating loads
 - Accessibility in case of failure

TECHNICAL CHALLENGES

- ▶ Other Issues?
- ▶ Summary

49 CFR 192.381

EFV PERFORMANCE STANDARDS

- ▶ Prescribes minimum requirements for
 - EFVB and EFVNB for single unit residences
 - Design, qualification, and installation of EFV
 - Locating and marking site of EFV
- ▶ Identifies conditions that preclude use of EFV
 - Inadequate line pressure
 - Contaminants in gas stream
 - Interference with operation and/or maintenance

EFV PERFORMANCE SPECS

- ▶ EFV performance parameters published by manufacturer
 - UMAC
 - DRESSER
 - R.W. LYALL & COMPANY

NATIONAL CONSENSUS STANDARDS

- ▶ Performance criteria and test methods
 - *ASTM F 2138* Standard Specification for EFVs for Natural Gas Service
 - *ASTM F 1802* Standard Test Method for Performance Testing of EFV
 - *MSS SP-115* EFV, 1¼ NPS and Smaller, for Fuel Gas Service

ASTM F 2138

STANDARD SPECIFICATION FOR EFVS FOR NATURAL GAS SERVICE

- ▶ EFVB and EFVNB subject to this standard
 - ½" CTS to 2" IPS
 - Max inlet pressure spec must be ≥ 125 psig
 - Temperature range of -20 to 140° F
- ▶ Requires
 - Sample tests to establish performance parameters
 - 100% production testing of all EFVs

ASTM F 1802

STANDARD TEST METHOD FOR PERFORMANCE TESTING OF EFV

- ▶ Residential and small commercial
 - ½" CTS and 1¼" IPS
 - Pressure rating of ≤ 125 psig
 - Temperature range of 0° to 100° F
- ▶ Performance characteristics tested
 - Flow at trip point
 - Pressure drop across EFV
 - Bypass flow rate of EFVB
 - Leak rate of EFVNB after trip
 - Verification that EFV can be reset
 - Compensation for contaminants in gas

MSS SP-115

EFV, 1¼" NPS AND SMALLER FOR FUEL GAS SERVICE

- ▶ Applies to EFVBs and EFVNBs with
 - Minimum design inlet pressure of 5 psig
 - Temperature range of -20° to 140° F
- ▶ Requires 100% production testing
- ▶ Incorporates ASTM F 1802 when testing high pressure EFV (≥ 5 psig)
- ▶ Requires identification markings on EFV

AMENDMENT OF PERFORMANCE STANDARDS

- ▶ Revise current standards?
- ▶ Develop new standards?
- ▶ Other?

AMENDMENT OF PERFORMANCE STANDARDS

- ▶ Open forum for discussion
- ▶ Summary

PERFORMANCE METRICS AND DATA

- ▶ Is there a need for new survey? e.g. to support a cost benefit analysis.
- ▶ Data that survey could capture
 - Number of EFV installations
 - Service type (residence, commercial, industrial)
 - Line size and pressure
 - Installation cost
 - Number and circumstances of in-service actuations; false closures; or failures to close
 - Other

PERFORMANCE METRICS AND DATA

- ▶ Incident data
 - EFV installed on gas line or not?
 - EFVB or EFVNB?
 - Did EFV perform as expected?
 - Did EFV mitigate consequences?
 - Other

PERFORMANCE METRICS AND DATA DISCUSSION

- ▶ Open forum
- ▶ Summary

COST OF IMPLEMENTATION

- ▶ Cost impact of NTSB recommendation
 - Modification of standard designs
 - Materials and installation
 - Operations and maintenance
 - Documentation and reporting
 - Other

COST OF IMPLEMENTATION

- ▶ Open forum
- ▶ Summary

MEETING SUMMARY/NEXT STEPS

» **MIKE ISRANI**
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