United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

Argued May 16, 2024 Decided August 16, 2024

No. 23-1173

INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA,
PETITIONER

v.

PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION AND UNITED STATES DEPARTMENT OF TRANSPORTATION,
RESPONDENTS

On Petition for Review of a Final Rule
of the Department of Transportation

Sean Marotta argued the cause for petitioner. With him on the briefs were *Catherine E. Stetson*, *Matthew J. Higgins*, and *Keenan Roarty*.

Brian J. Springer, Attorney, U.S. Department of Justice, argued the cause for respondents. With him on the brief were *Brian M. Boynton*, Principal Deputy Assistant Attorney General, *Abby C. Wright*, Attorney, *Paula Lee*, Senior Trial Attorney, U.S. Department of Transportation, and *Jeremy T. Henowitz*, Attorney, Pipeline and Hazardous Materials Safety Administration.

Adrienne Y. Lee and *Hana Vizcarra* were on the brief for *amicus curiae* Pipeline Safety Trust in support of respondents.

Before: WILKINS, WALKER and PAN, *Circuit Judges*.

Opinion for the Court filed by *Circuit Judge* PAN.

PAN, *Circuit Judge*: The Pipeline and Hazardous Materials Safety Administration ("PHMSA") regulates the safety of pipelines that transport natural gas and other potentially dangerous materials. In 2022, PHMSA promulgated a long list of new and revised safety standards. A trade group that represents pipeline companies — the Interstate Natural Gas Association of America ("INGAA") — challenges five of those standards, alleging flaws in the rulemaking process and inadequacies in PHMSA's final justifications. With respect to four of the standards at issue, we agree with INGAA that the agency failed to adequately explain why the benefits of the final standards outweigh their costs, as required by 49 U.S.C. § 60102(b)(5). But we conclude that the agency properly promulgated the last challenged standard. We therefore grant the petition in part and deny it in part.

I.

A.

The Secretary of Transportation is required by statute to "prescribe minimum safety standards for pipeline transportation and for pipeline facilities." 49 U.S.C. § 60102(a)(2). The Secretary has delegated that authority to PHMSA. *Id.* § 108(f); 49 C.F.R. § 1.97(a)(1).

When prescribing pipeline-safety standards, PHMSA must follow certain procedures that are mandated by statute. The procedures "are more specific and still more demanding" than those required by the Administrative Procedure Act ("APA"), which PHMSA also must follow. *GPA Midstream Ass'n v. Dep't of Transp.*, 67 F.4th 1188, 1196–97 (D.C. Cir. 2023).

To impose a new standard, PHMSA must publish two cost-benefit analyses: one when it first proposes the standard, and another when it finalizes the rule. *See GPA Midstream*, 67 F.4th at 1197–98, 1200–01. The first cost-benefit analysis is part of the required "risk assessment," 49 U.S.C. § 60102(b)(3), which the agency submits to "an advisory committee of experts for peer review, and to the public for comment."[1] *GPA Midstream*, 67 F.4th at 1192 (citing 49 U.S.C. § 60102(b)(4)). The advisory committee then provides a report on the proposed standard, which recommends adopting, rejecting, or changing it. *See* 49 U.S.C. § 60115(c)(2). Before finalizing the rule, PHMSA must consider the advisory committee's recommendation; "comments and information received from the public"; and other factors, such as the "reasonableness of the standard." *Id.* § 60102(b)(2). In addition, PHMSA must again explicitly consider costs and benefits when issuing the final standard. *Id.* § 60102(b)(5) ("[T]he Secretary shall . . . issue a standard . . . only upon a reasoned determination that the benefits,

[1] There are two advisory committees: the Technical Pipeline Safety Standards Committee (also known as the Gas Pipeline Advisory Committee, or GPAC) and the Technical Hazardous Liquid Pipeline Safety Standards Committee. *See* 49 U.S.C. § 60102(b)(4)(A)(i); *Pipeline Advisory Committees*, PHMSA, https://perma.cc/4NNP-4Q3E (Nov. 7, 2023). GPAC is the relevant committee for the standards challenged here.

including safety and environmental benefits, of the intended standard justify its costs."); *see also id.* § 60102(b)(2)(D), (E).

B.

In August 2011, PHMSA issued an Advance Notice of Proposed Rulemaking to announce that the agency was "considering whether changes are needed to the regulations governing the safety of gas transmission pipelines." J.A. 1–3. Nearly five years later, in April 2016, PHMSA published a Notice of Proposed Rulemaking ("NPRM") that included a long list of proposed modifications to pipeline standards. In conjunction with its proposal, PHMSA published a report entitled "Preliminary Regulatory Impact Assessment," *id.* at 139, which in relevant part outlined the expected costs and benefits of the proposed standards. Members of the public — including petitioner INGAA — offered comments, and the advisory committee considered the standards and proposed some alterations.

In August 2022, PHMSA published its final rule and a report entitled "Final Regulatory Impact Analysis" ("RIA"), J.A. 619, which analyzed the costs and benefits of the final standards. INGAA petitioned for reconsideration, noting its support for the final rule generally, but asking that PHMSA "reconsider several provisions." *Id.* at 677. PHMSA largely denied that petition, with a few exceptions not relevant here.

INGAA now petitions this court for review, challenging five specific standards that were included in the final rule. The challenged standards and PHMSA's justifications for adopting them are highly technical. We thus address each standard individually and in detail *infra*, in Section III of this opinion.

II.

We have jurisdiction under 49 U.S.C. § 60119(a) to review final regulations prescribed by PHMSA. We review *de novo* whether the agency followed the procedural mandates of the APA, as well as those of the pipeline-specific statute, § 60102. *See Sorenson Commc'ns Inc. v. FCC*, 755 F.3d 702, 706 (D.C. Cir. 2014); 49 U.S.C. § 60119(a)(3). On the merits of the final rule, we apply the familiar APA standard that requires us to determine whether the rule is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A). But in this context, we defer to the agency's decision only if it is "informed," *GPA Midstream*, 67 F.4th at 1199, and PHMSA must make a "*reasoned* determination" that the benefits of the final standard justify the costs, 49 U.S.C. § 60102(b)(5) (emphasis added). Finally, the APA requires the agency to show that it "reasonably considered the relevant issues and reasonably explained the decision." *China Telecom (Ams.) Corp. v. FCC*, 57 F.4th 256, 264 (D.C. Cir. 2022) (cleaned up).

III.

A.

We grant INGAA's petition for review as to four standards for which PHMSA failed to make "a reasoned determination that the benefits . . . justify [the] costs." 49 U.S.C. § 60102(b)(5). We refer to these standards as the high-frequency-ERW standard, the crack-MAOP standard, the dent-safety-factor standard, and the corrosive-constituent

standard. We vacate each of these standards based on PHMSA's inadequate final cost-benefit analyses.[2]

1. High-Frequency-ERW Standard

Some pipes are manufactured through a process known as electric resistance welding ("ERW"). ERW involves forming a pipe by using an electric current to weld the edges of a piece of steel together to form a cylinder. *See Fact Sheet: Pipe Manufacturing Process*, PHMSA, https://perma.cc/JYD5-URFB (Dec. 1, 2011). Prior to 1970, this welding was achieved through the use of low-frequency currents. *Id.* But for the last several decades, the process has instead used high-frequency currents, which "produce[] a higher quality weld." *Id.*

Corrosion can lead to the thinning of pipe walls, known as "metal loss," which can cause some pipes, including those formed by ERW, to split open at the seam (that is, the point where the steel is welded together). *See Fact Sheet: Pipe Defects and Anomalies*, PHMSA, https://perma.cc/4E9E-GZWG (Dec. 1, 2011). Prior to the instant rulemaking, the regulations addressed this concern by incorporating an industry standard known as ASME/ANSI B31.8S. *See* 49 C.F.R. § 192.7(c)(6). That industry standard requires pipeline

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[2] We thus need not opine on INGAA's other challenges to these four standards, including that PHMSA failed to offer an adequate preliminary cost-benefit analysis under 49 U.S.C. § 60102(b)(3)(B); violated the APA's logical-outgrowth doctrine; and failed to consider recommendations from the advisory committee as required by § 60102(b)(2)(G). *Cf. United States v. Philip Morris USA Inc.*, 566 F.3d 1095, 1118 (D.C. Cir. 2009) ("Because these challenges have no impact on the outcome of this appeal, we decline to address them.").

operators to immediately repair a pipe upon discovering metal loss along longitudinal seams formed by *low-frequency* ERW — but the standard does not mention pipes formed by *high-frequency* ERW. *See* ASME/ANSI B31.8S at § 7.2.1 (available at https://perma.cc/P66V-3C5K). By contrast, the final rule requires immediate repair where there is metal loss along a seam created by *either* high-frequency or low-frequency ERW, if the pipe is expected to fail at a certain pressure. *See* 49 C.F.R. §§ 192.714(d)(1)(iv), 192.933(d)(1)(iv).[3]

In justifying the final standard, PHMSA claimed that the standard "will not impose an additional cost burden on pipeline operators" because the regulations already required immediate repairs through their incorporation of ASME/ANSI B31.8S. J.A. 658–59. INGAA noted in its motion for reconsideration that the agency's reliance on ASME/ANSI B31.8S did not justify immediate repair of pipes formed by *high-frequency* ERW. INGAA therefore asked PHMSA to exclude from the rule's repair requirements any pipes formed by high-frequency ERW. But PHMSA denied the request. INGAA now challenges this standard as applied to pipes formed by high-frequency ERW.

We vacate the high-frequency-ERW standard because PHMSA's analysis of its costs is unsupported by the record. *See* 49 U.S.C. § 60102(b)(5) (requiring "a reasoned determination that the benefits . . . justify [the] costs"). The agency concluded that this standard simply "adopt[ed] requirements . . . referenced in ASME/ANSI B31.8S" and claimed that the standard therefore "will not impose an

[3] The regulation also applies to seams formed by other methods — known as direct current and electric flash welding — which are not at issue here.

additional cost burden on pipeline operators since [the mandated repairs] are already required." J.A. 658–59; *see* 49 C.F.R. § 192.7(c)(6) (incorporating ASME/ANSI B31.8S by reference). But, as discussed, the pre-existing industry standard addressed seams formed by *low-frequency* ERW, but not those formed by *high-frequency* ERW. *See* ASME/ANSI B31.8S at § 7.2.1 (available at https://perma.cc/P66V-3C5K). Contrary to the agency's assurances, the challenged standard imposes a new repair requirement with respect to high-frequency-ERW pipes. PHMSA did not recognize this requirement as new and therefore did not consider the costs it imposed. Thus, the agency's cost-benefit analysis is unsupported by the record and fails to demonstrate "a reasoned determination." 49 U.S.C. § 60102(b)(5); *cf. Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm*, 463 U.S. 29, 43 (1983) (requiring a "rational connection between the facts found and the choice made" (cleaned up)).

On appeal, the agency argues that seams formed through high-frequency ERW face a high risk of failure. But that argument pertains only to the standard's benefits — it supports the conclusion that the standard would reduce the risk of an accident. Without properly identifying the costs of the new standard, "it is not apparent just how the agency went about weighing the benefits against the costs." *GPA Midstream*, 67 F.4th at 1200. We find unconvincing PHMSA's contention that its discussion of ASME/ANSI B31.8S was "beside the point" because the agency just "'clarif[ied] existing regulatory expectations.'" PHMSA Br. 55–56 (alteration in original) (quoting J.A. 659). According to the agency's contemporaneous explanation, the existing regulatory expectations were the requirements of ASME/ANSI B31.8S, which do not support the agency's claim that no new costs will be incurred by pipeline operators under the high-frequency-ERW standard. *See Dep't of Com.*

v. New York, 588 U.S. 752, 780 (2019) ("[I]n reviewing agency action, a court is ordinarily limited to evaluating the agency's contemporaneous explanation in light of the existing administrative record." (citations omitted)). Because the agency imposed a new safety requirement without properly addressing the costs of doing so, the standard cannot stand.[4]

2. Crack-MAOP Standard

Another type of anomaly in a pipeline that can potentially cause failures is a crack — *i.e.*, an opening or separation in the pipe wall. *See Pipeline Glossary: Cracks*, PHMSA, https://perma.cc/V7L8-VWKA (last visited July 31, 2024). In the NPRM, PHMSA proposed requiring immediate repair of "cracks or crack-like flaws" in certain circumstances, depending on the location of the crack, its depth, and its interaction with other cracks.

Separately, PHMSA proposed requiring operators to immediately repair *any* anomaly — crack, corrosion, dent, etc. — based on the pipeline's "predicted failure pressure"

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[4] As for remedy, the high-frequency-ERW standard is contained within a provision that also applies to longitudinal seams formed by other methods — "direct current, low-frequency . . . electric resistance welding, [or] electric flash welding." 49 C.F.R. §§ 192.714(d)(1)(iv), 192.933(d)(1)(iv). INGAA does not challenge the standard as applied to pipes formed by those other methods, and PHMSA's reasoning is valid as to those methods because ASME/ANSI B31.8S *did* require repairs to those types of pipes prior to the present rulemaking. *See* ASME/ANSI B31.8S at § 7.2.1 (available at https://perma.cc/P66V-3C5K). Thus, as INGAA requests, we vacate 49 C.F.R. §§ 192.714(d)(1)(iv) and 192.933(d)(1)(iv) only as applied to pipes formed by high-frequency electric resistance welding. *See GPA Midstream*, 67 F.4th at 1201–02.

(that is, the gas pressure at which the anomaly would cause the pipeline to burst or otherwise fail). J.A. 121. The proposed rule set the limit for the predicted failure pressure in relation to the maximum allowable operating pressure ("MAOP"). The MAOP is the maximum gas pressure at which an operator may lawfully operate a segment of a pipeline based on its material, design, and location. *See* 49 C.F.R. §§ 192.3, 192.619. The proposed standard required operators to immediately repair any anomaly when the predicted failure pressure was less than or equal to 1.1-times the MAOP — in other words, when the pipe was expected to fail if faced with a gas pressure of 110% or less of the MAOP. PHMSA noted that the proposed standard was consistent with the pre-existing standard, stating that "PHMSA is not proposing to change this criterion." J.A. 38.

But PHMSA adjusted its approach to cracks during the comment period. The final rule requires operators to immediately repair any crack or crack-like anomaly when its predicted failure pressure is less than 1.25-times the MAOP. 49 C.F.R. §§ 192.714(d)(1)(v)(C), 192.933(d)(1)(v)(C). Thus, the threshold for repairing cracks was changed and operators must repair more cracks under the final rule than they would have repaired under the proposed rule: Under the final rule, operators must repair a crack when the expected failure pressure falls below 125% of the maximum allowed pressure, rather than below 110% of the maximum. This increases the burden on operators because, for example, under the final rule operators need to repair a cracked pipe that is expected to fail if the pressure reaches 115% of the MAOP, but operators would not have been required to make that repair under either the proposed or the pre-existing standard.

To justify this change, PHMSA explained that, for cracks, it believed that the proposed 1.1-times-MAOP

standard "would not provide an adequate safety margin." J.A. 587; *see also id.* ("PHMSA has determined that this safety margin for immediate crack conditions is inadequate . . . ."). In denying INGAA's petition for reconsideration as to this standard, PHMSA elaborated that the "more conservative MAOP-based threshold for immediate repair is appropriate to ensure adequate protection against crack anomaly failure for a number of reasons." *Id.* at 708–09 (footnote omitted).

We conclude that PHMSA failed to provide a reasoned final cost-benefit analysis for this standard, as required by 49 U.S.C. § 60102(b)(5). This time, the agency's reasoning fails because it neglected to analyze the costs altogether. The agency should have considered the costs of changing the predicted failure pressure at which operators would be required to repair cracks and crack-like anomalies. The change was significant — 1.1-times the MAOP was the standard for all anomalies prior to this rulemaking and was included in the proposed rule, but the agency adopted a new threshold of 1.25-times the MAOP for cracks and crack-like anomalies. Without evaluating the costs of the change, the agency could not make "a reasoned determination that the benefits . . . justify [the] costs." 49 U.S.C. § 60102(b)(5); *see GPA Midstream*, 67 F.4th at 1200.

PHMSA points to its statement in the RIA that "the final changes to § 192.933(d) addressing metal loss, stress corrosion cracking, and metal-loss affecting a detected longitudinal seam, and selective seam corrosion will not impose an additional cost burden on pipeline operators since they are already required." J.A. 658–59. But the pipe anomalies discussed in that statement include only one type of crack (stress corrosion cracking) — the statement does not address the costs of the entire crack-MAOP standard, which applies to *all* cracks and crack-like anomalies. *See* 49 C.F.R.

§§ 192.714(d)(1)(v)(C), 192.933(d)(1)(v)(C). In any event, to the extent the quoted statement from the RIA purports to apply to the crack-MAOP standard, it is inaccurate because the crack-MAOP standard did not adopt a mandate that was "already required," J.A. 659 — rather, it increased the standard from 1.1-times MAOP to 1.25-times MAOP.

PHMSA falls back on an argument that it "was not obligated to consider the impact of the [crack-MAOP standard] separate from other elements of this rulemaking." PHMSA Br. 51 (cleaned up). Elsewhere, it similarly argues that the statute "allows PHMSA to evaluate the aggregate effects of similar, mutually reinforcing regulatory provisions." *Id.* at 35. We need not decide today the precise extent to which the agency must particularize its cost-benefit analyses, or the extent to which it can calculate the costs and benefits of related provisions together: Here, as explained, the agency did not calculate the costs of the final crack-MAOP standard at all. To the extent it did address the costs, the agency claimed the standard had none because it reiterated already existing requirements, which is contrary to the record. We therefore vacate 49 C.F.R. §§ 192.714(d)(1)(v)(C) and 192.933(d)(1)(v)(C).

3. Dent-Safety-Factor Standard

The dent-safety-factor standard is one part of the agency's approach to addressing dents in pipe walls. Depending on factors such as their location and depth, dents are subject to certain repair or monitoring requirements. For example, some dents require immediate repair, 49 C.F.R. § 192.933(d)(1)(ii), and others require repair within one year, *id.* § 192.933(d)(2)(i)–(iii). But operators can avoid or delay these repair requirements under the final rule based on an exception: If the operator performs an engineering analysis

and ensures the pipe is not at risk of failure based on a measure known as "critical strain levels," the normal dent-repair requirements do not apply. *Id.*

Section 192.712(c), which was not included in the proposed rule but was added to the final rule, spells out procedures that an operator must use as part of its engineering analysis when evaluating dents if the operator seeks to utilize the exception to the normal repair requirements. The dent-safety-factor standard is one part of these procedures and is used to measure "reassessment intervals." 49 C.F.R. § 192.712(c)(9). If the engineering analysis relieves an operator of the duty to repair a dent at a particular time, the reassessment interval dictates when an operator must reexamine that dent to see if the condition has worsened. The dent-safety-factor standard requires operators to calculate the reassessment interval using two inputs. Operators start by estimating the "fatigue life," *i.e.*, how long it would take the dent to cause the pipeline to fail. *See id.* Then, the operators divide the fatigue life by a "safety factor" — a number set to provide a margin of error to ensure that the dent is reassessed prior to failure. *See id.* The final rule requires a safety factor of five or greater, meaning that, for example, a dent with a fatigue life of ten years would need to be reassessed within a maximum of two years: ten years (fatigue life) divided by five (safety factor). *See id.*

In the comment process, INGAA supported the adoption of a fatigue-life to safety-factor ratio, like the one adopted in the final rule; but INGAA proposed a safety factor of two rather than five. That would have resulted in reassessment intervals 2.5 times greater than that required by the final rule. In other words, if the fatigue life of a dent were ten years, INGAA supported a proposal that would have required reassessment after five years, instead of the final rule's two

years. After promulgating the final rule, PHMSA denied INGAA's reconsideration petition as to this standard.

We must vacate the dent-safety-factor standard because the agency failed to analyze its costs: There is simply no discussion of the costs of this standard in the final rule or RIA. Thus, "it is not apparent just how the agency went about weighing the benefits against the costs," and the standard cannot stand. *See GPA Midstream*, 67 F.4th at 1200.

The agency cites only its statement in the final rule that this standard provided "an adequate safety margin" and a footnote in the final rule referencing an industry publication that recommended a safety factor between two and five. J.A. 588. That does little to explain why the agency adopted the top end of the range and, more importantly, does nothing to identify the *costs* of the standard.

Because we have determined that the dent-safety-factor standard, contained in 49 C.F.R. § 192.712(c)(9), is inadequately justified, we must address the parties' further dispute over the appropriate remedy. INGAA asks us to vacate only that sub-provision, while leaving the remainder of § 192.712(c) intact. PHMSA, on the other hand, argues that if we vacate subsection (c)(9), we must vacate all of § 192.712(c).

We agree with PHMSA. "We will sever . . . a portion of an administrative regulation only when we can say without any substantial doubt that the agency would have adopted the severed portion on its own," such as when the provisions "operate[] entirely independently of one another." *Am. Petrol. Inst. v. EPA*, 862 F.3d 50, 71 (D.C. Cir. 2017) (cleaned up). Here, § 192.712(c) establishes a cohesive scheme under which an operator must "evaluate dents and other mechanical damage," and its application allows an

exception in circumstances where an operator otherwise would be required to more immediately repair the dent, *see* 49 C.F.R. § 192.933(d)(1)–(3). If we vacate only § 192.712(c)(9), an operator could avail itself of the exception without having to comply with the provision that "details *when* the next dent reassessment must take place."[5] Reply Br. 14 (emphasis in original). Because we have "substantial doubt that the agency would have adopted" the exception without the reassessment-interval requirement in subsection (c)(9), we conclude that it is not severable from the remainder of the provision. *Am. Petrol. Inst.*, 862 F.3d at 71 (cleaned up). We therefore vacate 49 C.F.R. § 192.712(c) in its entirety.

4. Corrosive-Constituent Standard

The corrosive-constituent standard is designed to require operators to monitor and prevent internal corrosion of pipeline walls. Prior to the present rulemaking, regulations focused on corrosive *gas*: They provided that pipeline operators must monitor and minimize internal corrosion "[i]f corrosive gas is being transported." 49 C.F.R. § 192.477. Corrosive gas can cause the pipeline's walls to corrode or thin, risking dangerous incidents such as ruptures. *See Pipeline Safety: Internal Corrosion in Gas Transmission Pipelines*, 65 Fed. Reg. 53,803, 53,803 (Sept. 5, 2000).

Concerned that those requirements were not specific enough, PHMSA proposed adding a new standard that would

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[5] In such a circumstance, reassessment would instead be required in either seven or ten years, depending on the geographic location of the dent, as established by 49 C.F.R. § 192.712(h). But those timelines act as backstops and may be significantly longer than the reassessment interval calculated under § 192.712(c)(9).

"require monitoring for deleterious gas stream *constituents*." J.A. 92 (emphasis added) (discussing proposed 49 C.F.R. § 192.478). "Corrosive constituents," such as carbon dioxide and water, may be harmless on their own but can create corrosive gas when combined with other substances.

Commenters objected to the breadth of the proposed standard and the advisory committee proposed limiting the rule "to the transportation of corrosive *gas*," rather than corrosive *constituents*. J.A. 504 (emphasis added). In response, PHMSA narrowed its approach in the final rule: The final rule requires operators to "develop and implement a monitoring and mitigation program to mitigate the corrosive effects, *as necessary*"; it does not, like the proposed rule, expressly require operators to "identify potentially corrosive constituents in the gas being transported." *Compare* 49 C.F.R. § 192.478(a) (emphasis added) *with* J.A. 112.[6]

In justifying the final standard, PHMSA claimed that regulations promulgated by the Federal Energy Regulatory Commission already require some operators to monitor corrosive constituents, so the new standard "is not expected to add any incremental compliance activities or costs, but rather codifies existing practice into regulation." J.A. 648. At the same time, "PHMSA acknowledge[d] that while there may be

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[6] PHMSA asserts that the changes between the proposed and final rules sufficed to fully implement the advisory committee's recommendation that the regulation only apply where corrosive gas is present. INGAA reads the final rule differently and believes the standard imposes obligations in some circumstances where corrosive constituents, but not corrosive gas, are present. We need not resolve this dispute over the precise meaning of the rule because we vacate the standard based on PHMSA's insufficient final cost-benefit analysis.

compliance costs," it was difficult to precisely predict or calculate those costs. *Id.* at 650. As for benefits, the agency noted that there were nearly 150 incidents and $200 million in damages over a 12-year span caused by corrosion-related incidents. *Id.* at 652. Once again, PHMSA rejected INGAA's petition for reconsideration of this final standard.

The final cost-benefit analysis of the corrosive-constituent standard was inadequate because PHMSA's description of the costs was internally inconsistent. The agency stated first that the rule "is not expected to add any incremental compliance activities or costs," J.A. 648; and then that "while there may be compliance costs, precisely how much those compliance costs are is hard to determine," *id.* at 650. We thus cannot discern the agency's reasoning: Does the standard impose no costs at all or does it impose some costs that cannot be calculated? The agency's explanation contradicts itself and thus fails to meet the requirement of a reasoned cost-benefit analysis. *See* 49 U.S.C. § 60102(b)(5); *cf. Nat. Res. Def. Council v. Nuclear Regul. Comm'n*, 879 F.3d 1202, 1214 (D.C. Cir. 2018) ("[I]t would be arbitrary and capricious for the agency's decision making to be internally inconsistent." (cleaned up)).

PHMSA does little to reconcile this inconsistency on appeal. It restates its conflicting justifications, and claims that the second statement "did not override" the first one. PHMSA Br. 43 (quoting J.A. 648, 650). But we must rely on the agency record, which does not explain PHMSA's reasoning, so this argument is unavailing. We thus vacate 49 C.F.R. § 192.478.

B.

We deny INGAA's petition as to the last challenged standard, which we refer to as the pipeline-segment standard.

INGAA challenges both the preliminary and final cost-benefit analyses of this standard based on a minor change in the language between the proposed and final rules. But PHMSA stated in the record that the revised wording does not implement any substantive change, and INGAA provides no reason to doubt the agency's representations. Because the language-change arguments are the only ones that INGAA preserved and because those claims are unconvincing, INGAA's challenge to the pipeline-segment standard fails.

The pipeline-segment standard addresses monitoring for "stress corrosion cracking" ("SCC"), which is a pipe anomaly that occurs when corrosion and high pressure (*i.e.*, stress) lead to cracks. *See Fact Sheet: Stress Corrosion Cracking*, PHMSA, https://perma.cc/QLP7-TPUX (July 23, 2014); *see also* J.A. 63 ("SCC is cracking induced from the combined influence of tensile stress and a corrosive medium."). One way to monitor pipelines for SCC is through "direct assessment" — *i.e.*, excavating areas around a pipeline to directly examine sample portions of the pipe and surrounding soil. The NPRM proposed requiring a minimum of three excavations per "SCC segment" when operators conduct a direct assessment. J.A. 127. The proposed rule did not define "SCC segment."

The final rule adopts the proposed standard with a minor tweak: It requires at least three excavations per "covered pipeline segment" — rather than per "SCC segment." 49 C.F.R. § 192.929(b)(3). The regulations define "covered pipeline segment" — as they did prior to the instant rulemaking — to mean "a segment of gas transmission pipeline located in a high consequence area," *id.* § 192.903, and a covered pipeline segment's "boundaries are determined by population density and other consequence factors," J.A. 582. The agency explained that "the final rule invokes certain

consensus industry standards" that "[m]ost operators already successfully utilize," so "the incremental cost . . . would be negligible." *Id.* at 642. As for benefits, PHMSA recognized that the standard was not expected "to result, on [its] own, in measurable changes in the risk of pipeline releases, incidents or other quantifiable benefits," but the agency pointed to the benefits of clarifying its expectations. *Id.*

In its petition for reconsideration, INGAA asserted that the change in terminology from "SCC segment" to "covered pipeline segment" could require pipeline operators to perform up to three times as many excavations. PHMSA disagreed and stated that there was no "substantive difference between the meaning of the proposed and final versions." J.A. 720.

On appeal, INGAA persists in claiming that the change in wording imposes a significant burden on pipeline operators, and that PHMSA failed to evaluate the costs and benefits of that burden in either its preliminary or final analyses. It asserts that requiring three assessments per "covered pipeline segment" instead of per "SCC segment" "tripl[es] the number of excavations" that a pipeline operator must conduct. INGAA Br. 39. But PHMSA has never defined "SCC segment," and INGAA provides no evidence other than its own representations that a single "SCC segment" could contain up to three "covered pipeline segments." To the contrary, PHMSA indicated in the record that it viewed the two terms as interchangeable. At oral argument, INGAA's counsel accepted that, if "SCC segment" and "covered pipeline segment" mean the same thing, it has no disagreement with the agency or the final rule. Accordingly, we take PHMSA at its word and interpret the final rule as substantively the same as the proposed rule with respect to the number of excavations required for a direct assessment. As a result, the parties agree to the number of

excavations that are mandated; and INGAA's challenges to both the preliminary and final cost-benefit analyses fall away.

To the extent INGAA mounts other attacks on the final cost-benefit analysis, such arguments are forfeited: INGAA's petition for reconsideration focused only on the language modification. Thus, INGAA cannot now argue, for example, that PHMSA failed to conduct a cost-benefit analysis for conducting a set number of excavations. *See Nuclear Energy Inst., Inc. v. EPA*, 373 F.3d 1251, 1290 (D.C. Cir. 2004) ("As a general rule, claims not presented to the agency may not be made for the first time to a reviewing court." (cleaned up)); 49 U.S.C. § 60119(a)(3) ("A judicial review of agency action under this section shall apply the standards of review established in [the APA].").

* * *

For the foregoing reasons, we grant the petition in part and deny it in part. We vacate 49 C.F.R. § 192.712(c) (the dent-safety-factor standard and related provisions); 49 C.F.R. §§ 192.714(d)(1)(v)(C) and 192.933(d)(1)(v)(C) (the crack-MAOP standard); and 49 C.F.R. § 192.478 (the corrosive-constituent standard). We also vacate 49 C.F.R. §§ 192.714(d)(1)(iv) and 192.933(d)(1)(iv) (the high-frequency-ERW standard), but only as applied to seams formed by high-frequency electric resistance welding. We deny the petition as to 49 C.F.R. § 192.929(b)(3) (the pipeline-segment standard).

So ordered.