

The System You Already Have

Why a pipeline safety management system is the industry's chosen route to zero incidents, how much of one you already own, and what stands between you and the rest | Kevin Graham, Founder

We all want the same thing: zero incidents. The industry has already identified the best way to help get us there. Most operators are further along than they think, and what is missing is not another program document.

Kevin Graham, Founder, Systemic Compliance · First edition, September 2026 · Scope: U.S. natural gas transmission, gas distribution, and hazardous liquid pipelines regulated by PHMSA and certified state programs.

Systemic Compliance works for pipeline operators. This paper was written to help them.

This series. Three papers, one argument in three steps. *The System You Already Have* asks why an operator would

build a pipeline safety management system while it is still voluntary, and shows how much of one the required programs already build. *Pipeline Safety Performance and Regulatory Expansion* reads the public safety record since 2010 and asks what the growing rulebook moved and what it did not. *Coherence* takes the part that did not move and locates it in the connections between an operator's own documents. Any one of them stands alone. In that order, each sets up the next.

88%

Operators who agreed or strongly agreed that a safety management system was improving pipeline safety performance.

8 of 10

API RP 1173 elements that already have required work behind them, before an operator writes anything new.

Since 2012

How long the NTSB, API, Congress and PHMSA have pointed in the same direction. It is still voluntary.

1 Start where we all agree

Operators, regulators and the public want the same things. Zero incidents and zero releases. Compliance programs that hold up in the field, in an audit, and after an incident. An industry that gets safer over time.

That is not a slogan and it is not only our view. When the National Transportation Safety Board issued its safety alert on pipeline safety management systems, it framed the whole question against the industry's own zero-accidents goal. The goal is shared. What is still argued about is the way and timing to get there.

This paper is about how to get there. It answers five questions in order: (1) what a pipeline safety management

system actually is, (2) why it is worth pursuing while it is still voluntary, (3) what it honestly costs, (4) how much of one you already have, and (5) what stands between you and the rest of it.

The short answer to the last one is that the obstacle is usually not missing documents. It is that the documents you already have do not work together. We call that coherence, and it is where this paper ends.

2 Everyone with standing has now said the same thing

The direction of travel has been consistent since 2012, and it has come from every quarter that has standing to speak.

2012. Following the Marshall, Michigan release, the NTSB recommended that API develop a safety management system standard for the pipeline industry. That is Safety Recommendation P-12-17.

2015. API published Recommended Practice 1173, *Pipeline Safety Management Systems*, first edition July 2015. It was reaffirmed in April 2023, and Errata 1 was issued in 2025.

2020. Congress directed the promotion of pipeline safety management systems in section 205 of the PIPES Act of 2020.

January 2024. The NTSB issued Safety Alert SA-095, *Pipeline Safety Management Systems: Vital for the Safe Operation of Pipelines*. Its central sentence: "The pipeline industry continues to have accidents that could have been prevented or the consequences more effectively mitigated had risks been more thoroughly identified and addressed." It advises operators to implement a robust safety management system as described in API RP 1173, and it asks those already running one to keep improving it.

2024. The NTSB recommended that PHMSA promote the benefits of pipeline safety management systems. That is Safety Recommendation P-24-2.

March 2025. PHMSA issued Advisory Bulletin ADB-2025-01, published at 90 FR 13658, encouraging operators to adopt and mature a safety management system.

Four different institutions, across thirteen years from the first recommendation to the most recent bulletin, pointing the same way. And it is still not a rule.

PHMSA says so itself, in that same bulletin: "Guidance and advisory bulletins are not rules; are not meant to bind the public in any way; and do not assign duties, create legally enforceable rights, or impose new obligations."

We are not going to tell you a mandate is coming. Nobody knows that. What we will say is that thirteen years of consistent encouragement from the investigator, the standards body, Congress and the regulator is a reasonable thing to plan around, whatever its legal status.

3 What a safety management system actually is

It helps to be plain about this, because the phrase gets used loosely.

A pipeline safety management system is not another program document. You already have roughly ten of those, and adding an eleventh is not what RP 1173 asks for.

It is a management system: a defined way of running the safety side of your business, organized around ten elements and driven by a Plan-Do-Check-Act cycle. Leadership sets the direction and commits the resources. Risk management identifies what can go wrong. Operational controls are how the work actually gets done. Competence, stakeholder engagement, emergency preparedness and documentation support that work. Then incident investigation, safety assurance and management review close the loop, so that what you learn changes what you do.

The plainest way to say it is this. You can have a garage full of car parts and still not have a car. Your program

documents are the parts. The management system is the assembly. RP 1173 does not replace 49 CFR Part 192 or Part 195. It sits on top of them and asks a question the parts cannot answer on their own: is this working, and how would you know?

One more thing worth saying, because it is the most common objection we hear. RP 1173 is scalable. A small local distribution company does not need the apparatus of a major interstate operator. It needs a policy, a risk picture, procedures that match its qualification program, a way to manage change, a way to learn from leaks and hits, and a management review that looks at those facts honestly. Because the standard is voluntary, you set the depth.

4 Where the industry actually stands

The engagement data is better than most people assume at the large end and worse than most people assume at the small end.

At the large end, adoption is broad. PHMSA's March 2025 advisory bulletin recites that "nearly 85 percent of total pipeline industry mileage is covered by PSMS," citing the industry's 2023 annual report, and that "about 86 percent of all gas distribution pipeline mileage is operated by companies that have begun implementing PSMSs voluntarily," citing a 2023 PHMSA information collection. The industry's own 2024 annual report describes participants representing nearly 80 percent of mileage as implementing a safety management system. Those figures come from different collections in different years and we would not read the difference between them as a trend.

Operators who have done it say it works. In the 2024 annual report, 88 percent of responding operators agreed or strongly agreed that the safety management system was improving pipeline safety performance. That is the industry grading its own work, and the grade is good.

At the small end, it has stalled. PHMSA's bulletin, citing its August 2024 report to Congress, states that "more than one-half of the smallest category of operators reported that their PSMS efforts best fit the 'stalled' characterization." The 2024 annual report puts a number on where the difficulty starts: operators below roughly 6,000 customers and 1.3 billion cubic feet of gas have less than a fifty percent chance of implementation. Only 503 of about 1,340 gas distribution operators responded to the survey at all.

PHMSA's own conclusion, in the bulletin, is that "very small operators need additional guidance to realize the benefits of implementing a PSMS."

It is worth saying that the industry has not ignored this. APGA publishes a PSMS planning and gap analysis tool built for small operators, AGA has published

implementation guidelines, and the Pipeline SMS site carries planning and evaluation tools anyone can download. The material is there. The adoption numbers above are what they are anyway, which suggests the difficulty is not a missing document.

That is the honest picture. The concept has been adopted where there are resources to adopt it. Where there are not, operators have started and stopped. If you are in that second group, you are not behind the curve. You are on it.

To be plain about the constraint: at the smallest operators the thing in short supply is usually people, not another standard. One person may carry several programs, with

no spare capacity to stand up an apparatus. That is exactly why the step this paper asks for is a meeting, not a hire. Connecting the documents you already have is measured in hours, not headcount, and it is the version of this work a two-person operation can actually do.

WHAT THIS PAPER DOES NOT CLAIM

It does not predict that PHMSA will mandate a safety management system, because nobody knows that. It does not claim that a safety management system produces zero incidents. It does not suggest that RP 1173 replaces any part of 49 CFR. And it does not offer legal advice about liability. Systemic Compliance is not a law firm.

5 Why it is worth doing while it is still voluntary

Voluntary does not mean optional if what you care about is risk. Five reasons, in the order we think they matter to an operator.

The rules you already follow assume a system you may not have. Section 192.13(d) requires a management of change process on onshore gas transmission. Section 192.911(k) requires the integrity program to contain one by reference. Sections 192.805(f) and 195.505(f) require you to communicate changes that affect covered tasks to the people performing those tasks. Section 192.1007(b) builds distribution threat identification on records that five other programs produce. Every one of those duties assumes information moves between programs. Not one of them requires anyone to write down what depends on what. The duty is real and the prerequisite is tribal knowledge.

Contractors are where programs quietly stop working. Most field work is not done by the people who wrote the Distribution Integrity Management Program. If contractors are qualified against a generic task list rather than against your procedures, then your procedures and your qualifications have drifted apart and nothing in either document will show it. A safety management system is the only common frame that puts contractor

control, competence, operational controls and incident learning in one place.

Management of change is the failure most operators already suspect is their biggest. A standalone management of change procedure that is not wired to qualification, to integrity, to training and to contractors is one more part in the garage. What makes change actually propagate is the surrounding system, not the procedure.

It is cheaper to build before you are told to. A system built after a consent order, a poor inspection, a serious incident or a sale is rushed, scoped to the last failure, and managed by lawyers. Built while you are stable, you can sequence it in dependency order and use an assessment as the baseline. Buyers and boards also understand "we run a management system" more readily than "we maintain seventeen manuals."

And you set the depth. This is the advantage of a voluntary standard, and it is worth taking. You are not obliged to build what a major would build.

6 What it honestly costs

Any paper that recommends this should say what it takes, so here is the list without softening.

What you will spend on.

- **Development and planning.** Gap assessments, defining policy, and building a roadmap.
- **Personnel time.** Your own people conducting assessments, writing procedures, and being trained. This is usually the largest real cost and the one least often budgeted.
- **Consulting.** Outside help where you do not have the capacity in house.
- **Technology and tools.** Software for documentation, conformance tracking, stakeholder engagement, incident tracking and performance measures.
- **Leadership and training.** Aligning leadership, and training employees so that safety sits inside daily operations rather than beside them.
- **Audits and assessments.** Regular audits and safety-culture surveys to see whether it is working.
- **Ongoing maintenance.** Management reviews and continuous improvement, indefinitely. This is not a project with an end date.

One caution from the industry's own experience. The "Act" phase, meaning management review and continuous improvement, is commonly the last part to mature. It is the part with no rule behind it and no obvious owner, so it is the easiest one to leave for later. Budget for it up front.

What you should expect in return. These are the benefits an operator can reasonably expect, stated as expectations rather than guarantees.

- A systematic way to identify, assess and mitigate risk, which reduces the likelihood of incidents.
- Measurable progress, because ongoing assessment gives you something to compare against.
- Fewer costs from spills, injuries and environmental damage, to the extent that fewer incidents follow.
- A safety culture in which safety is an operational value rather than a compliance obligation.
- Alignment with what the NTSB and PHMSA have recommended, which supports both public and regulatory confidence.
- Operational efficiency, because a connected system is written once, changed once and audited once.
- A structure for applying what you learn, so that lessons from one part of the business reach the others.

We would rather you weigh that list yourself than take our word for it. The 88 percent figure in Section 4 is the industry's own assessment, from operators who have done the work, so weigh it as informed self-report rather than an independent outcome measure.

7 You are further along than you think

This is the part most operators do not expect.

Federal regulation already requires you to produce and maintain roughly ten written programs: the Operations and Maintenance Manual, the Emergency Response Plan, corrosion control, integrity management for transmission or distribution, the Operator Qualification Program, public awareness, damage prevention, control room management, drug and alcohol, and the records and reporting that sit under all of it.

Map those ten documents against the ten elements of API RP 1173, first edition, and something useful appears. Most of the management system is already built, and you paid for it years ago.

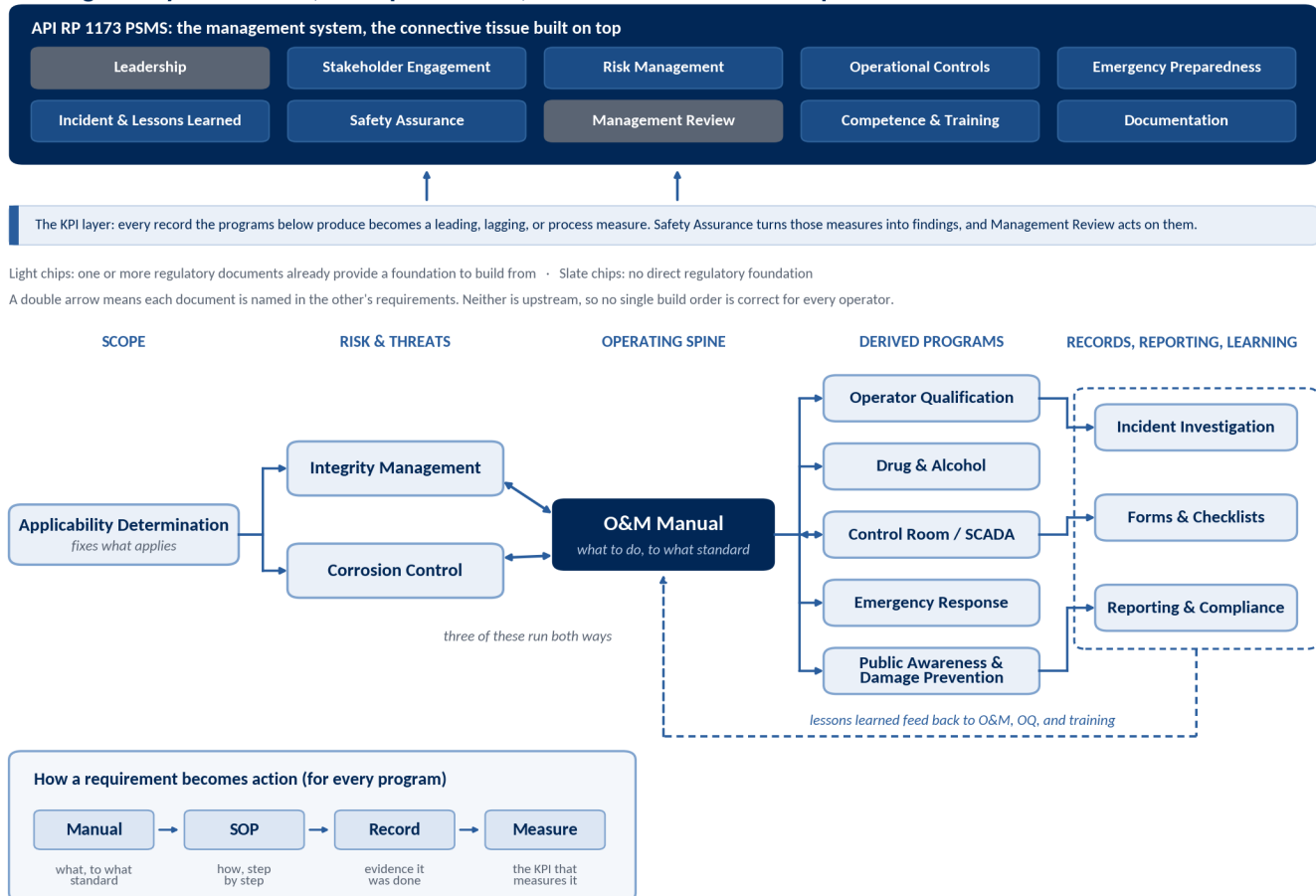
Eight of the ten elements already have required work behind them. Seven of them have at least one required program document that is their primary home. An eighth, incident investigation and lessons learned, runs on

required incident reporting and integrity feedback, though no single document owns it.

Only two have nothing behind them at all. Leadership and management commitment, at the front of the cycle. Management review and continuous improvement, at the back. No provision of Part 192 or Part 195 requires either one.

Required work behind an element is not the same as a satisfied element. RP 1173 asks for more than the rules do in nearly every case. Competence, awareness and training is the clearest example. Your Operator Qualification Program handles qualification on covered tasks, and the element also reaches training and awareness that OQ was never written to touch. Read the count as a head start on eight of the ten, not as credit for eight finished elements.

The regulatory foundation, its dependencies, and the PSMS built on top of it



Systemic Compliance · Pipeline Safety Management System · Illustrative; not to scale

Figure 1. The required program documents, the dependencies the regulation already creates between them, and the API RP 1173 management system built on top. The band above the documents is the measure layer, feeding safety assurance and management review. The two slate boxes are the elements no required document establishes: leadership at the front and management review at the back. Illustrative; not to scale.

Most of these documents also touch several elements at once. The Operations and Maintenance Manual alone carries operational controls, documentation and record keeping, and part of emergency preparedness. The table

names the required program that already does some of each element's work. Where it says None, you would be starting from nothing.

Table 1. The ten elements of RP 1173, first edition, and the primary home of each

RP 1173 ELEMENT	REQUIRED PROGRAM THAT ALREADY DOES SOME OF THE WORK
Leadership and management commitment	None
Stakeholder engagement	Public Awareness Program; Damage Prevention Program
Risk management	Integrity Management; Distribution Integrity Management Program
Operational controls	O&M Manual; Integrity Management; corrosion control; Damage Prevention Program; control room and SCADA; drug and alcohol; DIMP
Incident investigation and lessons learned	None, though incident reporting and integrity feedback supply it
Safety assurance	Integrity Management; Distribution Integrity Management Program
Management review and continuous improvement	None
Emergency preparedness and response	Emergency Response Plan
Competence, awareness and training	Operator Qualification Program
Documentation and record keeping	O&M Manual

This mapping is Systemic Compliance's analytical read for planning purposes and should be confirmed against your own programs.

That table changes the shape of the decision. The question is not whether to build a management system from nothing. It is whether to connect what you already run, and then add the two governance pieces at the ends.

8 How you get there: connect in dependency order

The ten documents are not a list. They depend on each other, and the regulation says so in text.

The Operations and Maintenance Manual is required to contain the corrosion control procedures and the control room management procedures. The continuing surveillance, emergency and failure-investigation procedures are required to be inside it too. Distribution threat identification is required to run on corrosion records, surveillance records, patrolling records, maintenance history and excavation damage experience, all of which other programs produce. The covered-task list is a function of the procedures those other documents define. Every one of those is a dependency written into the rule.

Three practical consequences follow.

Start where the fixed points are. The applicability determination comes first, because it decides which requirements govern which assets, and everything downstream inherits from it. Get that wrong and every program below it is scoped wrong.

Order matters less than connection. There is a long-running argument about whether integrity management or the O&M Manual should be written first. In practice the dependency runs both ways, and which came first at your company depends on your assets, your age and your

history. Nearly every operator already has all ten. The build is over. What is not done is the connecting.

Then add the two ends. Leadership commitment and management review are the two elements no rule

requires, and they are the two that turn a set of programs into a system. They are also, in our experience, the cheapest to write and the hardest to sustain.

9 The obstacle: what stops operators using what they already have

If eight of the ten elements already have required work behind them, why does the industry's own survey show more than half of small operators stalled?

Because a document set is not a system. The programs can each be complete, current and defensible on their own terms, and still fail to work together. The corrosion crew records a deficiency and the integrity engineer never sees it. The Operator Qualification Program lists a covered task the O&M Manual no longer describes. A change to the manual never reaches the training material. Nothing in any of those sentences breaks a rule, and all of them are risk.

That property, whether the documents agree with each other and whether information moves between them, is what we call coherence. It is the difference between owning the parts and running the system.

It is also the reason a safety management system built on an incoherent document set does not deliver what it promises. The management layer sits on top of the programs and assumes they already form a system. Where they do not, it inherits the disconnection and formalizes it. You end up with a mature process for reviewing a set of documents that disagree with each other.

Two things follow for an operator deciding where to start.

You can find this yourself, in a meeting. Take the ten documents and, for each one, list what it needs from the other nine and what it hands back to them. Many operators have never written that down. If you did, you would quickly find both of the problems this paper is about: (1) a record that somebody produces on a schedule and nobody downstream ever reads, and (2) a single question that two documents answer differently, such as a repair threshold or an inspection interval.

And it is measurable, not a matter of impression. The dependencies the regulation creates between these documents can be written down as tests, and an operator's programs can be scored against them: how many of the connections hold, out of how many apply. That count is what tells you how much of a working system you actually have, as opposed to how many documents you have.

Coherence, the third paper in this series, specifies that property in full: what it is, where the regulation already creates it, how it fails, and how it is measured. This paper's job is only to show you that it is the thing standing between you and the system you have mostly already paid for.

10 How close am I, and how would I know?

Two of the three things worth knowing are already being judged today.

An inspector asks whether a document meets the rule it answers to, and an inspector also forms a view on whether the program is actually working, from records, from field observation and from talking to the people doing the work. That is what the record and observation questions

in the federal question sets are for, and it is a real judgment made by experienced people.

What is missing is not the judgment. It is that the three are not separated, not put on a common scale, and not carried forward so you can see them move. And one of the three is barely asked at all.

So what we are proposing is a way of reporting, not a claim that nobody is looking. Three measures, reported separately, because they answer different questions and averaging them hides the problem.

Conformance is whether each document meets the rules that govern it. This is the one an audit already covers thoroughly.

Coherence is whether the documents agree with each other and whether information moves between them. Almost nobody measures this today, which is the whole reason *Coherence* exists.

Effectiveness is whether the system is actually working. Inspectors judge this routinely and so do many operators, and it is worth being precise about how much of it can be read from what you already keep, because the common assumption is that you learn nothing until you run a field campaign. That is not true.

Safety management measures come in three kinds. **Process measures** ask whether the system ran as designed: was the procedure reviewed inside its cycle, was the qualification re-evaluated before it expired, was the annual survey completed, was the management review held and did it produce actions with owners and dates. **Leading measures** ask whether the conditions for a failure are building: cathodic protection coverage, rectifier inspection conformance, alarm rate per controller per hour, standing alarms, locate accuracy on a sample, one-call positive response rate, contractor qualification currency. **Lagging measures** ask what already happened: leaks per mile, third-party damages, reportable incidents, injuries.

Look back at Figure 1. The band that runs above the documents is that measure layer, and the two arrows

rising out of it are the point of it. One goes to Safety Assurance, where measures become findings. The other goes to Management Review, where findings become decisions with an owner and a date. A measure that reaches neither one is just a number somebody collects.

Nearly all of that comes out of records you already keep, because a rule already requires you to keep them. So a review of your documents and your records can measure the process side of effectiveness, whether the system ran as designed, without a site visit. The field side, whether the work matched the paper, stays open until it is observed, and an honest score reports that part as pending rather than passing, because it has not been measured. That is a better starting position than most operators assume they are in.

What a records review cannot tell you is whether the work matched the paper. Whether the crew at the bell hole applied the criterion the procedure states, or the one they were trained to three years ago. Whether the management review changed a decision or produced a slide. Whether people raise concerns when they see something. That part needs observation, interviews and time in the field, and no amount of reading substitutes for it.

So an honest report says which part is which. Conformance from the documents. Coherence from the connections between them. Effectiveness from the records and field observations.

One pattern is worth naming before you look at your own numbers. An operator can have high conformance and low coherence. That is the common case, and it is the dangerous one, because it passes a conventional audit. Fixing it is what a safety management system is for. Leave it in place, and the management system you build on top of it inherits the same gaps.

11 What we are asking for

Of operators, one internal meeting. Get your own people in a room, take the ten documents, and list what each consumes and what each produces. Nobody outside your company needs to be in that room, and it does not need to become a project. If the interfaces hold, you are in better shape than most and you should know it.

Of those who find gaps, one decision. Decide whether to close them before you are told to. That is the whole argument of Section 5, and the honest version of it is that the work is the same either way. Only the circumstances change.

Of the industry, one adjustment. Move the goalpost from compliance to risk minimization. That one change does more than another document could, because it (1) puts operators and regulators on the same side of the table, both working the same question, (2) makes the case for a

safety management system obvious, since a management system is how you manage risk rather than how you pass an audit, and (3) brings coherence into view, because a risk question crosses documents the way real failures do and a compliance question mostly does not. It also settles what counts as fixed. Under a compliance goal, a gap closes when the missing language is added. Under a risk goal, it closes when the information reaches the person who needs it. And it makes the voluntary question go away, because if the goal is risk then waiting to be told is simply lost time.

Regulations are the floor. Zero incidents is the ceiling we all share.

The distance between them is a structural problem before it is a regulatory one.

Sources

Every figure and quotation in this paper comes from a named public document, and quoted phrases are verbatim from those documents.

Table 2. Key figures and their sources

FIGURE OR CLAIM	SOURCE
"Major pipeline accidents with serious consequences are rare in this country; but, when they occur, they are generally because of an alignment of weaknesses or failures across multiple activities."	PHMSA Advisory Bulletin ADB-2025-01, 90 FR 13658, March 25, 2025
"nearly 85 percent of total pipeline industry mileage is covered by PSMS"	ADB-2025-01, citing the Pipeline SMS 2023 Annual Report
"about 86 percent of all gas distribution pipeline mileage is operated by companies that have begun implementing PSMSs voluntarily"	ADB-2025-01, citing a 2023 PHMSA information collection
"more than one-half of the smallest category of operators reported that their PSMS efforts best fit the 'stalled' characterization"	ADB-2025-01, citing PHMSA's August 2024 Report to Congress
"very small operators need additional guidance to realize the benefits of implementing a PSMS"	ADB-2025-01, citing the same report
"Guidance and advisory bulletins are not rules; are not meant to bind the public in any way; and do not assign duties, create legally enforceable rights, or impose new obligations."	ADB-2025-01
"The pipeline industry continues to have accidents that could have been prevented or the consequences more effectively mitigated had risks been more thoroughly identified and addressed."	NTSB Safety Alert SA-095, January 2024
Nearly 80 percent of mileage implementing; 88 percent of operators agreeing that PSMS was improving safety performance; 503 of about 1,340 gas distribution operators responding; implementation below roughly 6,000 customers and 1.3 BCF	2024 Pipeline SMS Annual Report

FIGURE OR CLAIM	SOURCE
NTSB Safety Recommendations P-12-17 and P-24-2	NTSB, cited in SA-095
API RP 1173, first edition July 2015, reaffirmed April 2023, Errata 1 2025	API
Direction to promote pipeline safety management systems	PIPES Act of 2020, Pub. L. 116-260, section 205
PSMS planning and gap analysis tool for small operators	American Public Gas Association
Guidelines to Understanding Pipeline Safety Management Systems	American Gas Association
Planning and evaluation tools available to any operator	Pipeline SMS, pipelinesms.org
The mapping of program documents to RP 1173 elements in Table 1	Systemic Compliance analysis, confirmed against 49 CFR Parts 192, 195 and 199

Nothing in this paper is a compliance determination. Regulatory citations should be read in their current form before being acted on. Systemic Compliance is not a law firm.