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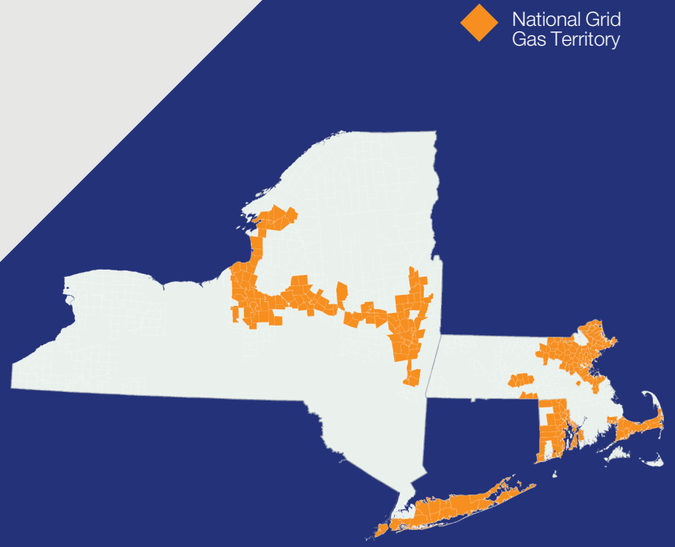
Safety. Reliability. Continuous improvement.

National Grid Pipeline Safety Management System

Our Gas Business and commitment to safety

National Grid operates over **35,000** miles of natural gas pipeline within Massachusetts, Rhode Island and New York. We provide safe and reliable natural gas service to more than **3.5** million customers throughout those regions.



A letter from Ross Turrini

An integral part of our culture at National Grid is set by our values: Do the Right Thing and Find a Better Way. So, in early 2017, National Grid did the right thing by voluntarily taking the proactive step to adopt the industry leading standards set by the American Petroleum Institute (API1173). Through these standards, which provide a disciplined, formalized approach to managing pipeline safety, we have found a better way to build upon our already strong, local, and empowered safety culture.

By adopting these standards, which demand a risk-based approach to managing our assets and operations, we self-imposed a rigorous guide for how we inspect, evaluate, and invest in our system and people. In line with our values, we seek to identify our own opportunities for improvement—continuously finding a better way—and share our findings both internally and externally to ensure the safety of our system and operations.

Rather than use a one size fits all approach, API1173 provides a framework by which each risk can be appropriately assessed and specific mitigation plans developed. The implementation of this industry standard builds on conformance with National Grid's established pipeline safety management programs and local, state and federal codes and standards. It integrates them into a single, umbrella framework providing a disciplined and formal method to manage pipeline safety risks and compliance issues.

And, the benefit to customers is clear: by putting our relentless commitment to improve pipeline safety into formal practice, we will have a gas system that is not only reliable, but constantly improving to be safer than ever.

Best,

Ross Turrini

Ross Turrini
National Grid
Senior Vice President
GP&E & Chief
Gas Engineer

National Grid leads the way in safety

At National Grid, we don't just talk about the importance of safety — it's embedded in our culture through our people, processes, and actions. Supported by local leaders who empower everyone down to the front-line worker, we're constantly refining and improving our efforts to keep our customers, communities, and employees safe.

Safety doesn't stand still: We celebrate our safety successes, keep our standards fresh, are constantly reviewing and learning, and are transparent about where we can improve.

We work very closely with industry and government agencies on a variety of measures used to ensure pipeline safety including:

- Coordination with local One Call Centers - Dig Safe®
- Visual inspection programs
- Design and construction techniques
- Workforce training

- Industry safety practices and government oversight
  - **Integrity Management Program** – The IMP meets and exceeds federal and state regulatory requirements and identifies, assesses and manages risks.
  - **High Consequence Areas** – HCAs bring added protection to pipelines in urban, suburban and other high population areas, such as schools. Pipelines within HCAs have extra safety features.
- Pipeline markers and facility mapping
- Public education programs

Training and periodic drills are also conducted with emergency responders to prevent and prepare for emergencies. These activities test procedures, logistics, communications and more. Emergency plans and procedures are periodically updated and are made available to state authorities.

What is a Safety Management System (SMS)?

A Safety Management System (SMS) provides a detailed approach to managing safety, including the structures, policies and procedures an organization uses to direct and control its activities.

The American Petroleum Institute (API) has developed a Safety Management System (SMS) called API1173.

The system:

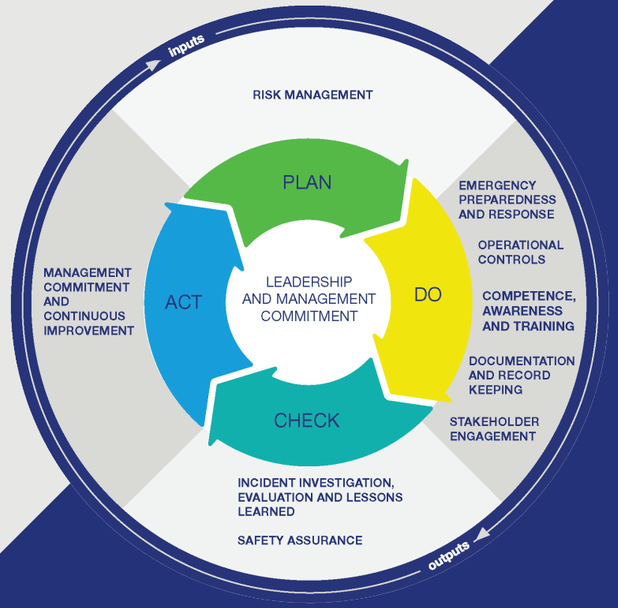
- Provides a framework for managing pipeline structures.
- Improves safety culture.
- Maintains a constant plan-do-check-act cycle

  Plan – set goals and objectives

  Do – execute plans

  Check – review performance

  Act – take action based upon review



Why implement a Safety Management System?

At National Grid, we are dedicated to continuous improvement and are committed to getting it right. By voluntarily committing in 2017 to begin adhering to the API1173 framework, we self-imposed a rigorous guide for how we inspect, evaluate, and invest in our system and people. API1173 standards provide a disciplined, formalized approach to managing pipeline safety that the various states' administrators have now recommended for all gas utilities.

The change in approach is significant, moving from a discrete set of pipeline safety programs as shown in the table below.

Discrete Pipeline Safety Programs

Transmission Integrity Management Program	**Gas Business Enablement**	**Operator Qualification and Training**
Distribution Integrity Management Program	**Control Room Management**	**Compliance / Quality Assessment Programs**
Process Safety Management System for Gas > 124 psig and LNG assets	**Public Awareness Program**	**Gas Asset and Engineering BMS**

Why implement a Safety Management System?

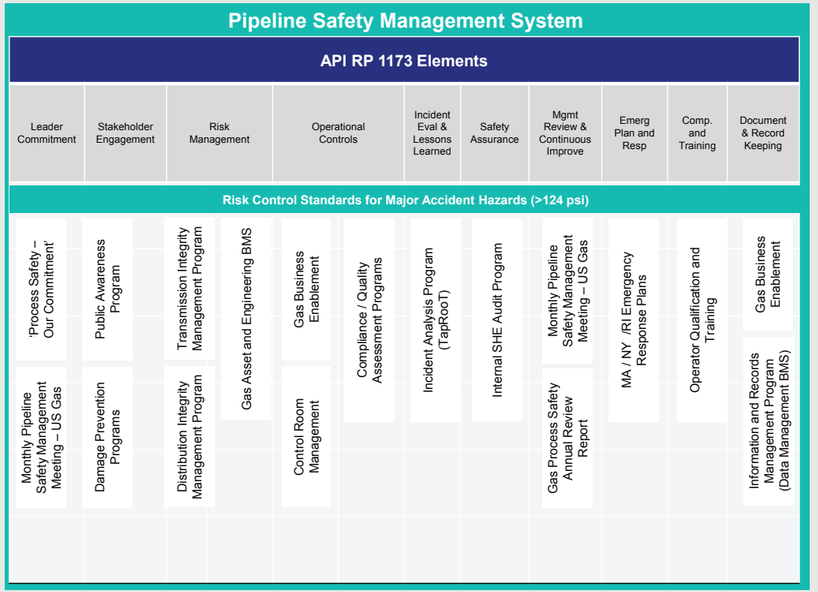
The SMS provides a framework to house all relevant activity under 10 prescribed elements.

The 10 Safety Management System (SMS) Elements

1. **Leadership and Management Commitment**
   Putting our relentless commitment to improve pipeline safety into formal practice
2. **Stakeholder Engagement**
   Building relationships both internally and externally to support the safety of our system and operations
3. **Risk Management**
   Managing our assets and operations using a risk-based approach
4. **Operational Controls**
   Integrating all aspects of our operations into a single, umbrella framework, providing a disciplined and formal method to communicate and manage standard ways of working
5. **Incident Investigation, Evaluation, Lesson Learned**
   Learning and continuously improving from the review and feedback from incidents
6. **Safety Assurance**
   Measuring and assessing pipeline safety risk and compliance issues
7. **Management Review and Continuous Improvement**
   Ensuring that pipeline safety performance is reviewed and continuous improvement actions are developed on an on-going basis
8. **Emergency Preparedness and Response**
   Developing and practicing readiness to respond in the event of a pipeline incident
9. **Competence, Awareness and Training**
   Designing and delivering proper training and information to achieve a workforce that has the appropriate level of experience, knowledge and expertise
10. **Documentation and Record Keeping**
    Managing documentation and record keeping to support pipeline safety decision-making and reporting

Safety Management System Elements

An integrated Pipeline Safety Management System that houses all relevant activities into a framework under 10 prescribed elements as shown below that enables disciplined execution.



Benefits of Implementing a Safety Management System

Adopting a safety management system is a best practice across multiple industries with a proven track record of safety benefit improvements.

Aviation

Nuclear Power

Chemical Manufacturing

- Historically low incident rates in nuclear industry maintained
- Sigificant reduction in incident rates in aviation and chemical manufacturing industries
- Improved safety culture (Crew Resource Management, Control Room Management, ‘sterile cockpit’)
- Adoption of Design for Safety concepts to ensure engineered controls considered before human performance controls
- Quality of materials and asset integrity closely linked to safety performance
- Improvements in customer service, reliability, and productivity realized

API1173 improves our operations by:

- Including a three year program and training curriculum to develop our workforce
- Providing a framework for inspection and evaluation of our system, using advanced inspection technology
- Evaluating all our assets and prioritizing upgrades to ensure safety
- A further step change in pipeline leadership commitment aligned to our new Gas Business Unit Operating model

Bringing API1173 to life – “Near Miss - Good Catch”

At National Grid we have a strong culture of looking out for one another – especially when it comes to safety. That is why we have implemented a program called “Near Miss - Good Catch” which gives us the opportunity to improve our workplace safety and keep people from getting hurt. Together, we can ensure that we all return home safely at the end of the day. This program is one example of how we Bring API1173 to life, in our quest for safety and our journey to continuous improvement.

- We’ve taken a leading position via the “Near Miss - Good Catch” program on asking our employees to look out for abnormal conditions and report them – Linked to **Leadership & Management Commitment**, where we’ve fostered a safety culture that supports employees taking personal responsibility for pipeline safety.
- Through this program, one of our technicians identified and reported an underrated regulator on our network in Massachusetts – Linked to Incident **Investigation, Evaluation, Lesson Learned** where we have set up a formal process for reporting and analyzing ‘defects’ within our system that could lead to pipeline safety incidents.
- Because we take this feedback seriously, we not only fixed that issue immediately but also inspected our network to see if that condition could exist in more than one instance – Linked to **Risk Management** where we challenge ourselves to evaluate threats to our pipeline throughout the system, taking an end-to-end, comprehensive approach to understanding risks.
- Through our commitment to inspect and learn we did find the need for an improvement program – Linked to **Management Review and Continuous Improvement** where we report pipeline safety performance results and take action to improve performance breakdowns.
- We self-reported this to our Regulator as we believe in being transparent about our improvement opportunities – Linked to **Stakeholder Engagement** where we work with external parties to not only inform them of work we are doing to reduce pipeline safety risks, but look for feedback from these parties on additional opportunities for improvement.
- Now we have an agreed plan and program to ensure that we remediate the issue, enhance our processes and prevent this from happening in the future – Linked to **Safety Assurance** where we measure how well we’ve remediated the risk and reduced the likelihood that the incident could reoccur.

Use your senses to detect a gas emergency

Gas leaks are often recognized by:

SMELL: Natural gas is odorless. A pungent odor like rotten eggs is added so you can detect it fast.

SIGHT: Outdoors you may see a white cloud, mist, fog, and bubbles in standing water. You may see blowing dust and vegetation in the area may appear to be dying.

SOUND: You may hear an unusual noise like roaring, hissing or whistling.

What to do next

MOVE your family and pets to a safe area outside, and call 911 or

1-718-643-4050 in NYC
1-800-490-0045 in Long Island
1-800-892-2345 in upstate New York
1-800-233-5325 in Massachusetts
1-800-640-1595 in Rhode Island

Meeting the industry goal of zero incidents

The Safety Management System (SMS) paves the way for continuous safety improvements. Users gain understanding of potential pipeline hazards and risk minimization. This framework approach will standardize the way we lead pipeline safety across our business and cements our leadership commitment. The SMS also measures progress toward safety.

Safety is the natural gas industry's top priority.

The industry spends millions of dollars each year to maintain the gas distribution system's excellent safety record. The addition of API1173 only strengthens those efforts.

The work we do is essential. We are proud to take a leadership position in pipeline safety. Adoption of a pipeline safety management system puts that leadership commitment into formal practice, underpinned by our values of "doing the right thing" and "finding a better way".

- US Gas Leadership Team